



Universidad de Navarra

Faculty of Medicine

Doctoral Thesis

**Building Primary Palliative Care
Capacity Through Education at A
National Level:
Pallium Canada and Its LEAP Courses**

José Luis Pereira



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Memoria presentada por Dr. Jose Luis Pereira para obtener el grado de Doctor
25-11-2021

José Luis Pereira



Universidad de Navarra

Faculty of Medicine

Dr. Prof. Carlos Centeno Cortés, investigador principal del Programa ATLANTES y profesor de la Universidad de Navarra, informa que:

El presente trabajo, “Building Primary Palliative Care Capacity Through Education at A National Level: Pallium Canada and Its LEAP Courses”, presentado por José Luis Pereira, ha sido realizado bajo mi dirección en el Departamento de Medicina de la Universidad de Navarra y, una vez revisado, autorizo su presentación ante el Tribunal que lo ha de juzgar.

Y, para que así conste, firma el presente informe:

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Pamplona, 25-11-2021



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El presente trabajo, “Building Primary Palliative Care Capacity Through Education at A National Level: Pallium Canada and Its LEAP Courses”, presentado por José Luis Pereira, ha sido realizado bajo mi dirección en el Departamento de Medicina de la Universidad de Navarra y, una vez revisado, autorizo su presentación ante el Tribunal que lo ha de juzgar.

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Dr. Prof. Juan Carlos Galofré Ferrater

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ABBREVIATIONS AND ACRONYMS

Frequently used abbreviations and acronyms in this thesis:

ADDIE	Analysis, Design, Development, Implementation, Evaluation
CFHI	Canadian Foundation for Healthcare Improvement
CPD	Continuing Professional Development
CTC	Commitment to Change
ECHO	Extension for Community Health Outcomes
IPE	Interprofessional education
IPC	Interprofessional collaboration
IPL	Interprofessional learning
LEAP	Learning Essential Approaches to Palliative Care (courses)
LEAP Core	LEAP course version targeting primary care providers.
LEAP ED	LEAP Emergency Department course version
LEAP LTC	LEAP Long Term Care course version
LEAP Onco	LEAP Oncology
LMS	Learning management system
MOOCs	massive open online courses
QI	Quality Improvement

ABSTRACT

Background

All the palliative care needs of a population cannot be met by specialist palliative care clinicians and teams alone. Both primary-level and specialist-level palliative care is needed, particularly if palliative care is to be provided to persons with cancer and non-cancer illnesses, and should be initiated early in the illness journey. However, many healthcare providers who care for patients with serious illnesses do not have the core competencies to provide a palliative care approach. Education, including undergraduate, postgraduate and continuing professional development (CPD) of health care professionals in practice, therefore remains a key strategy to ensure access to palliative care.

Pallium Canada (Pallium) is a non-profit organization that was founded in 2000 to build primary palliative care capacity nationally across Canada. It has done this largely through its interprofessional Learning Essential Approaches to Palliative Care (LEAP) courses which target providers across professions and settings and aims to equip them with core palliative care competencies. LEAP Core is one of over 17 course versions and targets primary care providers.

Goals and Objectives

The overall goal of my doctoral work was to gain in-depth knowledge and understanding of the development and spread of continuing palliative care education programs (using Pallium Canada and its LEAP Core course as case studies), to evaluate the impact of the LEAP courses at various levels, and to identify evaluation and research priorities for Pallium moving forward.

I approached the work by establishing a series of questions –:

- Objective 1:* To what extent has Pallium Canada’s LEAP program spread across Canada and what has facilitated and impeded that spread?
- Objective 2:* What curriculum development approach has evolved over the years, what are its features and why?
- Objective 3:* What are the instructional design approaches that facilitate spread of an interprofessional palliative care continuing professional development (CPD) course at a national level, including interprofessional learning?
- Objective 4:* What is the learner experience of the different profession groups towards Pallium Canada’s LEAP courses?
- Objective 5:* Do LEAP Core learners implement what they have learned into their practice?
- Objective 6:* Do the LEAP Core courses change learners’ knowledge, attitudes and comfort related to a palliative care approach?

Objective 7: What is the impact of LEAP courses on patients and the workplace?

Objective 8: How should Pallium Canada evaluate and study the LEAP program going into the future?

Methods

A series of case studies (for objectives 1, 2 and 3), two studies (for objectives 4, 5, 6 and 7) and an environmental scan (for objective 8) were undertaken to address these questions.

Objectives 4, 5 and 6 were addressed with a large analysis, using qualitative and quantitative methods, of data collected through pre- and post-course instruments that assessed learners' knowledge (K), attitudes (A) and comfort (C) levels related to providing a palliative care approach (2015-2017 Study). Learners completed a course evaluation (which included a survey that explored various facets of the learning experience) immediately post-course and made commitment to change (CTC) statements (four things they would change in their practices because of participating in the course). Four months later they reviewed their commitments and reflected on the extent to which they had implemented them (4-month post-course CTC). All learners who had participated in a LEAP Core course from 1 April 2015 to 31 March 2017 were eligible.

Objective 7 was addressed with a study of a project called INTEGRATE that included LEAP Core training in four family medicine clinics in Ontario. It used mixed methods, including surveys and interviews, of clinic staff (including doctors and nurses and other professionals) and of patients to assess impact. Four clinics with over 50 staff participated.

Objective 8's environmental scan included input from national and international education and evaluation experts, and a critical review of existing evaluation models, frameworks and approaches.

Results

The case studies resulted in three papers. The first mapped out the spread of Pallium across the country; 17 courses were delivered in the first 3 years in only 3 provinces, while in 2019 alone over 530 courses were delivered to over 10 000 health care professionals across the whole country; nurses made up the majority of learners (about two thirds), followed by physicians (about a quarter) and then other professionals). A number of factors were identified that have accelerated spread, as well as some that impeded it. The second paper described a unique curriculum development framework that has evolved, includes rapid prototyping methods, and is able to support the development and maintenance of multiple course versions at the same time. The third paper identified several instructional design polarities that educators need to navigate to develop short, interprofessional courses for large scale national deployment.

For the 2015-2017 study, 3045 learners from across professions responded (65.7% response rate). Over 79% to 97% of learners across professions found the courses relevant to their practices. Similar rates were found across the other six questions. Differences were noted across the profession groups though with similar rates expressed by physicians and nurses as a profession group pair, and by social workers and pharmacists separately. Analyses of the K, A and C surveys found significant improvements with medium to very large effect sizes across professions. The analysis of the CTC revealed many examples of learners implementing what they learned into practice.

In the INTEGRATE study, healthcare providers found the LEAP course helped them to understand and provide a palliative care approach better and patients with palliative care needs were identified earlier, experience more advance care planning and earlier, and were more often connected to home care services.

The environmental scan identified emerging trends related to evaluation education programs. A framework that evaluates both impact and implementation was developed, drawing largely on the Consolidated Framework for Implementation Research and Kirkpatrick's New World Model.

Conclusions

Pallium Canada and its LEAP program has seen significant spread across Canada. Room for improvement remains. There is evidence that the course not only improves knowledge, attitudes and comfort related to providing a palliative care approach, but what is learned is being implemented into practice with benefits for patients, colleagues, the clinics and learners themselves.

RESUMEN

Introducción

No todas las necesidades de cuidados paliativos de la población pueden satisfacerse exclusivamente por los equipos especializados de cuidados paliativos. Se necesitan tanto los cuidados paliativos especializados como los de cuidados paliativos generalistas, en especial si estos cuidados tienen como objeto enfermedades como cáncer u otras, que deben iniciarse tempranamente en el curso de la enfermedad. Sin embargo, muchos profesionales sanitarios que se dedican a los pacientes con enfermedades graves no tienen las competencias clave para brindar el enfoque propio de los cuidados paliativos. La educación, incluida la de pregrado, posgrado, y la educación profesional continuada (CPD, por sus siglas en inglés) de los profesionales de la salud en la práctica, por consiguiente, resultan partes de una estrategia crucial para garantizar el acceso a los cuidados paliativos.

Pallium Canadá (Pallium) es una organización sin ánimo de lucro que fue fundada en el año 2000 para desarrollar la capacidad de unos cuidados paliativos generalistas a nivel nacional en Canadá. Esto lo ha logrado ampliamente a través de sus cursos “Aprendiendo Enfoques Esenciales a Cuidados Paliativos” (LEAP, por sus siglas en inglés), que apunta a proveedores estratégicos de distintas profesiones y contextos, e intenta equiparlos con las competencias básicas de los cuidados paliativos. El curso *LEAP Core* es una de las 17 versiones del curso, dirigido a los sanitarios de atención primaria.

Metas y objetivos

La principal meta de mi trabajo doctoral era obtener un conocimiento y un entendimiento profundos de la expansión de los programas de educación continuada en cuidados paliativos (empleando Pallium Canadá y su curso *LEAP Core* como casos de estudio), para evaluar el impacto de los cursos LEAP en varios niveles, y para identificar prioridades de investigación y evaluación para Pallium en el futuro.

Enfoqué el trabajo estableciendo una serie de cuestiones:

- Objetivo 1:* ¿Hasta qué punto se expandido el programa LEAP de Pallium Canadá por Canadá y qué ha facilitado o impedido esa expansión?
- Objetivo 2:* ¿Qué enfoque de desarrollo curricular ha evolucionado a lo largo de los años, cuáles son sus características, y por qué?
- Objetivo 3:* ¿Cuáles son los enfoques de diseño educativo que facilitan la expansión de un curso de desarrollo de educación continuada (CPD) en cuidados paliativos interprofesionales a nivel nacional, incluyendo el aprendizaje interprofesional?
- Objetivo 4:* ¿Cuál son las experiencias de los alumnos de los distintos grupos profesionales en los cursos LEAP de Pallium Canadá?
- Objetivo 5:* ¿Ponen en práctica los alumnos lo que han aprendido en los cursos *LEAP Core*?

- Objetivo 6:* ¿Cambian los cursos LEAP Core los conocimientos, actitudes y el confort relacionados con el enfoque paliativo de los alumnos?
- Objetivo 7:* ¿Cuál es el impacto de los cursos LEAP en los pacientes y en el lugar de trabajo?
- Objetivo 8:* ¿Cómo debería Pallium Canadá evaluar y estudiar el programa LEAP en el futuro?

Métodos

Una serie de estudios de caso (para los objetivos 1, 2 y 3), dos estudios (para los objetivos 4,5,6 y 7), y un examen del entorno (para el objetivo 8) fueron realizados para abordar estas cuestiones.

Los objetivos 4, 5 y 6 fueron abordados con un análisis retrospectivo amplio, utilizando métodos cualitativos y cuantitativos de datos recogidos a través de instrumentos que evaluaban antes y después del curso los niveles de conocimiento (K), actitud (A), y confort (C); relacionados con la provisión de un enfoque de cuidados paliativos (estudio 2015-2017).

Los alumnos completaron una evaluación del curso (inclusive una encuesta sobre varias facetas de la experiencia de aprendizaje) inmediatamente después del curso e hicieron declaraciones de compromisos para el cambio (CTC) (cuatro cosas que cambiarían de su práctica por haber participado en el curso). Cuatro meses después revisaron sus compromisos y reflexionaron sobre el grado de implementación. Todos los alumnos que habían participado en el curso LEAP Core desde el 1 de abril de 2015 hasta el 31 de marzo de 2017 fueron elegibles.

El objetivo 7 se abordó mediante el estudio de un Proyecto llamado INTEGRATE que incluía formación LEAP Core en cuatro clínicas de medicina de familia en Ontario. Empleaba métodos mixtos, incluyendo encuestas y entrevistas para evaluar el impacto tanto en el personal clínico (médicos, enfermeras y otros profesionales), como en pacientes. Participaron cuatro clínicas con más de 50 profesionales.

El examen del entorno del objetivo 8 recibió los aportes de expertos nacionales e internacionales en educación y evaluación, y una revisión crítica de los modelos de evaluación, marcos y enfoques existentes.

Resultados

Los estudios de caso dieron como resultado tres artículos. El primero mapeó la expansión de Pallium por el país; se realizaron 17 cursos en los tres primeros años en tres provincias, mientras que, sólo en 2019, se impartieron más de 530 cursos a más de 10000 profesionales sanitarios a lo largo y ancho del país; los participantes mayoritarios fueron profesionales de enfermería (casi dos tercios), seguidos por médicos (un cuarto aproximadamente), y otros profesionales. Se identificaron una serie de factores como causantes de la expansión, así como otros que la impidieron. El segundo artículo describió un marco de desarrollo curricular que ha evolucionado, que incluye métodos de prototipado rápido, y capaz de apoyar el desarrollo y mantenimiento de múltiples versiones del curso simultáneamente. El tercer artículo identificó diversas polaridades de diseño educativo que los educadores necesitan para guiar el desarrollo de cursos cortos, interprofesionales, de despliegue nacional a gran escala.

Para el estudio de 2015-2017, 3045 alumnos de diversas profesiones respondieron (ratio de

respuesta: 65.7%). Entre el 79% y 97% de los alumnos de las distintas profesiones encontraron los cursos útiles para su práctica. Se encontraron ratios similares en las otras seis preguntas. Se percibieron diferencias entre grupos profesionales, si bien los ratios eran semejantes entre médicos y enfermeras, por un lado; y entre trabajadores sociales y farmacéuticos, respectivamente. Los análisis de los cuestionarios sobre K, A y C, encontraron mejoras significativas en todas las profesiones. El análisis del CTC reveló multitud de ejemplos de alumnos que habían implementado lo aprendido en la práctica.

En el estudio INTEGRATE, los profesionales sanitarios encontraron que el curso LEAP les ayudó a comprender y a brindar un mejor enfoque de cuidados paliativos, a identificar más precozmente los pacientes con necesidades paliativas, a mejorar la planificación avanzada (y más tempranamente), y a conectarse más frecuentemente con los servicios de atención domiciliaria.

El examen de entorno identificó tendencias emergentes relacionadas con la evaluación de los programas educativos. Se desarrolló un marco que evalúa tanto el impacto como la implementación, basándose en el Marco Consolidado de la Investigación de la Implementación y el el Modelo Kirkpatrick para el Nuevo Mundo (MKNM).

Conclusiones

Pallium Canadá y su programa LEAP, aun con margen de mejora, ha conocido una expansión significativa en Canadá. Hay evidencia de que el curso no sólo mejora el conocimiento, las actitudes y el confort relacionado con la provisión de un enfoque de cuidados paliativos, sino también que lo que se aprende se implementa en la práctica para beneficio de pacientes, colegas, clínicas y los propios alumnos.

RÉSUMÉ (français)

Contexte

Les cliniciens et les équipes spécialisées en soins palliatifs ne peuvent pas combler à eux seuls tous les besoins en soins palliatifs d'une population. Ces soins sont nécessaires, tant au niveau primaire qu'au niveau spécialisé, en particulier pour les personnes atteintes d'un cancer ou d'une autre maladie. De plus, ils doivent être mis en place dès le début de la trajectoire de la maladie. Cependant, de nombreux fournisseurs de soins de santé qui s'occupent de patients atteints de maladies graves ne possèdent pas les compétences de base pour fournir une approche palliative. La formation, y compris l'enseignement de premier, de deuxième et de troisième cycle ainsi le développement professionnel continu (DPC) des professionnels de la santé en exercice, reste donc une stratégie essentielle pour garantir l'accès aux soins palliatifs.

Pallium Canada (Pallium) est un organisme sans but lucratif qui a été fondé en 2000 pour renforcer les capacités en matière de soins palliatifs primaires à l'échelle nationale. Il y est parvenu en grande partie grâce à ses cours interprofessionnels LEAP (Les essentiels de l'approche palliative), qui s'adressent aux fournisseurs de soins de toutes les professions et de tous les milieux. Ces cours visent à doter ces professionnels des compétences essentielles en matière de soins palliatifs. Les Fondements du LEAP sont l'une des 17 versions de ces cours et visent les fournisseurs de soins primaires.

Buts et objectifs

L'objectif global de mon travail de doctorat était d'acquérir une connaissance et une compréhension approfondies de l'élaboration et du déploiement des programmes de formation continue en soins palliatifs (en utilisant Pallium Canada et son cours les Fondements du LEAP comme études de cas); d'évaluer l'impact des cours LEAP à divers niveaux et de déterminer les priorités d'évaluation et de recherche pour Pallium à l'avenir.

J'ai abordé le travail en établissant une série de questions :

- Objectif 1 :* Dans quelle mesure le programme LEAP de Pallium Canada s'est-il déployé dans tout le pays et qu'est-ce qui a facilité et entravé ce déploiement?
- Objectif 2 :* Quelle approche de l'élaboration du programme de formation a évolué au fil des ans, quelles sont ses caractéristiques et pourquoi?
- Objectif 3 :* Quelles sont les approches de conception pédagogique qui facilitent le déploiement d'un cours de développement interprofessionnel continu (DPC) en soins palliatifs au niveau national, y compris l'apprentissage interprofessionnel?
- Objectif 4 :* Quelle est l'expérience des apprenants des différents groupes professionnels en ce qui a trait aux cours LEAP de Pallium Canada?
- Objectif 5 :* Les apprenants des Fondements du LEAP mettent-ils en pratique ce qu'ils ont appris?

- Objectif 6 :* Les cours les Fondements du LEAP modifient-ils les connaissances, les attitudes et le degré d'aise des apprenants en ce qui concerne l'approche palliative?
- Objectif 7 :* Quel est l'impact des cours LEAP sur les patients et le lieu de travail?
- Objectif 8 :* Comment Pallium Canada devrait-il évaluer et étudier le programme LEAP à l'avenir?

Méthodologie

Une série d'études de cas (pour les objectifs 1, 2 et 3), deux études (pour les objectifs 4, 5, 6 et 7) et une analyse de l'environnement (pour l'objectif 8) ont été entreprises pour répondre à ces questions.

Les objectifs 4, 5 et 6 ont été abordés à l'aide d'une vaste analyse rétrospective utilisant des méthodes qualitatives et quantitatives, des données recueillies par le biais d'instruments pré et post-cours afin d'évaluer les connaissances (K), les attitudes (A) et les degrés d'aise (C) des apprenants en ce qui a trait à l'approche palliative (étude effectuée en 2015-2017). Les apprenants ont rempli une évaluation du cours (qui comprenait un sondage sur diverses facettes de l'expérience d'apprentissage) immédiatement après le cours et ont pris des engagements à effectuer des changements (EEC) (quatre éléments qu'ils changeraient dans leur pratique après avoir participé au cours). Quatre mois plus tard, ils ont revu leurs engagements et évalué à quel point ils les avaient mis en œuvre (EEC post-cours 4 mois plus tard). Tous les apprenants ayant suivi les Fondements du LEAP du 1^{er} avril 2015 au 31 mars 2017 étaient admissibles.

L'objectif 7 a été abordé dans le cadre de l'étude d'un projet appelé INTEGRATE, qui comprenait les Fondements du LEAP dans quatre cliniques de médecine familiale en Ontario. Nous avons utilisé des méthodes mixtes, notamment des sondages et des entretiens avec le personnel des cliniques (y compris les médecins, les infirmières et d'autres professionnels) et des patients pour évaluer l'impact des cours. Quatre cliniques comptant plus de 50 employés ont participé.

L'analyse de l'environnement en ce qui a trait à l'Objectif 8 comprenait des contributions d'experts nationaux et internationaux en éducation et en évaluation, ainsi qu'un examen critique des modèles, des cadres et des approches d'évaluation existants.

Résultats

Les études de cas ont donné lieu à trois articles. Le premier cartographie le déploiement des cours de Pallium au pays; 17 cours ont été dispensés au cours des 3 premières années dans seulement 3 provinces, tandis que pour la seule année 2019, plus de 530 cours ont été offerts à plus de 10 000 professionnels de la santé dans tout le pays. Les infirmières constituaient la majorité des apprenants (environ les deux tiers), suivies des médecins (environ un quart), puis des autres professionnels. Nous avons décelé un certain nombre de facteurs favorisant le déploiement, ainsi que ceux qui l'entravaient. Le deuxième article décrit un cadre unique d'élaboration de programmes d'études qui a évolué. Ce cadre comprend des méthodes de prototypage rapide et est capable de soutenir l'élaboration et la mise à jour de plusieurs versions de cours en même temps. Le troisième article décrit plusieurs polarités relatives à la conception pédagogique que les éducateurs doivent surmonter pour créer des cours courts et interprofessionnels destinés à être déployés à grande

échelle sur le plan national.

Pour l'étude de 2015-2017, 3045 apprenants de toutes les professions ont répondu (taux de réponse de 65,7 %). Plus de 79 % à 97 % des apprenants, toutes professions confondues, ont trouvé les cours pertinents pour leur pratique. Des taux similaires ont été observés pour les six autres questions. Des différences ont été constatées entre les groupes de professions, avec toutefois des taux similaires chez les médecins et les infirmières en tant que paire de groupes professionnels, et chez les travailleurs sociaux et les pharmaciens séparément. Les analyses des sondages K, A et C ont révélé des améliorations importantes avec des tailles d'effet moyennes à très importantes dans toutes les professions. L'analyse de l'EEC a révélé de nombreux exemples d'apprenants mettant en pratique ce qu'ils ont appris.

Selon les résultats de l'étude INTEGRATE, les fournisseurs de soins de santé ont trouvé que le cours LEAP les aidait à mieux comprendre l'approche palliative et à l'appliquer, et que les patients ayant des besoins en matière de soins palliatifs étaient identifiés plus tôt, bénéficiaient davantage et plus tôt de la planification préalable des soins, et étaient plus souvent mis en relation avec les services de soins à domicile.

L'analyse de l'environnement a permis de cerner les tendances émergentes en matière d'évaluation des programmes de formation. Un cadre permettant d'évaluer à la fois l'impact et la mise en œuvre a été élaboré, en s'inspirant largement du Consolidated Framework for Implementation Research [Cadre consolidé pour la recherche sur la mise en œuvre] et du New World Model [Modèle du Nouveau Monde] de Kirkpatrick.

Conclusions

Pallium Canada et son programme LEAP ont connu une expansion importante au pays. Des améliorations sont encore possibles. Il est prouvé que le cours améliore non seulement les connaissances, les attitudes et le degré d'aise liés à l'approche palliative, mais aussi que les résultats de l'apprentissage sont appliqués dans la pratique, entraînant des avantages pour les patients, les collègues, les cliniques et les apprenants eux-mêmes.

CHAPTER 1: INTRODUCTION

1.1. Palliative care: A healthcare and societal imperative

It is estimated that worldwide only about 14% of people who need palliative care, receive it.(1) In 2014, the World Health Assembly called on member states to make palliative care a core component of their healthcare systems.(2) The resolution highlighted, among others, the need for primary-level and specialist-level palliative care services, where the latter refers to palliative care provided by health care professionals who are not palliative care specialists. It also called for palliative care education. Others, at national and international levels, continue to make the case for improved access to palliative care, including approaching it as a human right and as a public health issue. (3–8)

Patients who could benefit from a palliative care approach are to be found in many settings of care, from home and other community-based settings such as residential hospices and long-term care facilities, to acute care hospitals and hospital outpatient clinics. In hospitals, they are found across many different services, including general medical and surgical wards, emergency departments, critical care units, oncology units, dialysis and other renal programs, geriatric programs, palliative care units and complex continuing care wards, to name only a few.

Palliative care is therefore needed across many settings of care and for patients with cancer and non-cancer illnesses.(9–13) Recent studies have highlighted that the integration of palliative care in non-cancer diagnosis is even more suboptimal than in cancer care.(14,15) This includes initiating a palliative care approach earlier in the illness trajectory and integrating it in chronic disease management.(4,16)

A large body of evidence points to a lack of access to palliative care for patients with progressive life limiting illnesses. (17–19) This need exists across many disease groups, including cancer care and advanced heart, lung, kidney, neurological disease, and geriatrics and frailty care, among others.(9–11,20–23) The need has also been described across many different settings of care where patients with palliative care needs find themselves. These are community and home care,(24) hospitals,(25,26) intensive care units,(27,28) emergency departments (29), surgical services (30), pediatric services (31),and long term care nursing homes.(12)

Achieving universal access therefore requires a multipronged approach that incorporates appropriate policies, services, medications, funding, and education.(32)

1.2. Primary-level and Specialist-level palliative care

The World Health Organization has promoted the integration of palliative care across the three levels of health care services; primary, secondary and tertiary care.(33) Others have reiterated this call and explained the rationale.(34–37) Primary palliative care is delivered by clinicians who are not specialized in palliative care but care for patients with serious illnesses and therefore require core palliative care competencies. (15,38) Some of these will work in areas where many patients with serious illnesses are cared for and they therefore need a higher level of core competencies. These

are healthcare providers working with patients with cancer, advanced organ diseases (such as advanced heart, lung, renal, neurological and liver diseases), critical care and geriatrics. In response to and recognition of this need, many professional bodies across many disease groups including cancer, cardiology, nephrology, pulmonology and neurology, amongst others, have published position papers calling on the upskilling of their members to provide a palliative care approach and to acquire the necessary core competencies. (16,39,40)

Secondary and tertiary level palliative care is often referred under the umbrella term *specialist-level palliative care* or simply *specialist palliative care*. It is provided by health care professionals with advanced skills and training in palliative care across many different settings, from hospital consultation teams and palliative care units to community-based consultation or support teams and residential hospices. Their role is, among others, to provide care to patients and families with complex needs through consultation support or as most responsible clinician or team when needed (41), support colleagues in primary care and other specialty areas and care settings care for patients with advanced disease, lead the development of the field through research and education, and provide health services leadership in palliative care. Studies from across the world, including Canada, highlight improvements over the last decade in specialist level palliative care specialists, teams and services, but many gaps still exist.

Given the large scope of needs in the population, the provision of palliative care cannot be the sole responsibility of specialist palliative care clinicians and teams.(42) All the palliative care needs of a population cannot be met by palliative care specialists alone.(42–44) If equipped with core palliative care skills and supported by specialist palliative care teams, providers across many care settings and specialty areas can provide what is referred to as the *palliative care approach*.(44–46) This includes primary care providers such as family physicians (general practitioners), home care nurses and many other allied health professionals across community and home care settings.(13,43,47–50) Equipping health care professionals who work in these various settings and disease groups with essential skills to initiate and provide a palliative care approach is therefore paramount.(51,52)

Studies show that general practitioners (referred to as family physicians in Canada when they have family medicine certification) and other primary care providers, including nurse practitioners, home care nursing staff and community paramedic emergency providers, are able to provide effective palliative care provided they have core competencies, are supported by home care resources and by specialist palliative care teams.(13,48,53–60) In most cases, with these supports and competencies, their involvement is, as with specialist community palliative care teams, also associated with improved quality of life parameters for patients, reduced emergency department usage, reduced hospitalizations and increased home deaths.(53,54,59,61) Where they may lag behind in these outcomes, increased efforts by specialist palliative care teams to provide support and education could improve the outcomes further so as to achieve similar levels as palliative care specialists. (53,62,63)

To optimize patient care and ensure needs (whether non-complex or complex) are met, close collaboration is needed between primary palliative care providers and palliative care specialists, across all settings including the community, home care, hospitals and nursing homes.(62–69) Palliative care specialists play a pivotal role in systems primary care capacity building; if they assume all the responsibilities of providing palliative care, both primary and specialist level palliative care,

they may over time deskill primary palliative care providers.(48,68,70) A major barrier that general practitioners and primary care providers face when they wish to provide a palliative care approach is the lack of valuing of their role by some palliative care specialists, lack of palliative care knowledge and skills, and busy practices.(62–64) By training primary care providers, as well as other healthcare providers across all settings, the palliative care approach is diffused, giving more patients access to palliative care earlier and more timely. There are also opportunities for specialist palliative care teams to mentor and guide primary care providers, including educating and supporting them o as to achieve similar results as specialist palliative care teams. (59,71,72)

1.3. The palliative care approach

Primary- or generalist-level palliative care, delivered by health care professionals who are not palliative care specialists, is increasingly referred to as the *palliative care approach*. (44–46,52) It is also referred to by terms such as *primary palliative care*, or *generalist level palliative care*. In recent years, researchers have been working on elucidating the concept and developing conceptual models to understand it and operationalize it better.(34,45,46) Small differences can be found across the frameworks, but the common grounds include palliative care delivered by non-specialist palliative care clinicians, core activities related to provide palliative care, and moving palliative care upstream (earlier in the illness and across all settings of care.

It includes, among others, identifying patients with palliative care needs early in the illness trajectory, engaging in timely advance care planning and goals of care discussions, screening for physical, psychological, social and spiritual needs and beginning to address these. It also includes referring in a timely way to palliative care specialist-level services when complex situations arise that need specialist palliative care intervention, or when additional assistance is needed.

Many jurisdictions, including several Canadian provinces, Ireland and the European palliative care association, have identified core palliative care competencies for both primary and specialist palliative care.(73–75) These inform, amongst others, the development of education programs – including courses and other curricula.

The Canadian Hospice Palliative Care Association (CHPCA), in its ‘The Way Forward 2015’ Framework for a Canadian national palliative care strategy, calls for an integrated palliative approach to care, which it describes as care that “focuses on meeting a person’s and family’s full range of needs – physical, psychosocial and spiritual – at all stages of a chronic illness.(76) It reinforces the person’s autonomy and right to be actively involved in his or her own care, and strives to give individuals and families a greater sense of control. It changes the understanding of hospice palliative care from a service offered to dying persons when treatment is no longer effective to an approach to care that can enhance their quality of life throughout the course of their illness or the process of aging.”

The CHPCA goes on to state that “The palliative approach integrates key aspects of hospice palliative care into the regular care that people are already receiving in their primary care provider’s office, in their home, in long-term care homes, in hospital or in other community settings.”

“The Way Forward” national strategy, in its aim of ensuring that all people in Canada have access to an integrated palliative care approach, stresses the need to 1) promote a shift in practice culture (to

one where palliative care is integrated earlier and across all settings and illness trajectories), 2) establish a common language; 3) educate and support providers; and 4) create caring communities.

1.4. The role of education in building primary palliative care

Unfortunately, despite the key role of healthcare providers across professions and settings in the provision of palliative care, many lack the competencies and confidence to provide a palliative care approach.(51,77–81) In a recent study of family physicians in ten countries that included general practitioners (family physicians) from Canada and several European countries, over 50% of Canadian practices indicated that they had not received adequate palliative care education and felt uncomfortable providing this care.(51) Lack of palliative care skills and comfort providing it was reported as a major barrier in a study of primary care clinics across Ontario and eastern Quebec provinces in Canada.(48) Importantly, patients and families have identified education and proficiency of general practitioners and their other providers as a key requirement for high-quality palliative care at home.(82)

Unfortunately, gaps remain in undergraduate and postgraduate training, so that graduates from medical and nursing schools, as well as other health care professions, often enter practice without core palliative care skills.(70,83) In a recent study of all 17 Canadian medical schools, for example, at the undergraduate level, palliative care clinical rotations were not offered in 2 schools, and was only optional in 13.(84) In 2015/16, only 29.7% of undergraduate medical students completed palliative care clinical rotations, yet this was a significant improvement compared to 2011/12 (13.6%, $p = 0.02$). At the postgraduate level, on average, 57.9% of family medicine trainees completed such rotations between 2007/08 and 2016/17. During the same period, palliative care clinical rotations were completed by trainees in specialty or subspecialty programs in anesthesiology (34.2%), geriatric medicine (64.4%), internal medicine (30.9%), neurology (28.2%) and psychiatry (64.5%).

Recognizing this, numerous Canadian national organization and federal and provincial government reports have included undergraduate and continuing palliative care education as a cornerstone of improving access to palliative care. (76) Researchers who have explored the needs of patients with cancer and non-cancer diseases have reached a similar conclusion.(15) These calls have been echoed by many organizations and professional bodies across the world (See Section 1.1)

1.5. Pallium Canada and the Learning Essential Approaches to Palliative Care (LEAP) Program

Pallium Canada (Pallium) is a non-profit organization that was founded in 2000 to build primary palliative care capacity nationally across Canada.(85)(86) It has done this largely through its interprofessional Learning Essential Approaches to Palliative Care (LEAP) courses which target providers across professions and settings and aims to equip them with core competencies to provide a palliative care approach.

The LEAP program consists of a suite of interprofessional courses, each one targeting a different care setting or disease group. The main goal of the LEAP courses is to provide health care providers with

the core competencies to provide a palliative care approach.(44,45) These skills include identifying patients with palliative care needs early, undertaking essential conversations such as advance care planning and goals of care discussions, decision-making, managing pain and other symptoms and addressing psychosocial and spiritual needs across the illness trajectory.

Other LEAP course goals include: to promote inter-professional teamwork; (87)(88)(89) enhance collaboration between services and specialist palliative care teams; and stimulate palliative care-related quality improvements in the healthcare system.

Pallium's approach is guided by several tenets. Firstly, patients with palliative care needs and their families are found across many care settings. Secondly, care is provided across these settings by providers from various professions and specialty areas. Thirdly, palliative care requires an interprofessional and multidisciplinary approach that is promoted through interprofessional education (IPE). Lastly, palliative care requires a public health approach, that includes engaging communities.(32,90)

There are currently over seventeen different versions of the course, each one targeting a different care setting or disease group. The courseware is also being used in some undergraduate and postgraduate medical and nursing curricula.

Pallium Canada's evaluation approach over the last decade has largely been informed by Kirkpatrick's Evaluation Model with its four levels; a) Reaction (Level 1) explores learners' reactions and satisfaction, b) Learning (Level 2) explores changes in competencies such as knowledge and skills, c) Behavior (Level 3) looks at the degree to which learners apply what they learned in practice, and d) Results (Level 4) explores the degree to which target outcomes at patient and health care system levels occur as a result of training.(91)

Learners in LEAP courses complete pre- and post-course instruments. These instruments explore various aspects of providing a palliative care approach and include a LEAP Knowledge Quiz, LEAP Attitudes to Palliative Care Survey, and the LEAP Self-Perceived Comfort Survey. They are primarily designed to enhance the learning process by prompting learners to reflect on their knowledge, attitudes and comfort levels related to providing generalist-level palliative care. By reflecting on their knowledge, attitudes and comfort levels related to palliative care before a course, learners identify their personal strengths and gaps in this area (real or perceived). It also reminds them of actual clinical encounters and situations they have previously experienced that they can draw upon during the LEAP learning experience. Post course, learners complete a LEAP Course Evaluation Survey to rate various aspects of the course, the facilitators and the learning experience. The various instruments provide data to evaluate the impact of the course and to identify their strengths and areas for improvement.

Post-course, learners also complete a Commitment to Change (CTC) statement in which they commit to changing three to four things in their practice that will result in better patient care as a result of participating in the course.(92)(93) Four months after the course they are sent a reminder of what they committed to four months previously and are asked to reflect on it.

1.6. Foundational Concepts

A key goal of my doctoral work was to explore, in more depth, concepts and the evidence that underpin palliative care related continuing professional development and spreading the palliative care approach through education; specifically in the context of the Pallium Canada Project and its LEAP program. This "whole process" includes the development, design, deployment, spread and scale-up, and evaluation of the impact of the program and hence similar types of programs. This journey resulted in studying several concepts related to these components of continuing professional education (CPD). In this section, I will provide an overview of these concepts. This is relevant as they connect with the educational and research activities that then follow and are reported in the papers associated with this doctoral work.

1.6.1. *Interprofessional education (IPE)*

Many terms are used to describe how healthcare providers from different profession groups work alongside each other.(88) The term *multidisciplinary* is increasingly being used to refer to that practice in which different specialty or field areas (not necessarily professions such as physicians or nurses) collaborate to provide patient care. This however often involves two or more specialty areas (such as cardiology and primary care), or different professions (such as a physician and a social worker), providing input to varying degrees on the care of the patient, but not necessarily involved in joint decision-making, planning and delivering care together. *Interdisciplinary*, on the other hand, refers to these teams working closely together, including joint input and decision-making, on patient care. In *interprofessional* practice or collaboration, two or more healthcare providers from different professions (such as a doctor and a nurse, or nurse and social worker) work side-by-side to provide care, all involved in shared input and decision-making. These terms are often erroneously used interchangeably. Interprofessional education (IPE) therefore refers to different professions learning alongside each other and together, often with the goal of joint problem solving and case management.

A growing body of evidence is showing that collaborative practice improves health care in many areas, including improved quality of patient care and safety, increased access to care and reduced workload issues that cause burnout among healthcare professionals.(88,94) The World Health Organization (WHO) has recognized this and called for much more integration of interprofessional education across the learning continuum of health care professionals. In its 2010 report (*A Framework for Action on Interprofessional Education and Collaborative Practice*) it states "Interprofessional education is a necessary step in preparing a 'collaborative practice-ready' health workforce that is better prepared to respond to local health needs". (95)

The main drivers for IPE include new models of health care delivery to meet the needs of an ageing population and the increasing prevalence of long-term chronic disease, in addition to a rapidly emerging patient safety agenda. Quality improvement with the quadruple aim in mind (improved patient outcomes, health care efficiencies and lower costs of care, improved patient experience and improved clinician and care provider experience) is another emerging driver. Thirstlethwaite goes on

to say that the delivery of complex health care requires a team-based and collaborative approach, although teamwork and collaborative practice are not necessarily synonymous.(96,97) The rationale for IPE is that learning together builds mutual respect and trust and better communication, and enhances future working together. (89,98,99) There is a large and ever-growing body of literature related to interprofessional education across the learning spectrum, from undergraduate and postgraduate learning to continuing professional development for those healthcare providers already in practice.(100,101) Although many gaps still exist in our understanding of how to optimize IPE and what its impact is on care and the health care system,(102) there are sufficient signals from empiric work that if designed well and operationalized in the workplace, IPE leads to better interprofessional collaboration and patient outcomes.(103,104)

Developing and implementing interprofessional education at a CPD level can however be very challenging, largely because they must simultaneously cater to different scopes of practice, competencies, learning needs, attitudes and approaches.(100,105–107) It is difficult to accommodate all within the confines of a short course (two days or shorter) and with a pool of facilitators that can specifically address each professions' learning needs. It requires intentional design and the application of best evidence and practices in this field.(106,108) A major challenge relates to addressing the scopes of practice and learning needs of different professions simultaneously.(107) Moreover, different profession groups may use different epistemological approaches and approaches to clinical care and decision-making, contributing to the creation of different cultures across professions.(109)

1.6.2. *The impact of Continuing Professional Development (CPD) and Continuing Medical Education (CME)*

Continuing professional development (CPD) refers to education undertaken after certification and entry in practice. The term continuing medical education (CME) refers to CPD specifically for physicians. In this thesis I will mainly (with some exceptions) use the term CPD and include CME in it. A number of seminal papers have reported large systematic reviews and studies that have explored the impact of CPD and have identified the design and deployment elements that are most associated with success or failure of CPD.(110–113) Clearly CPD is very heterogenous and can take on many different forms and use many different learning methods and designs. It can also be of different scopes and different lengths. This makes it difficult to make comparisons.

In the context of this doctoral work, attention is on the use of short, or relatively short courses, courses that last one to only a few days (such as the LEAP courses). The question “in general, how effective are short courses?” informed some of the work and literature searches. Positive impacts on knowledge, attitudes and self-confidence or efficacy following short education interventions have been reported, in health care in general and in palliative care specifically.(114–118) For example, a short one-day course on chronic pulmonary disease that used diverse instruction strategies, including interactive approaches and media, had short-term and long-term improvements in clinician self-confidence, knowledge and comprehension, and clinical practice as assessed by commitment to change follow-up assessments.(119)

Thoosen et al., in a study of an educational program of several hours aimed at general practitioners to help them identify patients who could benefit from a palliative care approach earlier and to

undertake advance care planning, found positive long-term effects, particularly in identifying patients early.(114) However, many learners still experienced challenges with implementing a palliative care approach in patients with advanced lung and heart diseases. Friedrichsen et al., showed that a half-day interprofessional palliative care course was able to improve competencies amongst 356 professionals working in community and hospital settings; 86% of learners were allied health professionals, 9 were physicians and 26 were nurses.(115) The learning methods included didactic presentations and case-based group discussions, similar to those used in the LEAP courses. The improvements were largely still present at the 3-months post-course mark.

However, others have reported a lack of impact of short courses in imparting targeted competencies and effecting behaviour changes in the workplace and at the bedside.(120–122) This cautionary note highlights the need for robust instructional design and the importance of ensuring conditions are in place to enhance success.(123) Others have noted that syntheses of medical education research regularly culminate in the conclusion that there is little difference in the effect of various instructional interventions.(124) Rourke and colleagues have highlighted the challenge of interpreting what appears to be mixed results (with some studies showing impact and others not) when they wrote: *“Medical education researchers have identified a number of methodological issues that generate this paradox. (6-8) One issue that receives less attention is the difficulty in typifying instructional interventions, which becomes a significant barrier to comparing their effects across contexts.”*(124)

Mattick et al., have highlighted that medical education is difficult to research.(125) They highlight that notable recent changes in health services research include an increasing emphasis on complex interventions, defined as interventions that involve more than one component. They therefore recommend that medical education researchers work within a complex interventions framework and look to research fields with similar challenges (e.g. the study of chronic illness in a changing context) for ideas about theories, frameworks, methodologies and collaborations that can illuminate the field of medical education research.

Given the complexity of this research, any small gain in evidence should be welcomed and celebrated.(126)

1.6.3. Curriculum development and instructional design

While there are many definitions for *curriculum*, *curriculum development* and *curriculum design*, they broadly include the competencies to be acquired, learning objectives, teaching and learning strategies, delivery methods, course content and materials, learner assessment and program evaluation approaches.(127) They also encompass planning, which involves identifying the needs, resources required, and drivers and barriers to implementation. The term *instructional design* is often used interchangeably with *curriculum development*, but some reserve it specifically to that element of curriculum development that relates to the learning experience, including the delivery and learning strategies.(128) This is also referred to as *learning design*.

Up until 2012, Pallium Canada used a relatively straightforward application of Kern’s curriculum development framework.(129,130) This model is based on the Analysis, Design, Development, Implementation, Evaluation (ADDIE) framework.(131) ADDIE is an acronym referring to the major

processes that comprise the generic instructional design (or instructional systems design or ISD) process: analysis, design, development, implementation, and evaluation. The ADDIE Model itself appears to be more of a colloquial, umbrella or generic term used to describe, at a high level, a systematic approach to instructional development; there appears to be no single author(s), but rather to have evolved informally through oral tradition.(131) There is a widely shared understanding that when used in ISD models, these processes are considered to be sequential but also iterative.

Kern and colleagues generally follow the ADDIE approach, although it consists of six iterative steps: 1) identify the problem and need to be addressed, and undertake a general needs assessment; 2) undertake a needs assessment of learners targeted; 3) establish the goals and specific learning objectives of the course or program; 4) identify and select the appropriate educational (or learning) strategies; 5) implement the program/course; and 6) evaluate the program and impact at different levels, then return back to step 1. Importantly, they highlighted the need to consider the steps, not as consecutive steps, but rather as an iterative process where an educator can jump between steps or undertake more than one simultaneously, or return to a previous one if necessary and plan the next step while in the midst of another; underlining the iterative nature of curriculum development.

Courses that are intended for large scale, national deployment necessitate unique learning design considerations. It requires, among others, balancing pedagogical and pragmatic needs. The courses must be resource efficient and able to reach large numbers of learners without diluting the learning experience. This, like IPE, requires intentional design.

Making design decisions should ideally be informed by evidence, but oftentimes educators need to rely on best practices, experience, and ongoing program evaluations. There is therefore a need for ongoing research into the impact of different design choices.

1.6.4. Learning theories and methods

A large part of the doctorate work was spent studying and exploring various learning theories, models and approaches, and their associated learning methods. The work of becoming acquainted with this body of literature had started at the beginning of the LEAP program in 2000/2001. Some of those insights I have previously published.(132)

It is a very large field with many theories and approaches, and also many opinions and opposing views. I cannot do justice to the body of this literature in a few short paragraphs and confess that even after exploring it I still feel overwhelmed by it at times. Nonetheless, it has informed the design of the LEAP courseware over the years and is referred to in more detail in one of the publications (**Annex 3**).

The theories and approaches that have informed the design of the LEAP courses have largely been social constructivism, cognitive flexibility theory and collaborative learning.(133) These are applied to the classroom, as well as hybrid, flipped and fully online renditions of the courses. While applying them though, their limitations also need to be recognized.(134)

The central premise of social constructivism is that knowledge is a human construction in which learners and facilitators are active participants and are not just passive receptacles.(135) They bring, in the case of the LEAP courses, pre-existing experiences and insights. The course is designed to encourage learners and facilitators to share their experiences and insights. Discussions that

provide learning are then centred around these experiences and the cases presented in the courses. Knowledge is constructed as learners make sense of their experiences and learn from each other and the facilitators. Situations that challenge their previous thinking (cognitive dissonance) serve as strong stimuli for new learning. Social constructivism lends itself well to interprofessional learning.(136) The Cognitive Flexibility Theory, which has constructivist links, relates to learning in complex and ill-structured domains, which is very relevant to palliative and end-of-life (EOL) care.(137) The theory pertains to transfer of knowledge and skills beyond their initial learning situation. In palliative care, for example, it is not unusual that two different patients with very similar diagnoses and burden of disease may require different approaches and treatments because of many different factors. One solution does not necessarily serve as a solution for all patients. The course therefore uses many case studies and multiple variations on some cases to illustrate this. The way in which these are weaved into the LEAP course designs are described in the paper included in **Annex 3**.

1.6.5. Implementation science

One cannot understand the spread and scale-up of a program such as LEAP without becoming acquainted with implementation and change science. (73,138–141) Achieving widespread uptake of a palliative care education program can be challenging.(138) Uptake involves *spread* (replicating an initiative elsewhere) and *scale-up*. The latter requires infrastructures, processes and policies to support full scale, system-wide implementation and sustainability.(141)

Spread and *scale-up*, terms that are often used interchangeably, are defined as two separate actions by some experts in the field of implementation and improvement science. Greenhalgh and Papoutsi define *spread* as replicating an innovation elsewhere, beyond its place of origin. (141) *Scale-up*, on the other hand refers to the infrastructures, processes and policies to support full-scale, system-wide implementation and sustainability. This definition has also been largely applied by The Canadian Foundation for Healthcare Improvement (CFHI), which has interpreted *spread* as replication of an innovation or change outside the start-up location but still geographically limited in dissemination; for example, an innovation in one unit in a hospital spreads to other units in the hospital, or to other hospitals in a region.(142) *Scale-up*, as applied by the CFHI, incorporates the concept of infrastructure, resources and processes to spread and sustain on a large scale and includes spread far beyond the organization or jurisdiction it started in.

Models and approaches within this body of scholarship and science that have applications to programs like the LEAP program include Everett Roger's Diffusion of Innovation model,(143) Kotter's Change Model,(144,145), McKinsey 7-S Framework,(146,147) Model, Theories Practice Behaviour Theory (148) and the large body of methods, approaches and attitudes encapsulated by quality improvement.(138,149)

CHAPTER 2: GOALS AND OBJECTIVES

2.1. Overall Goals

The overall goal of my doctoral work was to gain in-depth knowledge and understanding of the development and spread of continuing palliative care education programs (using Pallium Canada and its LEAP Core course as case studies), to evaluate the impact of the LEAP courses at various levels, and to identify evaluation and research priorities for Pallium moving forward.

I approached the work through a series of eight questions that became the specific work objectives:

2.2. Objectives

- Objective 1:** To what extent has Pallium Canada's LEAP program spread across Canada and what has facilitated and impeded that spread? (**Program Evolution**)
- Objective 2:** What curriculum development approach has evolved over the years, what are its features and why? (**Curriculum Development Framework**)
- Objective 3:** What are the instructional design approaches that facilitate spread of an interprofessional palliative care continuing professional development (CPD) course at a national level, including interprofessional learning? (**Instructional Design**)
- Objective 4:** What is the learner experience of the different profession groups with Pallium Canada's LEAP courses? (**Learner Experience**)
- Objective 5:** Do LEAP Core learners implement what they have learned into their practices? (**Commitment to Change**)
- Objective 6:** Do the LEAP Core courses change learners' knowledge, attitudes and comfort related to a palliative care approach? (**Impact on Competencies**)
- Objective 7:** What is the impact of LEAP courses on patients and the workplace? (**Integrate into Practice**)
- Objective 8:** How should Pallium Canada evaluate and study the LEAP program going into the future? (**Pallium Canada's New Evaluation and Research Framework**)

CHAPTER 3: METHODS

3.1. Overall approach

Given the broad scope of the work, several methods were used to address the doctoral goal and its corresponding objectives. The objectives were achieved through several activities.

The term *activities* is used in this thesis as an umbrella term that incorporates three major undertakings. These included several studies, an environmental scan, and an exploration of the formal and grey literature. The latter's aim was to gain in-depth knowledge and comprehension of the theoretical and empiric literature related to various aspects of the doctoral work and to inform the thesis. This provided insights, understandings and justifications (or refutation) of the multiple facets that contribute to, or influence, the complex enterprise related to designing, implementing, spreading and evaluating large scale deployment at a national level of primary palliative care education (also known as the palliative care approach).

The activities used to address the various objectives were:

- Objectives 1, 2 and 3 (Program Evolution and Spread; Curriculum Development; and Instructional Design) were addressed using a *Case Study* approach.
- Objectives 4, 5, 6 and 7 (Learner Experience; Commitment to Change; Impact on Knowledge, Attitudes and Comfort; and INTEGRATE into Practice) were approached by several studies. These largely used a *mixed methods approach* that used a pre- versus post-course design with standardized instruments.
- Objective 8 (Evaluation and Research Framework) was addressed using a multi-phased inquiry and development approach that relied mainly on an *environmental scan* that included a *critical appraisal*.

Collectively, the activities and their corresponding methods, represent descriptive and explanatory research. In the descriptive element, working with research teams and other collaborators, I described and defined phenomena related to Pallium Canada (including its spread, curriculum development framework and instructional design); I explored the question “what”. For the exploratory component, we explored the questions “why and how”, including the learner experience from an interprofessional perspective and the impact of the LEAP courses on health care professionals and practices.

3.2. Program Evolution; Curriculum Development Framework; Instructional Design (Objectives 1 to 3)

3.2.1. Case study overview

Case study is a research approach that is well established in the social and life sciences, law and

business.(150,151) Increasingly it is being used in healthcare across a number of areas, from health services planning and delivery, to education in the health professions.(151–153)

Case studies are particularly well suited to describe, explain and explore events, phenomena or interventions in the everyday contexts in which they occur.(154) The approach is used to generate an in-depth, multi-faceted understanding of a complex issue or intervention in its real-life context. (151) It allows for exploration of multiple perspectives, often by drawing on multiple sources of input, information and data. The use of mixed methods research approaches are often utilized.

The case study approach is a naturalistic one that lends itself well to answering the questions of “how”, “what” and “why”. These are explanatory-type questions, rather than research approaches that set out to test a specific hypothesis through structured interventions such as randomized controlled trials (that is experimental) that do not necessarily represent the realities of everyday life and experience.(151)

There is no single definition of the case study method. Heale and Twycross refer to some definitions, including one that describes case study simply as “an intensive study about a person, a group of people or a unit, which is aimed to generalize over several units”; and another describes it as intensive, systematic investigation of a single individual, group, community or some other unit in which the researcher examines in-depth data relating to several variables.”(150)

Creswell provides a definition that encompasses the key elements and is therefore the definition used in this doctoral work; “a case study is an exploration of a “bounded system” or a case (or multiple cases) over time through detailed, in-depth data collection involving multiple sources of information rich in context.”(155) He goes on to explain that “bounded system” refers to limits in terms of time and place, and “case” refers to a program, an event, activity or individuals. One could also add an intervention to the list. “Multiple sources” include interviews, focus groups, documents, reports, archival records (such as meeting minutes), observations, surveys, databases and other artifacts such as audio-visual material and publications (such as clinical guidelines or position papers that emerge from the work). Mixed research methods may be used to collect data and information as part of a case study.

Case studies fall into one of three types; *intrinsic*, *instrumental* and *collective*.(156) The focus may be on a case that is unique, in which case it is referred to as an *intrinsic case study*. When the spotlight is on a case that is representative of others (including phenomena) with the goal of gaining a better understanding of the phenomenon or issue, it is referred to as an *instrumental case study*. For the instrumental case study approach, one either selects a “typical” case that is representative of others, or an “atypical” or “aberrant” case that is different to “the rest” with the goal of understanding how and why it is different to the usual. When more than case is studied (concurrently or sequentially), and these are compared and contrasted, it is referred to as a *collective case study*. In the collective approach, a number of cases are selected to allow not only comparisons to be made across several cases, but also sometimes to study replication and spread and scale-up. Data sources need to be comparable across the sites. Sometimes a case study may have a combination of foci and include more than one of these types.(151)

In case study, data collection is usually extensive, drawing on multiple sources of information. Yin, in 1989, recommended six types of information; documentation, archival records, interviews, direct

observation, participant observations, and physical artifacts.(154) While these categories largely still hold true, one can also add sources such as online surveys and new media artifacts such as social media postings, websites and apps (and their utilization).

Crowe and colleagues have emphasized that case studies can be approached in one of three ways, depending on the epistemological perspective(s) adopted by the researchers; critical, interpretative, or positivist.(151) The critical approach involves questioning one's own and other's assumptions; the interpretative involves understanding meanings, contexts and processes as perceived from different perspectives (with the goal of theory building); and the positivist focuses on testing and refining theory with the aim of generalisability. Sometimes more than one approach is needed concurrently.

With such a broad range of data sources and types, analysis can be complex and challenging. Organizing the data and coding is important. Analysis can be undertaken of the whole case (holistic analysis) or on a particular aspect of or phenomenon within a case (embedded analysis).(155) In a collective case study, the researcher starts with a description of each of the cases followed by an exploration of the themes emerging within each case. This is referred to as within-case analysis. This is then followed by a cross-case analysis, in which themes are identified across the cases (what is common and what differs across the cases and why?).

3.2.2. The case: Pallium Canada and the LEAP courseware

For objective 1 (Pallium Canada and LEAP Evolution and Spread), Pallium Canada and its LEAP Program served as “the case.” It represents an *intrinsic case study* as it neither included other cases (collective case study) nor was it considered an instrumental case that is typical or atypical of other similar cases.

For objective 2 (Pallium Canada's curriculum development framework) and Objective 3 (LEAP's instructional design) a with-in case analysis was undertaken. While Pallium Canada and its LEAP Program remained the overall case, the case study analyses focused on describing and codifying the curriculum framework that evolved over the years and the instructional design of the LEAP courses, particularly from the perspective of interprofessional learning.

For the case studies related to Objectives 1, 2 and 3, I, working with a team, adopted mainly critical and analytical epistemological perspectives.

For this doctoral work, I draw upon the literature and upon my own previous experiences with the case study approach, which I had previously used: an in-depth study of the development of the first regional palliative care program within the province of Ontario in Canada with the goal to identify approaches to replicate it in other regions of the province (157); the implementation of technology to enhance and coordinate referrals to the palliative care unit and hospice facilities in the same region (158); and the first phases of the Pallium Project from 2000 to 2007.

Data sources

A variety of data sources and reflection points contributed to describing, codifying and understanding the case of Pallium Canada and its LEAP courseware and instructional design. The data sources used for the case study are listed in **Table 3.1**. This table served as the data collection

matrix for the case study. As the study evolved, additional data sources were added.

Table 3. 1. Source of information for the Pallium Canada and LEAP Program case study

Category	Source	Available at ...
Key Informants	Co-authors of the study; including Chief Executive Officer, Vice President of Operations, and the Lead for Pallium Canada’s Compassionate Communities. Provided their input through the process of studying and writing up the case study.	Co-authors of one of the papers published. See Annex 1.
	Key stakeholders’ engagement: Report provided by an independent external consulting firm (MacPhie Consulting, Toronto) commissioned by Pallium Canada; 22 interviews involving 29 external stakeholders. These included representatives of national and provincial palliative care organizations, national professional bodies, service provider organizations (such as regional authorities, nursing agencies, etcetera). Undertaken during June and July 2020	Report available upon request from Pallium Canada.
	Impact stories from stakeholders and users of LEAP, including managers, health care professionals, patients and communities.	https://www.pallium.ca/stories/
	Co-researchers and authors in the various studies associated with this doctoral thesis, including co-authors of the Pallium Curriculum Framework paper (see Annex 2) and the LEAP Instructional Design paper (see Annex 3)	
	Insights and experiences of the thesis author as a main contributor the work and the analysis (risk of bias acknowledged but mitigated by analyses undertaken with colleagues and external researchers and contributors to thesis-related studies.	
Key documents	Annual reports of Pallium Canada	https://www.pallium.ca/annual-reports/
	2007 Pallium Canada Phase 2 Summative Evaluation report “View from the Canopy”; undertaken by independent external evaluator (Frere Consulting, Red Deer, Alberta..	https://www.pallium.ca/wp-content/uploads/2019/07/View-from-the-Canopy-The-Pallium-Project-External-Evaluation-Report-2006.pdf
	Pallium Canada’s COVID-19 Report (to Canadian Medical Association)- March 2021.	
	Industry reports	https://www.pallium.ca/facts-research/
	Several Pallium Canada activity reports	https://www.pallium.ca/facts-research/
	Pallium Canada Phase 2 Summary Report	https://www.pallium.ca/wp-content/uploads/2019/07/Phase-II-Operations-%E2%80%93-Summary-Report-2004-2006.pdf

	Aherne, M. and Pereira, J.L. (2008), "Learning and development dimensions of a pan-Canadian primary health care capacity-building project", <i>Leadership in Health Services</i> , Vol. 21 No. 4, pp. 229-266. https://doi.org/10.1108/17511870810910065	See Reference (86)
	Aherne M, Pereira J. A generative response to palliative service capacity in Canada. <i>Int J Health Care Qual Assur Inc Leadersh Health Serv.</i> 2005;18(1):iii-xxi. doi:10.1108/13660750510578394	See reference (85)
Databases	Pallium Canada Learning Management System (LMS) online portal: includes course, learner and facilitator registration data (active since November 2014) – course registrations (reach), course evaluations, pre- and post-course surveys and questionnaires.	Secured database to protect data and privacy.
Media	Press releases on activities related to Pallium	Available from Pallium Canada upon request.
	User utilization of Pallium Canada’s videos (Youtube channel)	https://www.youtube.com/results?search_query=pallium+canada+videos
	Downloads of Pallium Canada’s Palliative Pocketbook and Pallium APP	
Other artifacts	LEAP Courses and COVID-19 national Webinars	https://www.pallium.ca/palliative-care-resources/
	Pallium Conference Posters	https://www.pallium.ca/facts-research/
	Pallium research papers	https://www.pallium.ca/facts-research/

Analysis approach

By reviewing the data sources, analyzing the quantitative data (such as number of courses, learners, profession groups, types of courses, dates delivered, place of delivery) and coding for emerging themes from the various data sources, and in collaboration with co-authors, I prepared the manuscripts using iterative approach of writing, checking and rewriting. The results of the case studies that emerged are described in **Annexes 1, 2 and 3** as thesis-related publications (Open Access).

As with qualitative studies, the concept of reflexivity is also relevant in case studies, alongside the concepts of credibility, transferability, and dependability. Reflexivity refers to the examination of one’s own beliefs, judgement and practices during the study process. (159–161) The researchers need to constantly be attentive to, and transparent about, how these beliefs, biases, pre-conceptions, judgements and relationship to the persons and program being studied, may influence the conduct of the research (design, execution, analysis, and reporting). It requires openness and acceptance that the researchers are part of the research.

To ensure high quality, qualitative research requires credibility, transferability, dependability, confirmability and reflexivity. Similarly as with qualitative research, the writing of a case study reflects the iterative nature of the research process itself, with continuous data analysis and fine-tuning.(159) Barret and colleagues highlight that “as a hallmark of high-quality qualitative research, reflexivity is not only an individual process but one that needs to be considered a collective process within a research team, and communicated throughout the research process.”(162)

Reflexivity is highlighted here because studies show that it is often inadequately described or accounted for in health education qualitative studies.(163) The research team, including the doctoral candidate, sought to practice reflexivity throughout the process through regular team meetings, and especially, during the preparation of the manuscripts. Working as a team in which team members would question assumptions and assertions, especially those distant from the everyday operations of Pallium and dependent on Pallium (such as the candidate) strengthened the process of reflexivity in the case studies and qualitative studies (published or submitted for consideration to publish).

3.3. Learner Experience; Commitment to Change; Impact on Competencies (Objectives 4 to 6)

3.3.1. Overall study design

A series of studies using mixed methods analyses (quantitative and qualitative) were undertaken on data collected through surveys and questionnaires pre-course and post-course by health care professionals who participated in all LEAP Core courses over a two-year period. A pre-post design was used to study the impact on competencies (defined in this study as compromising of knowledge, attitudes and comfort to the palliative care approach).

The responses to standardized questionnaires (LEAP Knowledge Quiz; LEAP Attitudes Survey; and LEAP Comfort Survey) collected pre-course and post-course (paired samples) were used to assess the impact on competencies. Responses to a standardized course evaluation survey (LEAP Evaluation Survey) completed immediately post-course were used to assess the course and interprofessional learning experience. Responses to post-course commitment to change (CTC) statements and 4-months-post course commitment to change (CTC) reflections were used to assess the application into practice of what was learned.

3.3.2. Study Participants

All learners who participated in all consecutive LEAP Core courses over two fiscal years – 1st April 2015 to 30th March 2017 – were eligible for entering into the study. The responses of those who completed the standardized questionnaires (LEAP Knowledge Quiz; LEAP Attitudes Survey; and LEAP Comfort Survey, Course Evaluation Survey, Post-course Commitment to Change Statements and Post-course Commitment to Change Reflections) were analyzed.

The learners were classified into five profession groups; a) physicians; b) nurses; c) pharmacists; d) social workers; and e) others. The physicians included family physicians, general practitioners and some physicians specializing in family medicine (family medicine residents). The nurses group

included mostly registered nurses (RNs), as well as nurse practitioners (NPs), and licensed or registered practical nurses (LPN or RPNs). The “Others” group included dietitians, chaplains and spiritual care providers, occupational therapists, physiotherapists and administrators.

Almost all learners were involved in primary care, mainly primary health care professionals practicing across Canada in community settings. These included settings such as family health clinics, community health centres, home care agencies and, in some cases, nursing homes.

The study design was influenced by a *post hoc* source of archival data with study population and participant numbers established before the evaluation was designed.

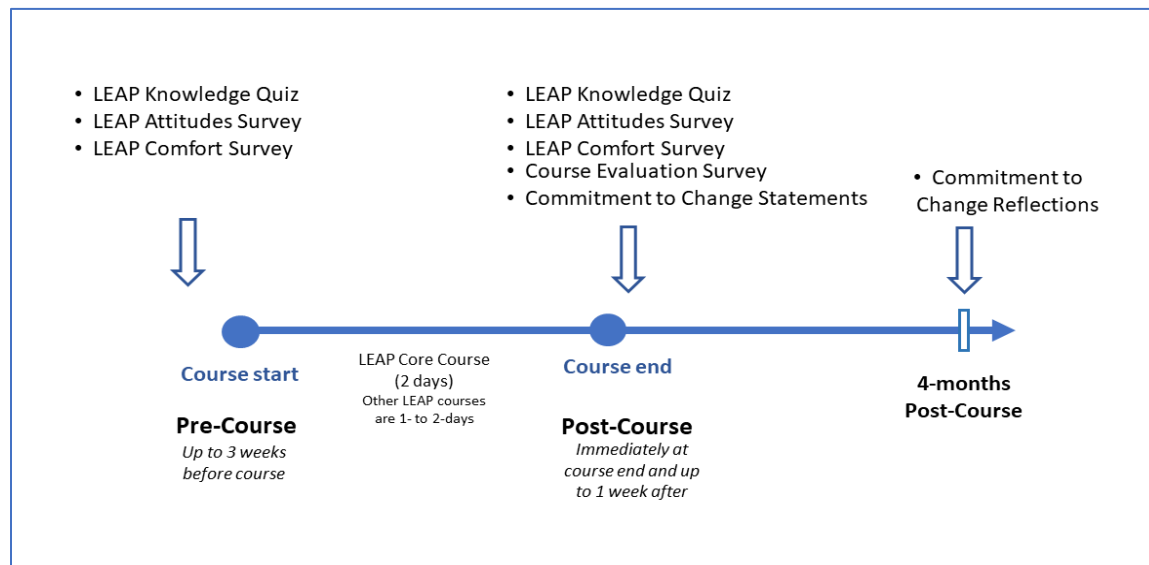
3.3.3. Instruments: Surveys and Questionnaires

As described in the previous section, LEAP learners complete several standardized questionnaires and surveys (collectively referred to herein as “instruments”) pre- and post-course. These include the LEAP Knowledge Quiz, LEAP Attitudes Survey, LEAP Comfort Survey, Course Evaluation Survey (learner experience), Commitment to Change (CTC) statements, and Commitment-to-Change 4-months Post-Course Reflections.

Scheduling of instruments

The scheduling (timing) of the various instruments is shown in **Figure 3.1**.

Figure 3. 1. Timing of various LEAP questionnaires and surveys



Role of the instruments

The role of the instruments, except for the Course Evaluation Survey, is mainly to nurture self-reflection on the part of the learner. They are therefore primarily part of the learning experience,

rather than as instruments to evaluate the impact of the course. As a “by-product”, the instruments provide data that can be used to evaluate the impact of the course using pre-post designs.

Pre-course, for example, by completing the Knowledge Quiz and the Attitudes and Comfort Surveys, learners are prompted to reflect on what they know about providing a palliative care approach, how they feel towards providing it, and how comfortable they feel providing it. The goal is to engage them and encourage them to self-identify learning needs. The facilitators are also provided with de-identified, aggregate results of the pre-course responses to allow them to address learning gaps in the course cohort uncovered by the pre-course instruments. Post-course, completing the instruments provides learners with a sense of accomplishment and empowerment (an experience previously reported by learners).

Instrument descriptions

Table 3.2 provides additional information on each of the instruments. Further details for each, including the process of development, follows.

Instruments development and evolution

The instruments were first developed in 2003 by this doctoral candidate (JLP), working with a team of educators. They have evolved over the years with the modifications led by the doctoral candidate. To enhance face and content validity, a blueprinting approach was used initially and with each update. (164–166)

A literature search was conducted in 2004 and 2005 to identify instruments that assessed palliative care competencies across the knowledge, attitudes and self-perceived competency/efficacy domains at a primary palliative care level (palliative care approach). No single instrument was found to optimally align with the content and goals of the LEAP course and its blueprint. Moreover, many were developed for undergraduate education. The LEAP instruments exploring the three areas of competency (knowledge, attitudes, comfort or efficacy) were therefore developed de novo, but drawing on some items and constructs from several instruments that existed at the time. (167)

In the knowledge domain, items were drawn from or inspired by the following instruments; the Palliative Care Quiz for Nurses (PCQN) (168), Adriaanson et al.’s Expertise, Insight and Self-Efficacy in Palliative Care Instrument (169), Weissman’s Palliative MCQ Items (EPERC project at the Medical College of Wisconsin), the Edmonton Palliative Care Family Medicine Residency Program Knowledge Test (170), Fischer et al.’s Knowledge Test (171), and Devulder et al.’s Palliative Care Knowledge and attitudes of general practitioners (172).

In the Self-perceived competency or efficacy domain, the following instruments informed the development of the LEAP Attitudes Survey; The Physicians’ End-of-Life Attitude Scale (PEAS) (173), The Self-Perceived Efficacy Scale in Palliative Care Scale (SEPC)(174,175), Weisman’s Palliative Medicine Comfort-Confidence Survey (176) and the Self-Efficacy Instrument for Palliative Care (SEP) (169).

Table 3. 2. Survey and Questionnaires used to assess the learners’ competencies before and after the LEAP

Core courses

Instrument	Description
<p>LEAP Palliative Care Knowledge Quiz Pre- and post-course</p>	<p>Goal</p> <ul style="list-style-type: none"> Assess knowledge related to providing a palliative care approach. <ul style="list-style-type: none"> Examples of topics: manage pain and other symptoms, provide psychosocial and spiritual care, advance care planning and goals of care discussion, essential conversations, grief and bereavement care. <p>Format</p> <ul style="list-style-type: none"> Multiple Choice Questions (MCQ) format with 4 answer options for each item. Items vary in cognitive levels, ranging from basic recall to application and analysis (where vignettes or problems are provided and learners need to analyze these in order to respond correctly). The same version is used for nurses, physicians and pharmacists. The version for social workers and others is modified; medical-type items replaced with alternative questions more appropriate to their practice scopes. Same items pre- and post-course. <p>Number of items: 20</p>
<p>LEAP Palliative Care Comfort Survey Pre- and post-course</p>	<p>Goal</p> <ul style="list-style-type: none"> Assess self-perceived comfort levels (proxy to self-efficacy and self-perceived competency) to providing palliative care approach-related tasks. <ul style="list-style-type: none"> Examples of topics: manage pain and other symptoms, provide psychosocial and spiritual care, advance care planning and goals of care discussion, essential conversations, grief and bereavement care. <p>Format</p> <ul style="list-style-type: none"> Likert-type, 7-point scale (1= “Not At All Comfortable” and 7 = “Very Comfortable”). Higher scores deemed more favourable as they indicate higher levels of comfort. Same items pre- and post-course. The post-course version also includes a retrospective pre-post (see text) component in which learners are asked to reflect back to before the course and indicate their level of comfort then and compare it to their present level. The same version is used for nurses, physicians and pharmacists. The version for social workers and others is modified; medical-type items replaced with alternative questions more appropriate to their practice scopes. <p>Number of items: 16</p>
<p>LEAP Attitudes to Palliative Care Survey Pre- and post-course</p>	<p>Goal</p> <ul style="list-style-type: none"> Assess attitudes to caring for patients with advanced disease, to palliative care in general and to initiating a palliative care approach earlier. <p>Format</p> <ul style="list-style-type: none"> Three subscales. Subscale A (items 1 to 11) assesses attitudes to caring for persons with advanced disease; Subscale B (items 12 to 19) assesses attitudes to palliative care in general; Subscale C (items 20 to 25) assesses attitudes to initiating a palliative care approach early. Subscales A and B: Likert 7-point scale; 1= “Strongly Disagree” to 7= “Strongly Agree”. In Subscale A, the lower the rating, the more favourable the attitude. In Subscales B and C, the higher the rating the more favourable the attitude (except for item 12 in Subscale B which is flipped; lower rating is more favourable). During analysis, the “negative” items (1 to 12) are reversed to allow for calculating a global score, with a high score being most favourable.

	<ul style="list-style-type: none"> • In Subscale C, six scenarios that describe patients with cancer and non-cancer diagnoses at different points in illness trajectories (from soon after diagnosis to end-of-life) are provided and learners are asked to indicate whether they believe a palliative care approach should be initiated in each of the vignettes using a 7-point scale with 1 = “Not at All Appropriate” to initiate a palliative care approach” and 7= “Very Appropriate” to initiate a palliative care approach. • Same items pre- and post-course. <p>Number of items: 25</p>
<p>LEAP Learner Experience Survey (Course Evaluation) Post-course</p>	<p>Goal</p> <ul style="list-style-type: none"> • Evaluate learners’ reaction to the course, the learning experience, the quality of each facilitator, the overall quality of the course, and the course’s strengths and areas for improvement as well as topics that need to be added. <p>Overall Format</p> <ul style="list-style-type: none"> • The survey is divided into 4 parts: Part 1 (Facilitator evaluation); Part 2 (Learner Experience); Part 3 (Individual module assessment); and Part 4 (Bias assessment- as is required by Canadian physician professional bodies). <p>Format: Learner Experience (Part 2) (This part is used in this study).</p> <ul style="list-style-type: none"> • Seven items are closed-ended questions consisting of statements with Likert-type scales with five categories (1 = “Totally disagree” and 5 = “Totally agree”); higher scores represent more favorable ratings. • The items explore constructs related to the learner experience and include the extent to which the course met learning needs, the relevancy of the cases to practice, opportunities for discussion, knowledge of the facilitators, and the overall learning experience. • Two items, namely relevancy of the course to practice and whether they would recommend the course to colleagues (referred to in industry as the net promoter) are used as global indicators of the learner experience. (177–180) • Three additional open-ended questions solicit input on what worked well in the course, what could be improved, and topics that should be added or removed from the course. <p>Number of items (Learner experienced component): 10</p>
<p>Commitment to Change (CTC) Statements Post-course</p>	<p>Goal</p> <ul style="list-style-type: none"> • Enhance the application into practice of what is learned in the course (see text). <p>Format</p> <ul style="list-style-type: none"> • Learners identify 3 to 5 things that they will change in their practice because of participating in the course. They commit to implementing these into the learning management system (LMS) account. • Free text in which learners type in their commitments. <p>Number of items: 3 to 5</p> <p>Further details on the Commitment to Change approach are described in the text.</p>
<p>Commitment to Change (CTC) Reflections 4-months post-course</p>	<p>Goal</p> <ul style="list-style-type: none"> • Remind learners what they learned and enhance the application into practice of what is learned in the course (see text). <p>Format</p> <ul style="list-style-type: none"> • 4-months after submitting the CTC statements, the learning management system (LMS) automatically sends learners personalized emails with the list of CTC comments they made immediately post-course. For each statement they indicate whether they implemented the commitment, using one of the following options: Implemented; Not implemented because of no opportunities; Not implemented despite opportunities. For each implemented commitment learners have to provide an example of the impact. For each non-implemented commitment, they describe the barriers experienced to implementing it.

The instruments related to the Attitudes domain included; The Thanatophobia Scale (174), The Collet-Lester Fear of Death Scale (181), the Frommelt Attitudes Towards care of the Terminally Ill Scale (182), Jubiliner et al.'s Competencies for medical students and resident's Instrument (176) and Lloyd-Williams and Dogra's Caring for dying patients' attitudes survey for medical students (183).

In 2012, the LEAP instruments underwent further modifications and the psychometric properties were compared to the Thanatophobia and the SEPC scales with cohort of family medicine residents (competencies equivalent to a family physician new in practice).(184) They underwent further validation with an interprofessional group of experts and a cohort of LEAP Learners. In 2014, just prior to the launch of the Pallium LMS, further adjustments were made to the instruments based on this work. The LEAP Attitudes Survey, for example, was divided into three subsections, including a new subsection to assess attitudes related to early initiation of the palliative care approach (the vignettes).

These versions of the LEAP instruments were used in this doctorate thesis work.

Although it would be ideal to use more objective assessment and measurement tools to assess skills, approaches such as simulated patients and objective structured clinical examinations (OSCES),(185) the short duration of the courses and the extensive resources that would be required for simulated patients, make these assessment approach non-viable for the LEAP courses.

Pallium Canada uses Messick's validity framework to guide its work towards identifying sources of validity and reliability for its instruments.(186) This framework has been well described, summarized and further developed by Downing.(187) It posits that all validity is construct validity, which requires multiple sources of evidence; construct validity is the whole of validity and has multiple facets. There are five sources for evidence of validity (and reliability); a) content, b) response process, c) internal structure (which incorporates traditional statistical methods such as internal consistency and item analysis), d) relationship to other variables (such as convergent or divergent correlations), and e) consequences. Messick and Downing go on to explain that: assessments are not valid or invalid, rather assessment scores have more (or less) validity evidence to support the proposed interpretations; validity requires multiple sources of evidence to support or refute meaningful score interpretation; validity is always approached as hypothesis; and validation research uses theory, data and logic to argue for or against specific score interpretations.

Commitment to Change (CTC)

Commitment to change (CTC) is a widely used approach in medical continuing education to reinforce learning and to encourage learners to apply what they learn in their daily practice.(92,93,188)

Increasingly it is also used to evaluate the impact of education interventions such as courses, workshops, small group learning and journal clubs. (93,189–192) It has also been used to provide learner feedback, reinforce behavioural change, (192) and facilitate reflective practice.(192–195) Several studies, including randomized trials, show that clinicians who expressed a commitment, as well as those who then reflected on them at a later time, were more likely to change their behaviour in practice; it therefore increases the likelihood of follow-through and implementation.(196–200)There are many variations in how the CTC approach is applied.(93) Some use a post-only design, where learners identify areas for change and commitments immediately after the course. Others use

a post/follow-up design where learners submit post-course commitments and then receive follow-up reminders weeks or months later with requests to reflect on them and the extent to which they were implemented into practice.(201,202) The post/follow-up approach is increasingly more common and considered optimal.(190–192,199,201–203) Procedures for collecting CTC statements vary in how they are solicited. Some use an open-ended approach in which learners submit their commitment statements in free text, while others provide lists of potential change ideas that learners select from; open-ended statements may be more effective.(191) A scale is sometimes added to each commitment for learners to indicate their level of commitment to enhance the reflective nature of the exercise and to help prioritize.

Approaches for undertaking the follow-up also vary. These include time period between making the statements and follow-up reflection; inclusion of additional questions soliciting feedback on barriers encountered, additional changes made, or new commitments; and the types of scales used to assess extent of implementation. Statements may be unanticipated in that they are not linked to the course’s learning objectives or original commitment statements.(204) In-depth explanations of the theoretical and practical foundations, and ethical implications, underlying CTC are described elsewhere.(203,205)

Despite the promise of CTCs and successes in their use in many areas, CTCs do not appear to be widely used in palliative care.

3.3.4. Data collection and management

All LEAP courses and learners are registered online into Pallium Canada’s customized learning management system (LMS). At the time of registration, learners provide basic demographic data that include profession, location and e-mail contacts. These are then linked to the instruments (quiz and survey, and commitment to change) to provide the demographic data for the instrument responses.

The LMS is based on the Moodle open-source software program (<https://moodle.com/>). Adaptations have been made to meet the needs of Pallium Canada. The LMS serves to register courses and learners online, distribute course materials for facilitators and learners, dispense the pre- and post-course surveys and questionnaires and collect their responses, and manage course and facilitator evaluations. The LMS is part of a multifaceted information technology (IT) ecosystem with several interconnected software platforms that serve to issue certificates of course completion, push communications and announcements to different user groups, receive feedback, access other programs such as the Pallium Palliative Pocketbook (e-version) and the Pallium App, provide a portal to Pallium’s online learning modules, manage course registration fees, and digitally catalogue and organize all LEAP courseware material (including slide decks, facilitator and learner manuals and videos).

Except for physicians who are applying to their professional bodies for continuing education credits (a requirement to maintain annual certification), completion of all the surveys and questionnaires are voluntary. During the process of registering online in the Pallium portal (LMS), learners are informed that the data is used to support the learning process (facilitators are provided aggregate, deidentified results of the pre-course questionnaires so as to address specific learning needs in the course cohort), and to undertake evaluations of the program and studies of program impact. Only

aggregate data is reported; no personal identifiers are reported to ensure anonymity. Pallium Canada also commits to not share any personalized data with any other third or outside party, except in the case of undertaking studies. For the latter, only deidentified data (as was the case in the studies related to this doctoral work) is shared and only following research ethics board approval and completion of data sharing agreements that include assurance of privacy and anonymity. Following disclosure of this information, learners click a consent box to consent to provide data.

For the studies presented in this thesis that used Pallium Canada data, a Pallium database manager first de-identified all the data before sharing it with the research team (and only after approval by the research ethics boards and after all researchers had signed a confidentiality agreement); all Pallium staff, collaborators and researchers sign a confidentiality agreement as per standard Pallium Canada procedures.

All data were downloaded from the LMS databases into a Microsoft Excel™ 2016 (Microsoft, Redmond, Washington) spreadsheet, checked for quality, cleaned, and de-identified. The de-identified data were then made available encrypted electronically to the research team, who then uploaded it to various software programs for analyses. Quantitative data were uploaded to and analyzed with R Version 4.0.2 (2020-06-22) program in the case of the Learner Experience study, and uploaded to and analyzed with the SPSS® Version 21 statistical software package (SPSS, Inc., Chicago, IL) in the case of the Impact on Competencies (Knowledge, Attitudes and Comfort) study. This was done to accommodate the preferences of the statisticians who collaborated in the studies. Qualitative data were downloaded into QSR NVivo V12 Plus software program to aid data organization and coding (<https://www.qsrinternational.com/nvivo-qualitative-data-analysis-software/about/nvivo>).

3.3.5. Analyses: Quantitative and Qualitative

The various analysis approaches used in the studies are described in more detail below within the various study sections, and in the papers published provided in the Annexes.

3.3.6. Learner Experience (Objective 4)

Analysis

Descriptive statistics consisting of box plots were used to show the distribution (and median, range) of the response data by item and professional group. For the primary inferential statistical analyses, the Kruskal-Wallis (KW) non-parametric test was used to test whether the rankings (scale of 1 to 5) for each of the seven closed-ended items differed across the profession groups. If the KW test was significant, follow-up post-hoc testing was undertaken to identify which specific profession group pairs differed. Post-hoc testing used the Dunn test with the Bonferroni method to adjust the p-values to avoid the possible inflation of the type-I error arising from multiple comparisons. Statistical analyses assumed a 2-tail, 5% (0.05) level of significance.

The qualitative data were analyzed using qualitative thematic analysis that involved content analysis, thematic analysis and saliency analysis in an iterative process.(206,207) Rigour was ensured using techniques that address large qualitative data sets.(208) Two independent researchers (LM,TS)

did the initial coding and a third researcher (JLP) provided additional analysis and context. Categories were identified a priori based on the open-ended survey questions, namely Course Strengths, Course Improvements, and Content. Data related to interprofessional learning and improvements to the course were also subjected to enumerative analysis in order to provide an indication of frequency and prevalence of a particular idea amongst respondents.(209)

The research teams, including the doctoral candidate sought to practice reflexivity throughout the process through regular team meetings, jointly reviewing and re-reviewing the data and analyses, and especially, during the preparation of the manuscripts. Working as a team in which team members would question assumptions and assertions, especially those distant from the everyday operations of Pallium and dependent on Pallium (such as the candidate), strengthened the process of reflexivity in the case studies and qualitative studies published to pending publishing.

3.3.7. Commitment to Change Statements and Reflections (Objective 5)

Commitment to Change in LEAP courses

In the LEAP courses, learners are asked immediately post-course to identify three to four things that they will do differently as a result of participating in the course (“post-course CTC” commitment statements”). These are submitted online into Pallium Canada’s learning management system (LMS). When preparing their commitments, learners are informed that they will be asked to reflect on them four months later. Instructions are provided to encourage the preparation of precise and realistic commitments. To avoid cueing, the questionnaire is open-ended with no lists for learners to select from.(204)

Four months after completing the course, each learner who submitted post-course CTC statements is automatically sent a personalized email via the LMS with a copy of their post-course commitment statements (“4-months CTC reflection”). They are asked to reflect online, using a two-step process, on the three to four commitment statements. For each statement, they are asked whether they have implemented it using one of the following response options: a) “I have had no opportunity to implement the change”; b) “I had opportunities but have not implemented the change”; and c) “I have implemented the change”. For each implemented statement they are then asked to describe the impact of the change, with an example from their practice. For the non-implemented items, they are asked to describe the reasons they were not able to implement, including any barriers. A four month period was chosen to allow sufficient time and opportunities to implement the change. (204)

Analysis

The qualitative evaluation of the resulting archival data was designed with three data analytic techniques; content analysis, thematic analysis and saliency analysis. (210–212) Rigour was maintained through independent, coding reviews, interdisciplinary team discussions and bracketing.(206–208)

Data analysis used an iterative process. Initially content analysis was done using a data-up approach. That process involves reading the data line by line and grouping it into general topics identified in the

data (content analysis). These data were then further coded to explore relationships among the topics and to identify emerging themes (thematic analysis). Finally, using a saliency analysis approach, topics that might not appear frequently in the data references but were relevant to practice were identified. Two researchers (LM, TS) did the initial coding independently and then met to confirm codes and themes through consensus. A third researcher (JP) provided additional context and verification.

Generally, in qualitative data analysis the goal is to identify and describe the nature of the data, not to quantify it. We did however undertake a descriptive quantitative analysis of the statements and themes to identify response rates by learners and the CTC implementation rate. In addition, we counted the number of responses in each of the CTC categories identified to obtain a sense of the frequency of their occurrence. This enumerative analysis was done to provide an indication of frequency and prevalence of common commitments amongst respondents.(209) It is important to note however that the number of coding references do not represent real numerical counts: they are an artifact of the coding process. Themes identified in this way are neither mutually exclusive nor exhaustive but can be used to identify trends in the data.

3.3.8. Impact on Knowledge, Attitudes and Comfort (Objective 6)

We used descriptive statistics to portray the samples across the courses and instrument completion within the courses and calculated means and standard deviations (SDs) for study participants overall as well as for participants stratified by profession.

We used scale total scores (Knowledge, Attitudes, Comfort) to perform the statistical analyses. For the attitudes scale in LEAP Core, we also calculated sub-totals for the three sub-scales and analyzed these separately as they explore different attitudinal concepts. We undertook paired samples analyses.

For the Knowledge Quiz, the response for each question was marked as “correct” or “incorrect” and the learner was then allocated a score out of 20 based on the number of correct responses. This score was then expressed as a percentage score. The analysis was then undertaken using the means and standard deviations of the percentage scores (i.e. as interval data); paired sample t-testing was used.

In the case of the Knowledge Quiz, a relatively small number of responses submitted did not have all items completed. We identified the number of surveys that were fully completed versus those that were incomplete (one or more missing response to an item on the questionnaire). Between 85% and 92% of quizzes submitted across all the courses were fully completed. We explored the impact of including, by way of pro-rating, surveys with one or two missing items. Pro-rating involved calculating a percentage score with the numerator being the number of correct responses and the denominator being the number of items completed. By allowing pro-rating when only one item was missing (not answered), we were able to increase the evaluable responses to 95% to 97%. We therefore accepted any survey submitted with only one missing response and pro-rated the scores of these responses (with the denominator being one less than the number of items in the quizzes). We felt that pro-rating responses with two or more missing items could not be justified. In the LEAP Knowledge quiz questionnaire, responses with two unanswered items were therefore excluded;

these constituted only 3% of submitted responses.

For the purposes of analyzing the Likert and Likert-type scales (Attitudes and Comfort respectively), we considered these data as interval data.(213,214) There were no missing data in the Attitudes and Comfort Surveys since the online surveys were set up so that a learner was not able to submit the whole survey if any field was left blank. Even though most of our variables deviated from normality, our large sample size allowed us to rely on the Central Limit Theorem to use parametric statistics for analyzing ratings generated from Likert scales.(214) This theorem shows that even when a population is non-normally distributed, the distribution of the “sample means” will be normally distributed when the sample size is 30 or more. In addition, the assumptions of normality of the t-tests and ANOVA analyses refers to the distribution of means, *not* the data; and there is evidence from several studies showing that the Likert response format produces empirically interval data at the scale level.(213,214)

We conducted paired samples t-tests to assess differences in participants’ scores pre- vs post-course. The significance level (alpha) was set at 5% (two-tailed) for all tests. We calculated Cohen’s *d* effect sizes to determine the magnitude of the difference pre- versus post-course. (215,216) As recommended by Cohen and by Sullivan and Feinn, effect sizes of 0.2, 0.5, 0.8 and 1.3 were deemed as “Small”, “Medium”, “Large” and “Very Large” respectfully. (215,216)

To explore internal consistency reliability of each of the tools across the courses and learner profession groups, we calculated Cronbach’s alpha coefficients. More detailed item analyses for each of the instruments across the different professions and courses are underway but are outside the scope of this report and will be reported elsewhere.

3.3.9. Ethics

The study – learner experience, commitment to change and impact on competencies - was reviewed by two research ethics boards. It was approved by the Conjoint Health Research Ethics Board (CHREB) of the University of Calgary (REB 17-0429). The Bruyère Research Ethics Board exempted it from a full review as it was deemed quality improvement (REB #M16-16-029).

3.5. INTEGRATE into Practice (Objective 7)

Project background

In 2013/2014, as provincial palliative care lead for Cancer Care Ontario, I had conceptualized a project called INTEGRATE (not an acronym; refers to integrating palliative care early in the illness trajectory in daily practice and across settings). A project implementation team was established, and I was involved in implementing it in one of the four sites selected (see below). A research team led by Evans and Buchman was established and I was a member of the team and involved in conceptualizing the study and then later interpreting the results and preparing the report and manuscript (See **Annex 4**). One of the key components of the project (intervention) was

interprofessional education of the participating using, using the LEAP Core course (for the community part of the project) and LEAP Oncology for teams in the participating cancer centres. The latter is reported elsewhere.

To evaluate the effect of the INTEGRATE Project on primary care capacity to deliver palliative care, we analyzed descriptive data and conducted pre-intervention and post-intervention surveys and semi-structured interviews.

Intervention settings and patient eligibility

Four primary care practices in the province of Ontario, Canada were invited to participate in the INTEGRATE Project which took place from 2014 to 2017. These practices were purposefully selected using maximum variation sampling to ensure diversity in geography and practice characteristics (such as academic status, extent of interprofessional resources). All four practices identified a local clinical champion to support the INTEGRATE Project implementation in their practice. Individual primary care clinicians at each practice chose whether to participate in the INTEGRATE Project (to integrate the palliative care approach).

The INTEGRATE model consisted of 2 interventions: interprofessional palliative care education; and an integrated care model to facilitate early identification of patients with palliative care needs, early linkages to community-based resources, and improved communication between providers involved in patient care. The model was co-developed by the project team (See **Annex 7**) and provincial working groups comprising clinicians, allied health professionals, administrators, and patient and family advisors. Part of the approach of identifying, assessing and managing was adapted from the Gold Standards Framework in the United Kingdom. (217,218)

To support early identification of patients requiring a palliative care approach, participating primary care clinicians in the participating practices (clinics) used the *Surprise Question*: “Would you be surprised if this patient were to die within 6 to 12 months?” (219)

Providers at participating practices completed Pallium Canada’s Learning Essential Approaches to Palliative Care (LEAP) Core 2-day workshop (LEAP Core). Sites were strongly encouraged to include all members of the care team to enhance interprofessional learning and collaboration. In addition, a trifold decision aid was developed to support providers in the identification of patients likely to benefit from a palliative.

Once physicians identified a patient using the *Surprise Question*, a palliative care approach was initiated. Patient assessment of symptoms and functional status was conducted using the Edmonton Symptom Assessment Scale-Version 2 and the Palliative Performance Scale-Version 2. (220)(221) Advance care planning conversations with patients and family members were also initiated by physicians and, at some sites, followed up by other members of the team, such as a nurse or social worker. Symptom management, triage, and referrals to home and community care (including palliative care specialists) were performed continuously by the care team based on patient need.

Data collection and analysis

Project managers were responsible for documenting patients identified using the *Surprise Question*,

the date of identification, and other clinical data elements for evaluation purposes. These data were collected on an ongoing basis from the point of implementation 2014/2015 until August 31, 2016. Analyses were however undertaken in 2017/2018.

To provide a baseline against which to assess the effect of the INTEGRATE Project, a Web-based self-administered survey was co-developed by the research team and provincial working groups, drawing from existing surveys where possible, such as from the LEAP Core Instruments and those of the Canadian Hospice and Palliative Care Association. The survey consisted of 20 questions with primarily Likert-type agreement scales, and was administered before and after implementation to measure the primary care providers' attitudes toward and confidence to provide palliative care; use of palliative care tools; delivery of palliative care; and perceived barriers to delivering palliative care. In accordance with the Dillman method, partial respondents and nonrespondents were sent 3 reminders to complete each survey.(222) To compare pre-implementation and post-implementation survey participant characteristics and responses, two members of the research team used the χ^2 test.

Two members of the research team also conducted semi-structured interviews with care providers and clinical and administrative leaders. The aim was to understand their views and experiences, identify implementation enablers and barriers, and assess the sustainability of the model. Interviewees provided verbal consent to participate in the interviews. Interviews were recorded and a summary of each interview was generated using a combination of interviewer notes and verbatim transcripts. The interview summaries were sent back to participants for review as a form of "member checking." Two members of the research team inductively coded the interview transcripts, reconciled their differences through discussion, and thematically analyzed the coded data using NVivo software.

Ethics

Ethics approval for this study was granted by the University of Toronto Research Ethics Board.

* For more details and information, please see the accompanying paper in the following section "Annexes: Thesis Related Publications", specifically **Annex 4** [Evans JM, Mackinnon M, Pereira J, et al. Building capacity for palliative care delivery in primary care settings: Mixed-methods evaluation of the INTEGRATE Project. *Can Fam Physician*. 2021;67(4):270-278. doi:10.46747/cfp.6704270 (Paper published)]

3.4. New Pallium Evaluation and Research Framework (Objective 8)

3.4.1. Overall approach

A multiphase, multipronged approach was used to develop a new evaluation and research framework or framework for Pallium Canada and its LEAP and ECHO programs. The approach, made up of four distinctive phases (with an additional fifth phase to follow) is shown in **Figure 3.2**. Pallium

Canada commissioned the Dr. Joshua Shadd Pallium Research Hub at McMaster University (led by the candidate of this doctoral thesis) in November 2020 to undertake this work. Pallium Canada provided funding and project management support.

A core project/study team of five researchers (including three with extensive evaluation experience and two with extensive education expertise) and a project coordinator was established to lead the work.

The first step in the process involved clarifying the goals of the evaluation and research to be conducted with respect to Pallium Canada’s LEAP and ECHO programs. It included identifying how the evaluation (and accompanying results) would be used, what resources were available to Pallium Canada to undertake evaluation and research in these programs, and who the stakeholders were (target of the evaluation and research results) and what their expectations were. These are key steps in developing an evaluation plan for any educational intervention.(223–225)

The core team, in collaboration with the Pallium Canada leadership team, established a set of guiding principles that would inform the development of the new evaluation framework, including which approaches, models and/or frameworks to adopt or adapt (See **Table 3.3**). The involvement of the Pallium Canada team was essential to ensure that the new evaluation and research framework would be realistic (given Pallium Canada’s resources) and appropriate (aligned with Pallium Canada’s needs while giving it direction). The guidelines were developed through an iterative, consensus-based process.

Table 3.3. Guiding Principles for Pallium Canada’s new evaluation and research framework (April 2021)

<ol style="list-style-type: none">1. Meaningful and relevant to diverse stakeholders:<ol style="list-style-type: none">a. Pallium Canada (for quality assurance, quality improvement, program planning and deployment, spread and scale, etc.);b. Palliative care stakeholders (i.e., funders, policy makers, educators, patients, and families);c. The palliative care scholarly community.2. Draw upon existing frameworks and approaches recognized by experts to be valid and rigorous.3. Overall, the Framework must be pragmatic, feasible, and doable within allotted resources.4. Flexible and allow integration of components from other evaluation frameworks or approaches if these are deemed relevant but not incorporated in a particular framework (i.e., allow some tailoring for specific cases and emerging needs).5. Use frameworks that incorporate complexity, recognizing that education interventions like LEAP are often only one component of multi-pronged strategies and are influenced by many internal and external factors (complexity).6. Recognize and build on previous evaluation and research on Pallium initiatives.

An analysis of Pallium Canada’s previous evaluation framework and its past evaluation (and research) activities was undertaken by the team. The goal was to identify strengths, limitations, missed opportunities and future opportunities. Reports of previous evaluation activities undertaken by Pallium Canada since its founding in 2000 were identified, as were studies published related to the LEAP courses and program. Pallium Canada has maintained a list of these throughout the years. This included reviewing Pallium’s archives. It also included a review of the resources Pallium had allocated to education and research over the years, and currently.

At the core of the process was an environmental scan that included a critical review, invited presentations from evaluation education experts, followed later (in response to a prototype- see below) by further input from a panel of national and international subject matter experts in palliative care and healthcare education and evaluation.

An environmental scan (ES) approach was deemed the most appropriate given the goals of the work, its relative efficiency (a new framework was required to inform Pallium Canada's submission to a large funding opportunity), and its ability to identify strengths, gaps, trends and experts' tacit knowledge in this field.

Using a critical review method, we searched the evaluation literature for papers most germane to our needs. While most of the articles were found in the academic literature, some grey literature sources were also identified through interactions with the expert panel. We then reviewed key reference within those papers.

A formal scoping or systematic review of existing frameworks was not undertaken as it was felt that the ES approach that included a critical review would be more efficient for the goal at hand and would be more sensitive to capturing emerging trends and tacit knowledge held by experts in the field. The critical review included recent systematic reviews. (138,226,227) Greenhalgh and colleagues(138,141) and the follow-up work by Damschroder and colleagues on developing the Consolidated Framework for Implementation Research (CFIR),(226), for example, involved large systematic reviews and syntheses that included nearly 500 published sources across 13 fields of research related to evaluations and spread and change science.

To contextualize the work, the team identified various scenarios concerning the delivery of LEAP and ECHO related programs. These included examples of LEAP courses being implemented in different settings, such as hospitals, long term care (LTC), family health clinics and home care agencies, as well as different modes of delivery such as classroom-only, online only or hybrid approaches. It also included examples of the envisioned ECHO activities, including communities of practice. The scenarios aided the members of the core team and the experts (subject matter experts or SMEs) understand the context of the LEAP and ECHO programs.

The terms *approach(es)*, *model(s)* and *framework(s)* are often used interchangeably in education evaluation literature, even though some may argue that each has distinctive features. So, for the purposes of this thesis, the term *approach(es)* will be used as a blanket term when referring collectively to them.

The core team drew up a list of existing approaches known to them through their work and experience, and that could be germane to Pallium Canada's new evaluation and research framework. An initial list of 13 approaches were identified through this process. In some cases, some core team members were not well acquainted with some of the approaches. To update the whole team on these approaches, core team members with expertise in them made formal presentations to the rest of the team.

For those approaches that the core team felt inadequately experienced in, six education and evaluation/research experts with expertise in those approaches were invited to provide more in-depth insight to the core team on them. These presentations were done virtually (as this process occurred during a major wave of the COVID-1 pandemic) and were followed by a questions and

answer session between the invited expert and the core team. The core team was also equipped with a set of semi-structured interview questions to add to the questions that emanated from the presentation. This included a question on whether the experts were aware of any other approaches (and if they could elaborate on) that were germane to the LEAP and ECHO programs but not included in the initial list.

This process provided additional details on several approaches, including the Consolidated Framework for Implementation Research (CFIR) (226,227) the Active Implementation Framework (228), The RE-AIM (Reach, Effectiveness, Adoption, Implementation, and Maintenance) Framework (229–231), Health Technology Assessment (HTA) (232), Kirkpatrick's New World Model (NWKM) (233,234), Logical Framework Approach (LFA) (235,236), 3-Wishes Project Evaluation Framework (237,238), the Realist Model (239,240) and (241–244).

Equipped with the information from the environmental scan, the core team developed, using an iterative process, a prototype evaluation and research plan (framework) for the LEAP and ECHO programs. They then shared this prototype, along with background information on Pallium Canada and the LEAP and ECHO programs, to a panel of 15 national and international education and palliative care experts for their input (**Table 3.4**). The input was gathered first in writing and then through a virtual 3-hour-long symposium. The panel members were sent a MS Word document with the prototype plan and asked to submit their initial responses and reactions to the prototype in writing. This input was then collated and then presented to the panelists several weeks later during the virtual symposium. This approach allowed more in-depth discussions and clarifications, and consensus building amongst the panelists and the core team. These then informed the final version of an education and research framework (described in the Results and the Appendix sections of this thesis).

3.4.2. Environmental scan

The environmental scan approach is a recognized and valuable tool in health care that can provide planners, policymakers and stakeholders with knowledge and sights about current contexts (including social, economic, technological, political), and emerging trends. (245,246) It has been used in health care for a range of purposes, including reviewing the current state of services and programs, evaluating community and patient needs, identifying service gaps, identifying emerging trends and directions, assessing professional education and training needs, supporting quality improvement initiatives, and informing program and policy development.(245,247)

Environmental scans can provide an opportunity for an organization to envision and plan for its future by understanding the context it operates in and identifying trends that would be important for its future direction and operations. It can also be helpful for developing evidence-based and evidence-informed policies.

As in case study methods, the sources of data and information in environmental scans are often also varied and multiple perspectives and input should be sought. Data for environmental scans often include a combination of internal and external sources; with internal sources being from within the organization or program, and external being outside the organization/program.

Environmental scans allow the researcher, clinician, or policy maker to account for diverse types and

sources of knowledge and insights.(247) These types of knowledge include codified knowledge (data collected from the literature, reviews, policy documents, or studies) and tacit knowledge (data collected from surveys, interviews, focus groups, or symposia).

Given the multiple sources of data, varying target populations or subjects, and types of knowledge, it is difficult to provide an overarching framework for environmental scans, except to say that they usually entail a combination of a literature review (focused, descriptive, systematic, critical, or exploratory), surveys, focus groups and/or interview with key stakeholders and key informants, and some form of program planning.(246)

3.4.3. Critical Review

A critical literature review approach was deemed the most appropriate as it seeks to identify relevant literature in a field in order to derive a new conceptual model that expands on existing theories or frameworks.(248) The critical review approach presents, analyzes and synthesizes material from different sources. It goes beyond a description of identified articles and includes a degree of analysis and conceptual innovation, hence the “critical” aspect of it.(248) A general assessment of what is pertinent and of value from the previous body of work is undertaken. The review may then, as in our case, provide a stepping stone for a new phase of conceptual development and subsequent “testing”.(248,249) Critical reviews do not typically require a systematic and structured approach used in other review methods such as systematic reviews. It does not require a formal assessment of the quality of the items (papers) selected but emphasizes the conceptual contribution of those papers identified.(248,249)

Figure 3. 2. Process of developing Pallium Canada’s New Evaluation and Research Framework (November 2020 to April 2021)

PHASE 1	
Step 1: Clarify evaluation needs, goals and target stakeholders	Any evaluation and its accompanying activities should be guided by what one wishes to accomplish with the evaluations, who requires the evaluation results (stakeholders), and the scope of the evaluation given available resources.
Step 2: Establish guiding principles	Establish guiding principles for Pallium’s new evaluation framework upfront to inform the process and to ensure appropriateness and practicality of the evaluation framework(s) and approach(es) that emerge.
Step 3: Review Pallium’s evaluation activities to date	Review Pallium Canada’s evaluation approach(es) to date and evaluation activities undertaken since inception in 2000, and identify their strengths, limitations and gaps.
Step 4: Environmental scan	Goal of the scan was to identify: a) potential approaches and models germane to Pallium’s evaluation needs; b) industry trends related to CPD evaluation; c) approaches that could complement evaluation framework; and d) additional internal and external factors to consider. A multipronged approach was used: <ul style="list-style-type: none"> • Project core team members independently identified approaches and frameworks based on their personal expertise in the area. • Series of interviews with and presentations by invited SMEs (x5). • Review of additional approaches and frameworks identified by SMEs (snowball approach). • Focussed review of several key publications (and their references), including two influential text books.^{1,2}
↓	
PHASE 2	
Develop a prototype plan	Informed by the work of Phase 1, the core team developed a prototype of a new Evaluation and Research Plan for Pallium Canada (with accompanying list of potential evaluation-related activities and studies).
↓	
PHASE 3	
Expert panel of national and international thought leaders and SMEs for further input and advice	The prototype plan was subjected to review, critique, and input by an expert panel of invited national and international evaluation and education experts (x15). This was done asynchronously via email followed by a virtual online symposium (restrictions imposed by the COVID-19 pandemic restrictions on face-to-face meetings).
↓	
PHASE 4	
Finalize new evaluation plan for Pallium Canada’s LEAP and ECHO programs.	The expert panel input was then incorporated, where applicable and possible, and the prototype panel modified accordingly to produce a final evaluation plan to be recommended to Pallium Canada’s leadership.
↓	
PHASE 5 (Future work)	
Communication, knowledge translation and soliciting partnerships	Communicate opportunities to either collaborate with Pallium in undertaking evaluation and research related to its LEAP and ECHO programs or to independently undertaking these activities (with support from Pallium such as sharing data). A database of interested parties and potential collaborations and partnerships will be developed.
CPD= continuing professional development (education of professionals who are already in practice)	
SME = subject matter expert (in this case, in health education program evaluation)	
¹ Tara Fenwick, Jim Parsons. <i>The Art of Evaluation: A resource for educators and trainers</i> . 2 nd Ed. Thompson Educational Publishing, Toronto, Canada. 2009 (and 2000 edition).	
² Kathryn E Newcomer, Harry P Hatry, Joseph S Wholey (Eds). <i>Handbook of Practical Program Evaluation</i> . Jossey-Bass Printers. New Jersey, USA. 2015	

Table 3. 4. Research Core Team and Expert Panel

Names	Province/ Country	Roles and Affiliations
Research Core Team		
Dr. Jose Pereira (Lead), Michelle Howard PhD (McMaster University), Christopher Klinger (Pallium Canada), Shera Hosseini PhD (McMaster University), Holly Finn (Pallium Canada- project manager)		
Expert Panel		
Dr. Michael Anderson	Ontario	Lecturer, Department of Surgery, University of Toronto Senior Researcher, Waakebiness-Bryce Institute for Indigenous Health, Dalla Lana School of Public Health, University of Toronto
Cheryl Cameron, MEd	Alberta	Advanced Care Paramedic and Past Lead of the EMS Palliative Assess, Treat and Refer Program, Alberta Health Services
Andrew Costa, PhD	Ontario	Associate Professor, Schlegel Chair in Clinical Epidemiology and Aging, McMaster University; Research Director, Michael G DeGroot School of Medicine, Waterloo Regional Campus, McMaster University
Vernon Curran, PhD	Newfoundland and Labrador	Associate Dean of Educational Development, Office of Professional Development, Faculty of Medicine, Memorial University of Newfoundland
Lawrence Grierson, PhD	Ontario	Associate Professor, Department of Family Medicine, McMaster University; Assistant Dean, Health Sciences Education Graduate Program, McMaster University; Scientist, McMaster FHS Program for Education Research, Innovation & Theory (MERIT)
Dr. Eman Hassan	British Columbia	Adjunct Professor, Division of Palliative Care, Department of Medicine, University of British Columbia Executive Director, BC Centre for Palliative Care
Jocelyn Lockyer, PhD	Alberta	Professor Emerita, Department of Community Health Sciences, Cumming School of Medicine, University of Calgary
Muhamad Mamdani, PharmD	Ontario	Professor, Department of Pharmacy, University of Toronto Director, Li Ka Shing Centre for Healthcare Analytics Senior Adjunct Scientist, Institute for Clinical Evaluative Sciences (ICES)
Hsien Seow, PhD	Ontario	Associate Professor, Department of Oncology Canada Research Chair in Palliative Care and Health System Innovation, McMaster University Director, McMaster Hub, Institute for Clinical Evaluative Sciences (ICES)
Dr. Jonathan Sherbino	Ontario	Professor, Department of Medicine, McMaster University; Assistant Dean, McMaster Education Research, Innovation and Theory
Dr. Jessica Simon	Alberta	Associate Professor, Division of Palliative Medicine, Department of Oncology, University of Calgary
Courtney Petruik, PhD(c)	Alberta	Doctoral Candidate, Department of Sociology, University of Calgary and Project Co-Lead, Calgary Allied Mobile Palliative Program (CAMPP)
Dr. Frank Elsner	Germany	Professor, Department of Palliative Medicine, University of Aachen Director, Palliative Care Unit, University Hospital, Aachen (Germany)
Dr. Claudia Gamondi	Switzerland	Primario, Palliative and Supportive Care Clinic, Ospedale San Giovanni, Bellinzona (Switzerland)
Dr. Tania Pastrana	Germany	Assistant Professor, Department of Palliative Medicine, University of Aachen Former President, Latin-American Hospice Palliative Care Association (ALCP)

CHAPTER 4: RESULTS

4.1. Program Evolution and Spread

The features, evolution, spread, factors of success and barriers to scale-up of Pallium Canada and its programs (including the LEAP Program) were elucidated and recorded using the case study approach.

The founding principles and the *raison d'être* of Pallium Canada were identified and tracked over its 21 years of existence. The main mission – spreading the palliative care approach at a national level by way of primary-level palliative care education across different settings and mobilizing communities – continues to inform Pallium Canada's work today. While there have been several “side activities”, particularly in Phase 2 (2003 to 2007) – including a rural-based children's bereavement program and coordination of palliative care call help centres in three western Canadian provinces – the organization and its activities remains focused on building primary level palliative care capacity nationally.

By the definitions of “*spread*” and “*scale-up*” as described by Greenhalgh and Papoutsis, and applied by the Canadian Foundation for Health Care Improvement, we found evidence of both spread and scale-up of Pallium Canada and its LEAP and Compassionate Communities programs. (141) (142) There has been a doubling in the total number of all LEAP courses offered across Canada from 2015 to 2019; over 537 courses presented in 2019 alone; as compared to 222 in 2015. These numbers apply to all LEAP course versions, of which LEAP Core is the main one and accounts for 50% of the course types (with LEAP Mini, LEAP LTC and LEAP Paramedics making up the majority of the rest.)

In Phase 1 of Pallium Canada (2000-2003) – during which the LEAP concept as a short interprofessional CPD program was tested and socialized in health care and palliative care circles – 17 LEAP courses were delivered in only in three Canadian provinces. In contrast, the almost 540 courses delivered in 2019 alone demonstrates significant growth in number and in spread across the country; mapping the courses shows delivery in every of the ten Canadian province and three territories.

Spread has occurred at the micro, meso and macro health systems levels. At a micro level, we found examples of adoption (training large proportion of staff on the palliative care approach) in family health clinics, hospital units and undergraduate and postgraduate medical and nursing education programs within academic institutions. At a meso level, expansion of the LEAP courses was found across provincial and national home care agencies, across provincial renal care programs (including all dialysis programs in the province of Ontario) and several cancer centres in two provinces.

Evidence of course delivery across all the provinces and territories speak to macro spread. However, while many course events were one-off events, there are several examples of coordinated and intentional large-scale adoption and spread of the LEAP program by provincial and national entities. The emergency services directorate of the provinces of Nova Scotia, Prince Edward Island, Alberta, and British Columbia, for example, have adopted the LEAP Paramedic training as its default training program for palliative care competencies and impact on healthcare providers, patients and the systems have been reported.(58)(250)(251) Not reported in the publication associated with this

doctoral part of the work, is more recent adoption of the LEAP Long Term Care (LTC) and LEAP Personal Support Workers (PSW) by provincial ministries in two provinces, two large national training colleges and two private nursing home pan-Canadian enterprises.

Growth has been most prominent in the nursing professional group, which has grown exponentially since 2014/2015; with an almost ten-fold growth in annual number of nurses taking the LEAP courses in 2019 compared to 2014/2015. The number of physicians taking the course annually has been increasing annually but at a much lower rate as compared to nurses. Similarly for the other professions, except for paramedics which has seen a large degree of spread and scale-up across the country.

The types of LEAP course versions delivered over the years was mapped. LEAP Core, directed at primary care providers, accounted for (in 2019) 50.7% of all the LEAP courses delivered, followed by LEAP Mini (condensed one-day course) accounting for 15.3%, LEAP Paramedics (14.9%) and LEAP LTC (7%). For the other versions, including LEAP ED, LEAP Hospital, LEAP Peds, LEAP Renal and LEAP Onco, there has been less deployment; among others because of more recent launch dates. But other factors related to spread and scale-up were also identified, including less robust marketing of those in their respective settings of care. This is an area of improvement for the future.

A number of factors were identified that over the years have facilitated spread and scale-up, and program viability. These were grouped into four large categories; products, personnel and infrastructure, approaches and strategies, and governance and funding. Examples of each of these are listed and described in more detail in the corresponding publication (see **Annex 1**). Several factors and barriers that have impeded spread and scale-up were also identified and are described in the corresponding publication. One of the main ones relates to Canada's geopolitical set-up as a federal state with 13 different provinces and territories, each one responsible for oversight of its own health care, resulting in 13 different health care systems. These in turn are further subdivided in many of the provinces and territories into subdivisions or regions. Work on spreading and scale-up requires, in most cases, engaging each of these (over 45 at last count in 2020) separately to advocate for training of health care professionals.

The response to the COVID-19 pandemic (which started in Canada early March 2020), while briefly described in Annex 1, merits further discussion here. Pallium, like other healthcare education organizations, had to make significant modifications to our usual practices to respond to the pandemic, including increased calls for palliative care education. This resulted in rapidly pivoting from mainly classroom education to fully online education (see Section 4.2. below for details on the different LEAP course versions developed between March 2020 and August 2021). The pivoting and curriculum development efforts, led by the doctoral candidate, resulted in a rapid response with over 350 courses delivered and 7000 professionals completing one or other course, mainly through online learning. Over 200 LEAP facilitators were also trained to facilitate the LEAP courses online. **Table 4.1.** lists the courses and the number of learners registered for each as well as the profession groups.

Table 4. 1. Courses delivered and learners registered during the COVID-19 Pandemic (1 March 2020 to 30 Aug 2021)

Course type	Number of courses delivered	Number of participants	Profession groups		
			Physicians	Nurses	All others combined
LEAP Core Online ¹	216	3860	444	2424	992
LEAP LTC Online ²	4	46	0	28	18
LEAP PSW ³	N/A	1138	N/A	N/A	1138
LEAP Supportive Care Assistant (SCA) ⁴	N/A	47*	N/A	N/A	47*
LEAP In-Depth Online	2	75	19	47	9
LEAP Paramedic Online	50	770	0	0	770
TOTALS	272	5936	463	2499	2974
Other Course Types					
LEAP Core (in-person)	31	515	47	340	128
LEAP Paramedic (in-person)	20	152	0	0	152
LEAP Long Term Care (in-person)	8	158	3	50	105
LEAP Mini	7	124	35	44	45
Les fondements du LEAP (en linge)	8	116	9	59	48
LEAP Oncology (in-person)	3	42	5	30	7
LEAP Mini Francais	1	10	0	5	5
LEAP Facilitator Training (online)	2	8	2	6	0
LEAP Coach Workshop (online)	1	3	0	3	0
'Other' TOTALS	81	1128	101	537	490
¹ Launched April 4, 2020. Consists of 15 online self-learning modules PLUS 4 interprofessional case-based learning webinars ² Launched Sept 2020. Consists of 15 online self-learning modules PLUS 4 interprofessional case-based learning webinars ³ Launched April 2021. Online self-learning course. ⁴ In partnership with Colleges and Institutes Canada (CiCan). LEAP palliative care component embedded within their overall program. CiCan contracted by Government of Canada to train up to 5000 supportive care assistants.					

In addition, the doctoral candidate also led the mobilization of webinars hosted by Pallium Canada to help the community respond to the pandemic. These webinars consisted of panels of experts (3 to 4 persons) and covered various emergent topics such as: virtual care in palliative care; providing palliative care in settings like long term care (LTC), hospitals and homes; donning and doffing PPE in the home; addressing shortages of palliative care medications during the pandemic; self-care for health care professionals; and managing various symptoms such as shortness of breath related to the virus. Nineteen webinars were held from April to August 2020, plus an additional 10 in French. Participants were from all professions and from across the country. **Table 4.2.** lists the webinars, their topics, dates, participant numbers and region of work of participants and panelists.

Two additional publications emanated from the webinars; both related to issues emerging early in the pandemic; growing shortages of palliative care medications and appropriate protocols for donning and doffing personal protective equipment (PPE) when doing home visits.(252,253) The webinars contributed to better understandings of both topics and ultimately resulted in the publication of the two manuscripts.

Table 4. 2 Pallium Canada COVID-19 Webinar Series (April to August 2020)

	Name of webinar	Date	# of persons	Professions of Participants	# of Provinces, Territories & international	# of panelists (origin)
1.	PPE in the Home	3 April 2020	267	MDs, RNs, PHs, SWs, PMs, Other	11 P/T Int: 2	4; ON
2.	End-of-Life Care in the Emergency Department for Patients Imminently Dying with COVID-19	8 April 2020	200	MDs, RNs, PHs, SWs, PMs, Other	11 P/T Int: 2	4; MB, ON
3.	Managing Dyspnea in Patients with COVID-19	14 April 2020	217	MDs, RNs, PHs, SWs, PMs, Other	10 Provinces Int: 3	3; BC, ON
4.	Shortages of Palliative Medications during COVID-19	15 April 2020	222	MDs, RNs, PHs, SWs, PMs, Other	9 Provinces Int: 1	6; ON, NFL
5.	Reorganizing Palliative Care Services during the COVID-19 Pandemic	17 April 2020	116	MDs, RNs, PHs, SWs, PMs, Other	9 Provinces	3; BC, ON, NS
6.	Palliative Approach to Care in the Coronavirus Pandemic	17 April 2020	96	MDs, RNs, PHs, SWs, PMs, Other	9 Provinces	3; BC, ON
7.	The Impact of COVID-19 on Health Care Providers (Grief and Loss)	22 April 2020	376	MDs, RNs, PHs, SWs, PMs, Other	11 P/T Int: 3	5; ON, FL Spain
8.	Palliative Approach to Care in Long-Term Care during COVID-19	27 April 2020	340	MDs, RNs, PHs, SWs, PMs, SCs, Other	10 P/T Int: 3	4; ON, SK
9.	Providing Virtual Palliative Care	8 May 2020	703	MDs, RNs, PHs, SWs, PMs, SCs, NAs, Other	12 P/T Int: 3	5; ON, AB, NS
10.	Advance Care Planning and Serious Illness Tools During COVID-19	13 May 2020	390	MDs, RNs, PHs, SWs, PMs, SCs, NAs, Other	12 P/T Int: 5	4; BC, AB, ON
11.	The Psychological Impact of COVID on Health Care Professionals	29 May 2020	592	MDs, RNs, PHs, SWs, PMs, SCs, NAs, Other	11 P/T Int: 3	3; ON, NFL
12.	Approche palliative et personnes âgées en milieu hospitalier dans le contexte du COVID 19	4 June 2020	50	MDs, RNs, PHs, SWs, PMs, SCs, NAs, Other	5 P/T Int: 1	3; QC, ON
13.	The State of Palliative Care in Hospitals During the COVID Pandemic	5 June 2020	156	MDs, RNs, PHs, SWs, PMs, SCs, NAs, Other	9 Provinces	4; AB, MB, ON
14.	Palliative Care in the Home: Lessons From COVID	15 June 2020	482	MDs, RNs, PHs, SWs, PMs, SCs, NAs, Other	11 P/T Int: 4	5; NS, AB, ON
15.	Childcare and Caregiving during COVID: Challenges for Palliative Care Health Care Workers	23 June 2020	153	MDs, RNs, PHs, SWs, PMs, SCs, NAs, Other	10 P/T Int: 2	3; ON
16.	Trauma Informed Palliative Care	10 July 2020	406	MDs, RNs, PHs, SWs, PMs, SCs, NAs, Other	10 P/T Int: 2	2; AB, ON
17.	Shortage of Palliative Care Meds during COVID-19 (Part 2)	29 July 2020	128	MDs, RNs, PHs, SWs, PMs, SCs, NAs, Other	9 Provinces	3; BC, AB, ON
17.	Trauma Informed Palliative Care for Structural Vulnerability	14 Aug 2020	234	MDs, RNs, PHs, SWs, PMs, SCs, NAs, Other	11 P/T	3; ON
19.	Clinical Protocols: What Real Cases Have Taught Us	27 Aug 2020	155	MDs, RNs, PHs, SWs, PMs, Other	11 P/T	3; C, NFL, ON

P/T, Provinces, Territories. Int, international.
 AB, Alberta; BC, British Columbia; MB, Manitoba; NB, New Brunswick; NFL, Newfoundland; ON, Ontario; Quebec, QB;
 SK, Saskatchewan; YK, Yukon Territory; NWT, Northwest Territories; NV, Nunavut Territory
 NAs, Nursing Aides; MDs, physicians; RNs, nurses including nurse practitioners; PHs, pharmacists; SCs, spiritual care providers; SWs, social workers; PMs, paramedics; Other (include managers, occupational therapists, spiritual care providers, etc.)

* For more details and information, please see the accompanying paper in the following section “Annexes: Thesis Related Publications”, specifically **Annex 1** [Pereira J, Chary S, Faulkner J, et al. Primary-level palliative care national capacity: Pallium Canada [published online ahead of print, 2021 Jul 27]. *BMJ Support Palliat Care*. 2021;bmjspcare-2021-003036. doi:10.1136/bmjspcare-2021-003036 (Paper published)]

4.2. Curriculum Development Framework

The case study approached, including reviewing relevant documents and records, and an iterative exploratory process between the authors (of the accompanying publication; See **Annex 2**), allowed us to fully capture and document the curriculum development framework of the LEAP courseware that has emerged over the years.

Up until 2012, Pallium Canada used a relatively straightforward application of Kern’s curriculum development framework.(129,130) Prior to that, Pallium Canada had developed other educational interventions but these were few in number and quite different to the LEAP courseware.(86) In 2012, Pallium Canada began the process of developing multiple versions of the LEAP courseware targeting different care settings, disease groups and, in some cases, also professions (although the default for most courses is still an interprofessional approach). It became apparent that Kern et al.’s model (and the ADDIE approach in general) needed additional adaptations to guide the development of multiple course versions simultaneously, while also updating and maintain existing ones. Other factors also needed to be considered, including developing French versions

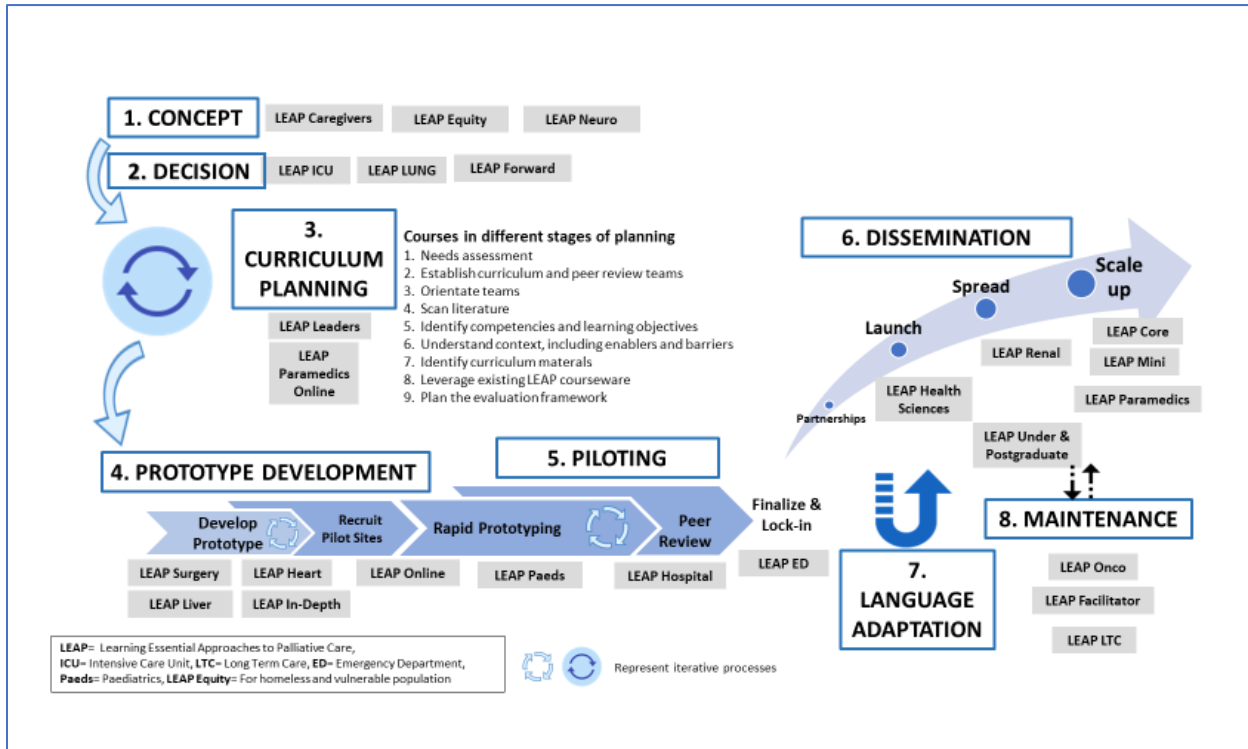
The curriculum framework that emerged, referred to as Pallium Canada’s Curriculum Development Framework and summarized in **Figure 4.1**, supports the development of multiple versions for different settings simultaneously. It draws on some approaches used by air controllers in which multiple aircraft at different stages of flight, takeoff and landing, have to be managed simultaneously in a synchronized and coordinated way.

The Framework is made up of eight phases: (1) Concept, (2) Decision, (3) Curriculum Planning, (4) Prototype Development, (5) Piloting, (6) Dissemination, (7) Language and Cultural Adaptation, and (8) Ongoing Maintenance and Updates. Several of these phases include iterative cyclical activities. The framework allows multiple courses to be developed simultaneously, staggered in a production line with each phase and their corresponding activities requiring different levels of resources and stakeholder engagement. It leverages existing LEAP courses and curriculum materials to produce new LEAP courses, allowing efficiencies and maximizing output.

The framework incorporates the rapid prototyping approach that is used extensively in industry and quality improvement – largely through the Plan-Do-Study-Act (PDSA) cycle – and a key feature of the Successive Approximation Model (SAM).(254,255) This involves shorter design sprints where a prototype is quickly created, reviewed, and revised, with the process repeating, continually incorporating feedback from users (learners and teachers). This continues until stakeholders are

satisfied with the product.

Figure 4. 1. Pallium Canada’s LEAP curriculum development framework



The multiple activities described in the framework require infrastructure, resources, logistics and funding. These collectively contribute to the spread and scale-up of the LEAP program, described in the previous section of the thesis and elaborated in **Annex 1**.

A list of LEAP courses developed and launched, as well as those under development, are provided in a table in the accompanying published paper (**Annex 2**). However, that table does not include the courseware developed from January 2020, particularly in response to the COVID-19 pandemic. As experienced world-wide, the pandemic caused significant disruptions in health care, education and many other aspects of social life, industry and the economy. It brought new and urgent needs, including the need to pivot to virtual care and education. It exposed significant gaps in the delivery of care to persons at the end of life and increased the need for palliative care in several settings. Health professionals with limited palliative care training were mobilized to provide end-of-life care in many settings. This required pivoting LEAP courseware to online-only delivery. The palliative care learning needs of other groups of people who previously had not been targeted by LEAP courses were identified, including nursing aides, personal support workers and family members called to care for loved ones in their homes (to avoid admission to hospitals, hospices or palliative care units where restrictions prohibited or limited visitations). These too required education.

Pallium Canada’s curriculum development framework proved very useful throughout this process. It’s rapid prototyping feature was critical in getting courseware quickly out into the field, often with timelines in the order of only a few weeks. The first fully online version of LEAP Core, for example,

was launched in the first week of April 2020, within two weeks of Canada going to pandemic-related lock-down. Previous experiences with online learning were invaluable to support the pivoting to full virtual learning.(256–258) **Table 4.3.** lists those courses and course versions launched since January 2020, including during the pandemic.

Table 4.3. List of Learning Essential Approaches to Palliative Care (LEAP) courseware developed and launched since January 2020 (ending in September 2021) (See Annex 2 for list of pre-existing LEAP courses)

LEAP Course	Targeted Professions ¹ and Settings	Format
LEAP Core Online	Family physicians, nurses, pharmacists and social workers. Community settings (e.g. family medicine clinics, home care agencies).	15 self-learning online modules (See LEAP Self-Learning modules) followed by 4 X 90 minutes interprofessional case-based learning modules. E & F
LEAP LTC Online	Family physicians, nurses, pharmacists, social workers and personal support workers (PSWs/nursing aides). Long term care facilities and nursing homes.	15 self-learning online modules (See LEAP Self-Learning modules) followed by 4 X 90 minutes interprofessional case-based learning modules. E & F
LEAP Paramedics online	Paramedics and other emergency service (including primary, advanced care and specialized paramedics)	Fully online versions of the course, tailored to different jurisdictions such as the provinces of Alberta and British Columbia. Each province as different paramedic emergency services protocols.
LEAP In-Depth	More in-depth learning following up on completing a LEAP course. Completing a LEAP Core or LEAP LTC is a pre-requisite. Goes into more depth in areas like heart, lung, liver and neurological diseases and further communication training.	3 days classroom even (22 hours) E & F
LEAP In-Depth Online	As above	Fully online learning with 8 webinars, each 90 minutes long E
LEAP Surgery	Surgeons (from different surgical fields), nurses and social workers working in surgery programs	3 hours online or 4 hours classroom E
LEAP Caregivers	Members of the public (non-health care professionals) called upon to care for family members and friends.	3 hours online learning modules E & F
LEAP Lung Online	Physicians (internists, pulmonologists, generalists), nurses, pharmacists and social workers caring for patients with advanced lung diseases	12 online self-learning modules PLUS 4 webinars (each 90min long) E
LEAP Personal Support Worker (PSW)	For personal support workers (PSWs) who work in settings such as long-term care (LTC), nursing homes, and in home care. PSWs provide much of the care provided in LTC and home care. They do not have nursing qualifications	Online self-learning with 12 modules (total of 12 hours) E & F
LEAP Personal Support Assistant (PSA)	For nursing assistants who provide support to nurses and PSWs, usually persons with education at a school level but who provide important services. A course for these assistants was developed during the COVID-19 pandemic by Colleges and Institutes of Canada. Pallium Canada contributed the palliative care and end-of-life care components of the training.	Integrated within a standardized large education program that covers many aspects of care. Full online, self-learning modules LEAP component about 5 hours
Under development		
LEAP for Parishes	Pallium partnered with the Canadian Catholic Bishops Conference to develop a series of modules to educate parishioners in parishes across Canada on what palliative care is, including advance care planning, and how to care for someone who is seriously ill and be informed oneself of what to expect and what to do if faced with a serious illness. 4 modules to be delivered by trained facilitators across the country with accompanying videos- for in-person classroom learning. E & F	
Under consideration: LEAP Intensive Care Units (ICU), LEAP Neurology, LEAP Dementia		
Additional information		
E= English, F=French (The goal is to have all courses in both English and French versions).		
¹ “Nurses” includes registered nurses (RN), nurse practitioners (NP), licensed practical nurses (LPN), registered practical nurses.		

* For more details and information, please see the accompanying paper in the following section “Annexes: Thesis Related Publications”, specifically **Annex 2** [Pereira J, Chary S, Moat JB, et al. Pallium Canada's Curriculum Development Model: A Framework to Support Large-Scale Courseware Development and Deployment. J Palliat Med. 2020;23(6):759-766. doi:10.1089/jpm.2019.0292 (Paper published)]

4.3. Instructional Design

The case study approach, accompanied by in-depth exploration by the candidate of the literature related to instructional design, resulted in a deeper understanding of the instructional design of the LEAP courses. In some cases, the design had been intentional, drawing on existing empirical evidence and the literature. In other cases, the instructional features had emerged naturally through trial and error. The doctoral work uncovered, in some of these cases, literature that was pertinent to these features and instructional design considerations. These are included in the manuscript accompanying this section of the thesis (**Annex 3**).

The case study describes the various design approaches and learning methods used in the LEAP courseware to create an interactive, inter-professional and collaborative learning experience. The designs are influenced by several adult learning approaches and learning theories, including social constructivism, cognitive flexibility theory and collaborative learning.(133) While applying them, one needs to recognize their limitations.(134)

A number of factors influenced the courseware’s learning design. These have included factors such as practicality and scalability, cost, resource requirements and some political considerations. The case study also clarified and codified several design polarities that have to be navigated when designing the LEAP courses. These polarities exist when there are two opposing options, or polarities, each with their own merits and limitations. Instructional designers need to make choices between these polarities or find a middle ground or compromise between them.

The design polarities identified in the case study are described by the following questions:

- a. Which profession groups do we target?
 - *Polarity: All profession groups versus only one*
- b. Do we keep all the profession groups together all the time or do we separate?
 - *Polarity: Keep all together versus keep them separate to address different learning needs and scopes of practice*
- c. How large should the class sizes be?
 - *Polarity: Large to maximize outreach versus small to maximize interactivity*
- d. How long should the course be?
 - *Polarity: Several days (4 to 5 days) to ensure all material is covered adequately versus short (half to 2 days) to maximize outreach*
- e. What content needs to be included?

- *Polarity: Only that content that addresses some key competencies versus a broader coverage of the competencies.*
- f. How is the course organized in terms of addressing the pertinent learning objectives?
 - *Polarity: The learning objectives are addressed through clustered integration of topics (in modules) versus more horizontal integration (topics scattered throughout the different modules with cases to reflect real life)*
- g. How flexible is the courseware to allow for adaptations and modifications by facilitators?
 - *Polarity: No flexibility to ensure standardization and quality versus full modifications to allow for modifications to accommodate local realities and facilitator preferences.*
- h. How to accommodate regional (provincial and territorial) differences in health systems and coverage of services and medications?
 - *Polarity: One single generic version for the whole country to ensure standardization versus multiple versions for the different jurisdictions.*
- i. Who should the facilitator be and what are the criteria for being a facilitator?
 - *Polarity: Open door policy where anyone who is interested can facilitate versus rigid requirements to identify only select facilitators with exceptional teaching/facilitating skills.*

The decisions taken, and the underlying rationale and literature in support of these decisions, are described and discussed in the accompanying published paper (See **Annex 2**). The learning methods used in the LEAP courses are also described in the paper.

Case-based learning (CBL), for example, is used extensively and preferred over problem-based learning (PBL) as it was felt to be more efficient in the context of a short course that needs to be deployed on a large scale nationally.(259) Cases are discussed in small and in large groups. Short lectures, in the form of overviews, are also used in some modules for efficiency; used to introduce key concepts and develop common understandings across professions. They are often book-ended by cases.

Other factors are also considered in selecting the courses' learning methods. These include feasibility and resource availability for large-scale deployment. Balancing these factors sometimes also calls for design compromises. For example, while simulated patients are effective methods to learn communication skills, they are very resource-intensive and not practical for a short course that has to cover other competencies.(260) The LEAP courses therefore largely use education videos and some role play instead.

* For more details and information, please see the accompanying paper in the following section "Annexes: Thesis Related Publications", specifically **Annex 3** [Pereira J, Giddings G, Sauls R, et al. Navigating Design Options for Large-Scale Interprofessional Continuing Palliative Care Education: Pallium Canada's Experience. Palliative Medicine Reports 2021 2:1, 226-236. doi.org/10.1089/pmr.2021.0023 (Paper published)]

4.4. Learner Experience

A total of 244 courses were delivered during the study period with a total of 4636 participants (See **Table 4.4**). Professionals from various professions participated in the courses with nurses (including registered nurses, registered practical nurses and nurse practitioners) representing the largest group (2990; 64.5%), followed by physicians (878; 18.9%). Other professions included physiotherapists, occupational therapists, counsellors, and administrators (541; 11.7%).

A total of 3045 participants responded to all ten items of the evaluation questionnaire (response rate 65.7%). Response rates varied across professions, with the lowest being amongst “other professions” (47.3%) and the highest amongst physicians, pharmacists and nurses (75.4%, 74% and 66% respectively) (**Table 1**). An additional 64 participants responded only to the open-ended questions for a total of 3109 responses to that part of the questionnaire. These were included in the qualitative analysis.

Table 4. 4. Number of participants and course evaluation survey response rates for all 244 Learning Essential Approaches to Palliative Care (LEAP) Core courses delivered from 1 April 2015 to 30 March 2017 (for respondents who completed all ten survey items).

Profession	Number of learners (% of total)	Number of surveys returned and Response Rate (%)
Total	4636	3045 (65.7%) ^b
Physicians	878 (18.9%)	662 (75.4%)
Nurses	2990 (64.5%)	1973 (66%)
Pharmacists	100 (2.2%)	74 (74.0%)
Social workers	127 (2.7%)	80 (63%)
All others^a	541 (11.7%)	256 (47.3%)
^a Includes physiotherapists, occupational therapists, dietitians, spiritual care providers, managers and administrators		
^b An additional 64 respondents responded only to the 3 open-ended questions, they were included in the qualitative analyses (i.e. 3109 respondents).		

Quantitative analyses

Table 4.5 shows the learners’ responses by profession group with the responses combined into two categories. For the item related to relevancy of the course to practice, 95.8% of all learners indicated “strongly agree” or “agree” with the statement. For the net promoter item (recommend the course to colleagues), 96.8% strongly agree or agreed with the statement. The proportions varied across professions for these responses. In the case of the relevancy item, for example, 97.3% and 96.7% of nurses and physicians respectively agreed or strongly agreed with the statement, compared to 78.8%

and 87.8% of social workers and pharmacists respectively. Overall, high positive ratings were reported for the other five items. Variability is also noted across the professions.

The median scores were 5 (5 being the most favourable score) across almost all seven items for almost all profession groups (**Table 4.6**). Social workers scored medians of 4 for the items related to relevancy of the course, the course meeting their learning needs, and the relevancy of the cases to their practices. Pharmacists also reported median scores of 4 for the course meeting their learning needs and the relevancy of the cases.

No significant differences were found across profession groups for the item related to opportunities for discussion in the course [χ^2 (df 4) = 2.59; $p=0.628$], so no post-hoc analysis was undertaken. However, statistically significant differences were noted across and between profession groups for the other six items (**Figure 4.2** and **Table 4.6**).

For the global item related to the course being relevant to their practices, no statistically significant differences were noted between the following groups: physicians and nurses ($\chi^2= 1.31$; $p=1.00$); pharmacists and social workers ($\chi^2= -1.25$; $p=1.00$); pharmacists and other ($\chi^2= 0.725$; $p=1.00$); and social workers and other ($\chi^2= 2.32$; $p=1.00$). Statistically significant differences were noted between: physicians and pharmacists ($\chi^2= -4.75$; $p<0.001$); physicians and social workers ($\chi^2= -6.63$; $p<0.001$); nurses and pharmacists ($\chi^2= -5.52$; $p<0.001$); and nurses and social workers ($\chi^2= -7.39$; $p<0.001$). For the “recommend the course to colleagues” item significant differences were found between physicians and nurses ($\chi^2= 5.40$; $p<0.001$), and nurses and pharmacists ($\chi^2= -3.52$; $p<0.001$).

Qualitative analyses

The qualitative analysis of the open-ended questions revealed several course strengths (**Table 4.7**). Five major themes emerged; a) high interactivity and learner engagement; b) high quality of facilitation and facilitator knowledge; c) the use of real-life narratives and experiences; d) the relevance of the course and its contents and cases to their practices; and e) interprofessional insights.

Course limitations and areas for improvement clustered into 5 themes; a) course length and content volume (mixed views noted where some wished a longer course, others a short course, but most satisfied with the current course length); b) communication learning videos (more for specific settings of care rather than generic ones and juxtaposition of videos showing poor and good behaviour); c) facilitation (some relatively isolated experiences of poor facilitation by some individual facilitators); d) adjustments for different contexts (such as different advance care planning regulations and language across different provinces); and e) interprofessional learning (**Table 4.8**).

Only 69 of 3109 respondents specifically identified the interprofessional learning design as a limitation or area for improvement. All professions were represented. They called for different course versions or more breakout sessions for different professions. Some physicians felt that the presence of other professions reduced the “scientific” and “medical” content of the course while some social workers felt that the psychosocial domains were underrepresented and the course “too medical”. Some nurses felt that knowing about medications, including opioids, was outside their scopes of practice while others valued that content. Similarly, some physicians requested separate “psychosocial” modules for other professions.

Table 4. 5. LEAP course participants’ responses (rounded to nearest whole number), by profession groups, to closed-ended survey questions; categories combined. (See Figure 1 further analysis)

Survey statement	Profession	n	“Strongly agree” or “Agree” combined n (%) ^a	“Neutral”, “Disagree” and “Strongly disagree” combined n (%) ^a
“The course was relevant to my practice”	Physicians	662	640 (97%)	22 (3%)
	Nurses	1973	1919 (97%)	54 (3%)
	Pharmacists	74	65 (88%)	9 (12%)
	Social Workers	80	63 (79%)	17 (21%)
	Others	256	231 (90%)	25 (10%)
	Total	3045	2918 (96%)	127 (4%)
“I would recommend the course to colleagues”	Physicians	662	631 (95%)	31 (5%)
	Nurses	1973	1934 (98%)	39 (2%)
	Pharmacists	74	70 (95%)	4 (5%)
	Social Workers	80	71 (89%)	9 (11%)
	Others	256	243 (95%)	13 (5%)
	Total	3045	2949 (97%)	96 (3%)
“The course met my learning needs.”	Physicians	662	618 (93%)	44 (7%)
	Nurses	1973	1886 (96%)	87 (4%)
	Pharmacists	74	69 (93%)	5 (7%)
	Social Workers	80	64 (80%)	16 (20%)
	Others	256	234 (91%)	22 (9%)
	Total	3045	2871 (94%)	174 (6%)
“The cases were relevant to my practice.”	Physicians	662	632 (96%)	30 (4%)
	Nurses	1973	1847 (94%)	126 (6%)
	Pharmacists	74	59 (80%)	15 (20%)
	Social Workers	80	60 (75%)	20 (25%)
	Others	256	223 (87%)	33 (13%)
	Total	3045	2821 (93%)	224 (7%)
“There was ample opportunity for discussions.”	Physicians	662	630 (95%)	32 (5%)
	Nurses	1973	1864 (95%)	109 (6%)
	Pharmacists	74	69 (93%)	5 (7%)
	Social Workers	80	69 (86%)	11 (14%)
	Others	256	248 (97%)	8 (3%)
	Total	3045	2880 (95%)	165 (5%)
“The facilitators were knowledgeable.”	Physicians	662	654 (99%)	8 (1%)
	Nurses	1973	1960 (99%)	13 (1%)
	Pharmacists	74	73 (99%)	1 (1%)
	Social Workers	80	75 (94%)	5 (7%)
	Others	256	255 (100%)	1 (0.4%)
	Total	3045	3017 (99%)	28 (1%)
“Overall, the course was a good learning experience”	Physicians	662	638 (96%)	24 (4%)
	Nurses	1973	1940 (98%)	33 (2%)
	Pharmacists	74	70 (95%)	4 (5%)
	Social Workers	80	74 (93%)	6 (8%)
	Others	256	251 (98%)	5 (2%)
	Total	3045	2973 (98%)	72 (2%)

^a Denominator is the total number of responses received from that profession

Table 4. 6 Details of results of the omnibus and post-hoc Kruskal-Wallis tests of responses of LEAP Core course learners across profession groups to survey questions assessing aspects of the learning experience (seven items). (Scale: 1=Strongly Disagree; 5=Strongly Agree)

Refer to Fig.1	Statement in Survey	Group	n	Med score	Min score	Max score	Kruskal-Wallis test to detect differences across groups			Post-hoc test to identify differences between profession group pairings				
							X ²	df	p value	Group	RN	Ph	SW	Other
Fig 1a	"The course was relevant to my practice" (Q1)	MD	662	5	1	5	138	4	p < .0001	MD	1.31; p=1.00	-4.75; p<.0001	-6.63; p<.0001	-6.62; p<.0001
		RN	1973	5	1	5				RN	-7.39; p<.0001	-8.21; p<.0001		
		Ph	74	5	1	5				Ph	-1.25; p=1.00	0.725; p=1.00		
		SW	80	4	2	5				SW	2.32; p=1.00			
		Other	256	5	2	5				Other				
			3045											
Fig 1b	"I would recommend this course to colleagues" (Q14)	MD	662	5	1	5	42.2	4	p < .0001	MD	5.40; p<.0001	-1.42; p=.157	-0.845; p=1.00	1.26; p=1.00
		RN	1973	5	1	5				RN	-2.22; p=.267	-2.26; p=.236		
		Ph	74	5	1	5				Ph	1.01; p=1.00	2.02; p=.439		
		SW	80	5	2	5				SW	0.799; p=1.00			
		Other	256	5	2	5				Other				
			3045											
Fig 1c	"The course met my learning needs." (Q2)	MD	662	5	1	5	56.2	4	p < .0001	MD	3.26; p=.011	-2.85; p=.0436	-4.11; p<.001	-0.652; p=1.00
		RN	1973	5	1	5				RN	-5.53; p<.001	-2.93; p=.034		
		Ph	74	4	2	5				Ph	-0.852; p=1.00	2.28; p=0.224		
		SW	80	4	2	5				SW	3.43; p=.006			
		Other	256	5	2	5				Other				
			3045											
Fig 1d	"The cases were relevant to my practice." (Q4)	MD	662	5	2	5	80.5	4	p < .0001	MD	0.676; p=1.00	-4.88; p<.001	-5.08; p<.001	-4.47; p<.001
		RN	1973	5	1	5				RN	-5.31; p<.001	-5.41; p<.001		
		Ph	74	4	2	5				Ph	-0.018; p=1.00	2.04; p=.410		
		SW	80	4	2	5				SW	2.13; p=.332			
		Other	256	5	2	5				Other				
			3045											
Fig 1e	"There was ample opportunity for discussions." (Q3)	MD	662	5	1	5	2.59	4	p=.628	MD	NA	NA	NA	NA
		RN	1973	5	1	5				RN	NA	NA		
		Ph	74	5	1	5				Ph	NA	NA		
		SW	80	5	1	5				SW	NA	NA		
		Other	256	5	2	5				Other	NA	NA		
			3045											
Fig 1f	"The facilitators were knowledgeable." (Q5)	MD	662	5	1	5	21.6	4	P = .0002	MD	4.00; p<.001	0.372; p=1.00	0.527; p=1.00	3.67; p=.0023
		RN	1973	5	1	5				RN	-1.03; p=1.00	-1.03; p=1.00	1.36; p=1.00	
		Ph	74	5	1	5				Ph	0.104; p=.884	1.70; p=.884		
		SW	80	5	3	5				SW	1.62; p=1.00			
		Other	256	5	2	5				Other				
			3045											
Fig 1g	"Overall, the course was a good learning experience" (Q13)	MD	662	5	1	5	27.0	4	p < .0001	MD	4.48; p<.001	-0.717; p=1.00	-0.392; p=1.00	2.12; p=.339
		RN	1973	5	1	5				RN	-2.44; p=.147	-2.17; p=.300	-0.676; p=1.00	
		Ph	74	5	1	5				Ph	0.257; p=1.00	1.85; p=.645		
		SW	80	5	2	5				SW	1.58; p=1.00			
		Other	256	5	3	5				Other				
			3045											

X²: chi-squared statistic; MD = Physician Group; RN = Nurse Group; Ph = Pharmacist Group; SW = Social Worker Group; Other = includes therapists, dieticians, chaplains, administrators
 NA; Not applicable as omnibus testing showed no statistically significant differences existed across groups.
 * Analyses undertaken with Bonferroni adjustments.

Figure 4. 2. Boxplot showing frequency and distribution of responses by profession groups to LEAP Core course evaluation survey (seven closed-ended questions- Figures A to G)

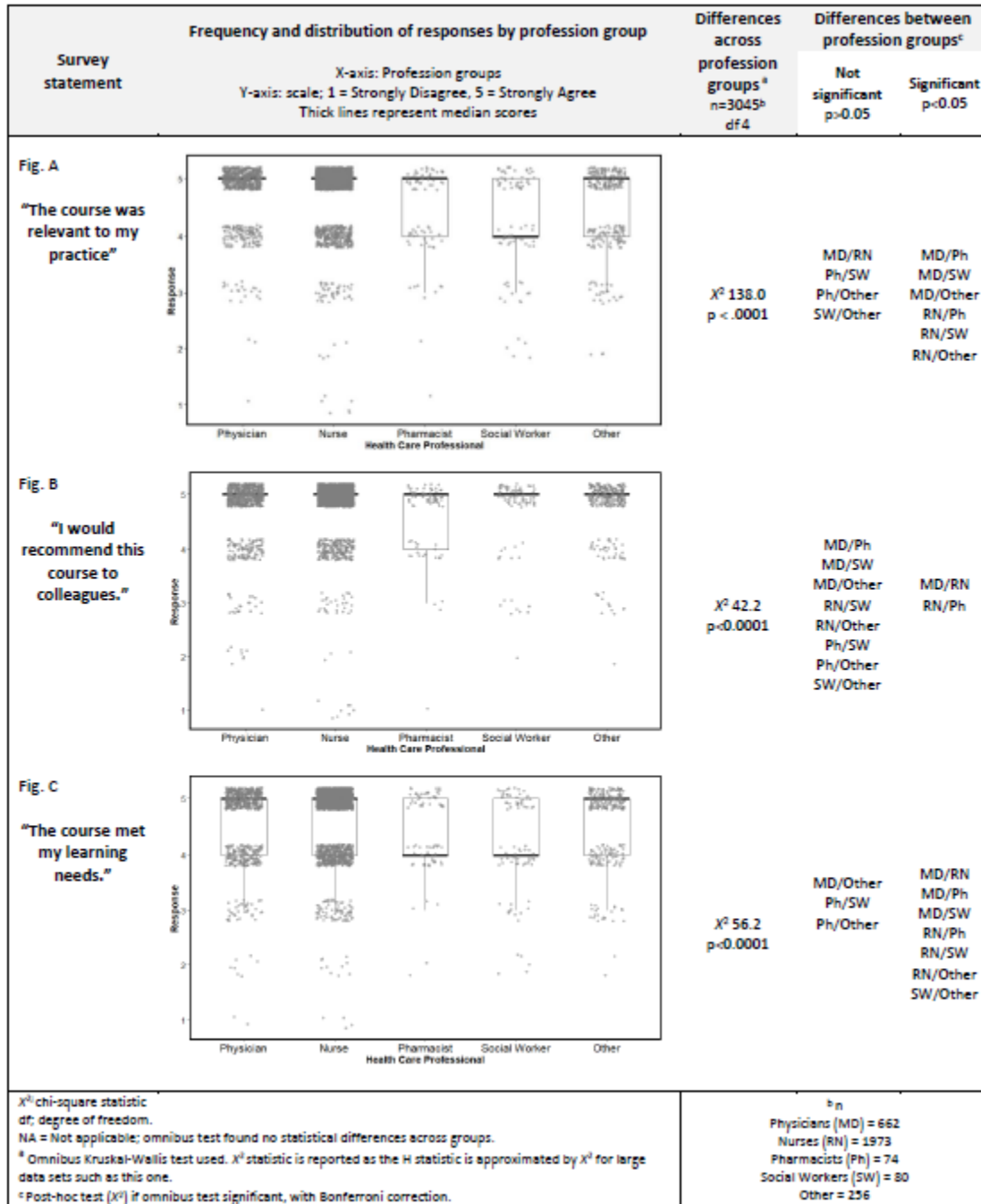
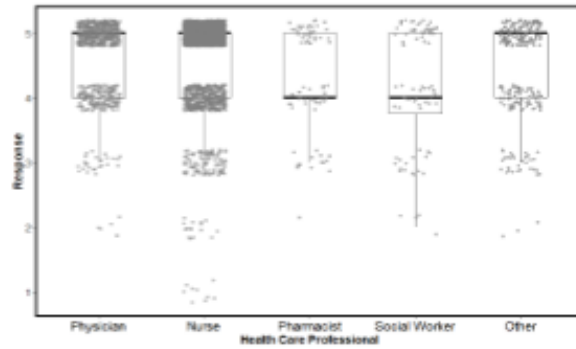


Fig. D

"The cases were relevant to my practice."



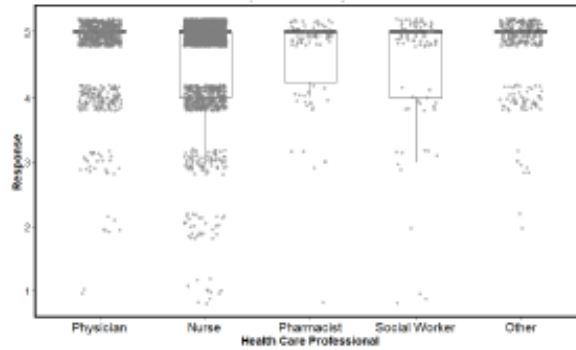
χ^2 80.5
p<0.0001

MD/RN
Ph/SW
Ph/Other
SW/Other

MD/Ph
MD/SW
MD/Other
RN/Ph
RN/SW
RN/Other

Fig. E

"There was ample opportunity for discussions."

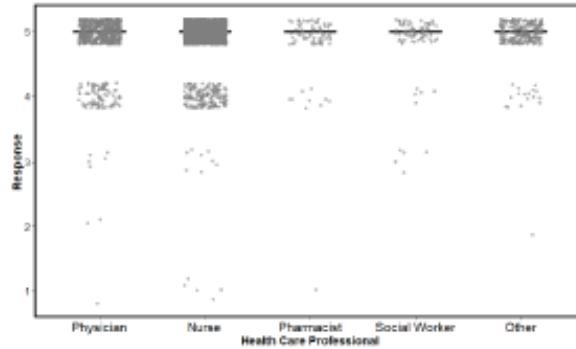


χ^2 2.59
p=.628

NA NA

Fig. F

"The facilitators were knowledgeable."



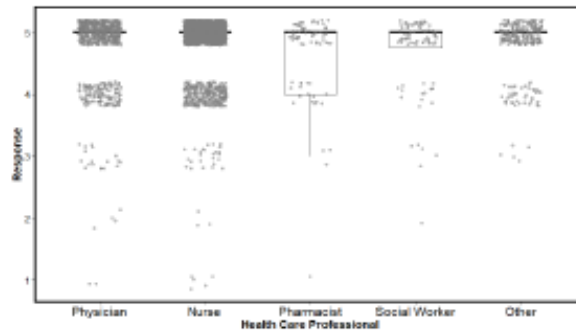
χ^2 21.6
p=.0002

MD/Ph
MD/SW
RN/Ph
RN/SW
RN/Other
Ph/SW
Ph/Other
SW/Other

MD/RN
MD/Other

Fig. G

"Overall, the course was a good learning experience"



χ^2 27
p<0.0001

MD/Ph
MD/SW
MD/Other
RN/Ph
RN/SW
RN/Other
Ph/SW
Ph/Other
SW/Other

MD/RN

Table 4. 7. LEAP Core course strengths as reported by learners from different professions in the survey open-ended questions.

Theme	Illustrative quotes
Learning methods that promote interactivity and engagement	<p><i>"Working through cases with highly experienced palliative care providers was invaluable."</i> (Physician)</p> <p><i>"Large enough group to allow discussion but not too large as to be intimidating"</i> (Physician)</p> <p><i>"The group discussions of personal cases- I loved being able to talk out some cases and get answers to questions - taking an actual case study and applying helped put pictures and a real live person to remember what to do with the new information"</i> (Nurse)</p> <p><i>"I like the small group discussions and case studies"</i> (Pharmacist)</p> <p><i>"The videos offered a good way to start a conversation."</i> (Nurse)</p> <p><i>"The open format with ample opportunity for interactive discussion"</i> (Physician)</p> <p><i>"The interactive modules and being able to openly discuss stressful events we have experienced in palliative care"</i> (Other)</p> <p><i>"The course was perfectly structured in a way which includes theory along with good interactions and experience sharing that all the participants can benefit well. Group discussion on different case scenarios and essential conversations on the palliative care approach were the best for me."</i> (Nurse)</p>
High quality facilitation	<p><i>"Excellent experienced facilitators who were able to draw from their backgrounds to give "clinical pearls" and further guidance."</i> (Physician)</p> <p><i>"Facilitators were highly knowledgeable, very effective presenters and approachable"</i> (Nurse)</p>
Use of narrative and case examples	<p><i>"The conversations with the facilitators and the participants...sharing ideas and experiences."</i> (Physician)</p> <p><i>"The real-life examples that were provided by the facilitators and the group discussion"</i> (Nurse)</p> <p><i>"Small group discussions, examples and cases from presenters' experiences"</i> (Pharmacist)</p>
Inter-professional learning (IPL)	<p><i>"Diversity of professionals/settings at each table"</i> (Physician)</p> <p><i>"Being able to interact with other health care professionals and know more on resources available for palliative care patients"</i> (Physician)</p> <p><i>"Interaction with other health professionals to see the entire picture of the palliative patient/family"</i> (Pharmacist)</p> <p><i>"The group discussions were exceptionally useful, learning what other doctors have experienced. Also having input from nurses as to what their problems were."</i> (Physician)</p> <p><i>"The interprofessional learning experience was great, it was eye opening to hear about different experiences and the collaborative approach that suggestions were made when discussing scenarios"</i> (Physician resident)</p> <p><i>"The interprofessional atmosphere and open discussions."</i> (Physician)</p> <p><i>"As an NP I prescribe. I found the nuts and bolts of prescribing medications to manage symptoms most helpful."</i> (Nurse Practitioner)</p>
Course relevancy	<p><i>"The length of the course and material covered were adequate."</i> (Nurse)</p> <p><i>"All course content was relevant to my practice."</i> (Nurse)</p> <p><i>"I now will consider Spiritual care. Which I'd kind of forgotten about."</i> (Nurse)</p> <p><i>"Pain management in palliative care and essential conversation"</i> (Physician)</p> <p><i>"The information was relevant, clinical, concrete and useful. That's the sort of information I thrive on"</i> (Nurse)</p> <p><i>All participants' questions were answered.</i> (Physician)</p> <p><i>"I found to be overall knowledgeable in a concise format"</i> (Physician)</p> <p><i>"At this time, I cannot think of anything that could be improved. I am new to palliative care in general, so this was a great way to become introduced to the topic."</i> (Pharmacist)</p>

Table 4. 8. LEAP Core course limitations and areas for improvement as reported by learners from different professions in the survey open-ended questions.

Theme	Illustrative quotes
Course length and content volume	<p><i>There was a lot of information over a short amount of time, it may be beneficial to make the course an extra 1/2 day for more time for discussion and questions.</i> (Nurse)</p> <p><i>"It could be a bit shorter. ... I don't want to hear what other family doctors are doing, I want to hear what the palliative doctors are doing and take those messages away"</i> (Physician)</p> <p><i>"Less time should be spent on the initial "Being Aware" session and more time on the med parts"</i> (Nurse)</p> <p><i>"There is too much to cover in 2 days with very little time for extra discussion and not enough time to break."</i> (Nurse)</p> <p><i>"I did find it quite intense. By the second afternoon I was saturated. I don't know if it could be offered over a full day and two half days ... it was a lot of information to process."</i> (Physician)</p>
Communication learning videos that demonstrate good skills	<p><i>"The videos on communication that showed how not to discuss issues with patients should be complemented by videos on how to discuss difficult topics with patients"</i> (Physician).</p> <p><i>Would like to see videos showing the "right way" rather than mostly having videos with "what needs to be improved".</i> (Nurse)</p> <p><i>Videos should probably show what was done bad and then an example of a video where it was done well</i> {Physician}</p> <p><i>"Role playing allows the opportunity to put into practice some new communication skills."</i> (Physician)</p>
Facilitation	<p><i>"More interaction with the group, less lecturing. putting a doctor or palliative nurse educator/social worker into each group".</i> (Nurse)</p> <p><i>"[the facilitators] Tended to engage the physicians more than other members of the team. They did a great job however of addressing the varying levels of knowledge."</i> (Physician)</p> <p><i>"Opening remarks also should set the "tone", and the ground rules which includes attendees and facilitators alike. For example, that everyone is from different professions, and come with different experiences and backgrounds."</i> (Nurse)</p>
Adjustments for different contexts	<p><i>"Having the content geared to LTC [long term care]. But there is a LEAP for LTC therefore I just need to take that course."</i> (Nurse)</p> <p><i>"Would have liked to further discuss things that ELC, community health nurses provide for palliative [patients] in our area."</i> (Nurse)</p>
Inter-professional learning	<p><i>"Myself, as an LPN, I would have liked it if it was more into my scope of practice. This program was over my head."</i> (Licensed Practical Nurse)</p> <p><i>"I don't think it's appropriate to have, Social Workers, and Occupational Therapists, physiotherapists, etc... in the same learning environment as physicians and NPs. Their learning focus is completely different. I appreciate interdisciplinary care, but I found the medical aspect teaching and learning in this course was significantly slowed down by the questions and focus of the non-medical practitioners."</i> (Physician)</p> <p><i>"Our group consisted of mainly nurses (from a variety of settings), one social worker, and one pharmacist. Overall the course was excellent, but as a pharmacist, it would have been beneficial to work through some more complex cases. However, I understand that this would not have been appropriate for this specific group."</i> (Pharmacist)</p> <p><i>"As an Allied Health professional, I don't necessarily deal with medications. I don't believe that it was useful for me to learn about the conversions of the opioids. Although it has increased my knowledge with medications."</i> (Other)</p> <p><i>"Less calculation... Nurses can't do that. It was helpful to know the ranges."</i> (Nurse)</p> <p><i>"I wonder if physicians should be offered a more concise course over 1 day. ...Although the large group</i></p>

discussions were interesting, I don't know if it's the best use of time for physicians.” (Physician)

“Need a course for non-medical practitioners, such as social workers, mental health workers, psychotherapists...” (Social worker)

“Have a separate course for MDs” (Social Worker)

“Time management to allow for adequate time for all topics. Perhaps offer a separate physician-directed and allied-health directed course.” (Physician)

“Course could possibly be modified for each discipline. For example as an RN I would have liked to have spent more time on medications, calculations of same etc.” (Nurse)

“Divide the course participants and discuss more relevant issues for the different professions.” (Dietician)

“Having Doctors and nurses in separate groups, seemed to be geared more to physicians.” (Nurse)

“More time [should be] allotted to all areas except psycho/social (which is important, but too much time given to it)” (Nurse)

4.5. Commitment to Change

Response and implementation rates

The total number of courses delivered, number of learners, their distribution by profession group, and the response rates to the post-course CTC statements and the 4-months CTC reflection are shown in **Table 4.9**. A total of 2574 learners (55.5% of all the learners enrolled in the courses) submitted post-course CTC statements. The response rates varied across professions with response rates for nurses and physicians at 55.9% and 63.7% respectively. Response rates for pharmacists, social workers and other professions were 66%, 50.4% and 39.4% respectively. A total of 10288 statements were submitted post-course; physicians submitted 2231, nurses 6685, pharmacists 264, social workers 256 and “other professions” 852 commitment statements.

For the 4-months CTC reflection, 1063 learners submitted reflections on their initial CTC statements (**Table 4.9**). This represented 41.7% of all learners who had submitted post-course CTC statements and 22.9% of all learners who enrolled in the course. A total of 4250 reflections (approximately 4 per learner) were submitted.

Of the 4250 reflections submitted, 3081 (72.5%) were reported by learners as implemented and 830 (19.5%) did not get opportunities to implement their commitments by the 4-months post-course mark (**Table 4.10**). The extent to which learners implemented each of their CTC statements varied across professions, the lowest being amongst social workers (60.6%) and the highest amongst physicians (73.9%) and nurses (73.3%).

Table 4. 9. LEAP Core Commitment to Change (CTC) commitment statements and reflections: Response rates immediately post-course and 4-months post-course and implementation rates 4-months post course.

		All learners	Physicians	Nurses	Pharms	Social workers	All others
Number of learners in courses (%)		4636	878 (18.9%)	2990 (64.5%)	100 (2.2%)	127 (2.7%)	541 (11.7%)
CTC statements immediately post-course^a	Number of learners who responded (% of all learners)	2574	559	1672	66	64	213
	Response rate ^b	55.5%	63.7%	55.9%	66.0%	50.4%	39.4%
	Total number of CTC statements ^a	10288	2231	6685	264	256	852
CTC Reflections 4-months post course	Number of learners who responded to 4 month post reflection survey	1063	226	664	24	33	116
	Response rate relative to number of learners who posted CTC statements immediately post-course ^c	41.7%	40.4%	39.7%	36.4%	51.6%	54.5%
	Response rate relative to number of learners enrolled in courses ^d	22.9%	25.7%	22.2%	24.0%	26.0%	21.4%
	Total number of statements reflected on ^e	4250	904	2654	96	132	464

Pharms; pharmacists

^a Learners commit, immediately after each course, to change 3 to 4 things in their practices as a result of participating in the course; Commitment-to-Change (CTC) commitment statements. Then 4 months post course they are shown their original commitment statements and asked to reflect on them (CTC 4-month reflection), to indicate whether they implemented them (“Yes”, “No” or “No because of no opportunity”), and provide examples of the impact if implemented or reasons if not implemented).

^b Response rate: [Number of learners who responded divided by number of learners who enrolled in courses] X 100

^c Response rate: [Number of learners who responded to CTC Reflection survey 4 months post-course divided by number of learners who completed CTC Statements immediately post-course] X 100

^d Response rate: [Number of learners who responded to 4 months post-course CTC Reflection divided by number of learners who enrolled in courses] X 100

^e Total number of commitment statements made immediately post-course that were reflected on 4 months post-course

^f Number of CTC commitments made post-course that had been implemented as reported by learners in the 4-month course CTC reflection (% refers to proportion of total number of CTC commitments submitted 4 months post-course)

Table 4.10. Implementation rates of Commitment-to-Change (CTC) commitment statements 4-months post course for LEAP Core course participants.

	Total	Physicians	Nurses	Pharms	Social workers	All others
Number of learners who provided 4-months post course reflections^a	1063	226	664	24	33	116
Total number of CTC statements reflected on 4-months post course^a	4250	904	2654	96	132	464
Number of statements implemented (%)^b	3081 (72.5%)	668 (73.9%)	1946 (73.3%)	69 (71.9%)	80 (60.6%)	318 (68.5%)
Number of statements for which no opportunities to implement presented (%)	830 (19.5%)	169 (18.7%)	500 (18.8%)	22 (22.9%)	38 (28.8%)	101 (21.8%)
Number of statements not implemented	339 (8%)	67 (7.4%)	208 (7.8%)	5 (5.2%)	14 (10.6%)	45 (9.7%)

Pharms; pharmacists

^aLearners commit, immediately after each course, to change 3 to 4 things in their practices as a result of participating in the course; Commitment-to-Change (CTC) commitment statements. Then 4 months post course they are shown their original commitment statements and asked to reflect on them (CTC 4-month reflection), to indicate whether they implemented them (“Yes”, “No” or “No because of no opportunity”), and provide examples of the impact if implemented or reasons if not implemented).

^b Number of CTC commitments made post-course that had been implemented as reported by learners in the 4-month course CTC reflection (% refers to proportion of total number of CTC commitments submitted 4 months post-course)

Post-course CTC commitment statements

Several themes emerged from the post-course CTC commitment statements; **Table 4.11** lists the top five most frequently occurring themes, with illustrative quotes. The most frequently occurring themes included; a) initiating palliative care early across disease groups; b) improving opioid use and managing symptoms; c) using clinical instruments more; d) engaging in more advance care planning; and e) improving interprofessional collaboration.

For the theme related to initiating palliative care earlier, for example, the statements focused largely on identifying patients with palliative care needs earlier, initiating a palliative care approach earlier and helping patients and families to understand the palliative approach (especially that it was not limited to end-of-life). This theme highlighted key principles of palliative care; such as that is not restricted to end-of-life (last days or weeks of life). In the theme related to opioid use and other medications, a broad range of medications were covered. Learners indicated increased confidence using palliative care-related medications appropriately. The commitments related to pain and symptom management reflected a broad range of pain and symptom assessment and management approaches. In the advance care planning (ACP) theme, statements focused largely on the elements and processes of ACP and better use of ACP resources.

Overall, the post-course CTC statements signaled that course participants, across profession groups,

demonstrated a deeper understanding of a palliative care approach. Especially among nurses, the data suggest that they had a heightened sense of being able to bring new tools and approaches to their patients' care. This included better symptom management and the regular use of screening tools, among others. Learners reported sharing their newly acquired knowledge and skills with nursing colleagues and increased ability to engage physicians regarding patient care plans. Some participants mentioned being more aware of their approach to patient interactions and taking a more holistic approach. Nurses made commitments to pain and symptom management and advance care planning alongside physicians.

Table 4. 11. LEAP Core Commitments to Change (CTC) immediately post-course: Top five most occurring themes with illustrative quotes and comments (all profession groups)

Emerging themes	Sample Quotes
Early initiation of palliative care	<i>I will be more proactive and open in my conversations with patients in accessing the Palliative care service early in a patient's disease process (Nurse)</i>
Opioids and other medications	<i>I will make recommendations for a laxative regimen for every patient starting opioid medications. (Pharmacist)</i> <i>I will be more aware of the signs of opioid toxicity and look to hydrate the patient and either reduce the dose or rotate the opioid. (Physician)</i>
Increased use of screening and assessment clinical tools	<i>Consistent use of screening tools (ESAS, PPS, FICA etc.). (Social worker)</i> <i>I will use the screening tools - ESAS and PPS more often in my assessments, I will also use them at the beginning of the palliative care process. (Physician)</i>
Pain and symptom management	<i>"... to continue to practice the calculations in rotation of pain medication. (Physician)</i> <i>Monitor pain management once implemented - monitor efficacy, delirium, neurotoxicity, etc. (Pharmacist)</i> <i>Consider opioids as only one part of the total pain management plan (Physician)</i>
Advance care planning (ACP)	<i>I will ensure that my palliative care clients know why advance care planning is necessary... (Nurse)</i> <i>implement advance care planning into regular practice (Physician)</i> <i>To be more aware of resources available - especially advance care planning to be able to share with patients that ask as well as direct family members to make their decisions. (Pharmacist)</i>

4-months CTC reflection

The 4-months CTC reflection themes as expected aligned with the CTC statements post-course (**Table 4.12**). Similarly to the CTC statements post-course, the top themes revealed implementation of: a) early initiation of palliative care; b) improved use of opioids and medications; c) increased use of screening and assessment tools; d) improved pain and symptom management; and e) advance care planning. Increased advocacy and grief and bereavement care related activities appeared in the "top" list. Practice changes in the theme "early initiation of palliative care" included initiating

conversations about palliative care earlier and/or taking more practical steps to begin a palliative care approach for patients. This theme also included evidence of integrating palliative care more often in non-cancer populations. Commitments related to “opioids and medications”, participants described better use of opioids and other medications in the palliative care approach. This manifested as better opioid and medication dosing, titration and the use of different modalities for pain and symptom control. Nurses described identify signs of patient discomfort better and responding to these, including non-pharmacological methods. Reflections related to the theme on “the use of clinical tools” indicated a broader use of different tools, including the *Surprise Question*, Edmonton Symptom Assessment Scale (ESAS-V2) and the Palliative Performance Scale (PPS-V2). There was a sense that these enhanced holistic care and improved patient comfort and care. In some cases, they also spread the use of these tools in their services. In the theme “pain and symptom management”, practice change led to observed improved symptom management, both physical and psychological. This domain also included more appropriate management of hydration and nutrition in advanced diseases.

The theme “grief and bereavement care” was most often mentioned by nurses. This included comments on their own grief at losing a patient and a family member and how they were better equipped to deal with that. Learners across professions described the impact of practice change related to ACP; initiating ACP discussions more often and earlier across disease groups, using resources more often, sharing resources with patients and families, and promoting ACP amongst colleagues. Examples were also given of how learners used ACP learned in the course in their own personal lives (themselves, their families and their friends).

“Advocacy” emerged in the 4-months reflection more predominantly than in the post-course statements, especially amongst nurses, pharmacists and social workers. It included advocacy for patient needs, resources and system changes. Examples of initiating quality improvement initiatives were also provided. Some learners, for example, initiated projects to integrate reminders of ACP in their practice’s, including prompts in electronic medical records.

The commitments that were more frequently not implemented were mostly clinical in nature and included using opioid continuous infusion pumps, managing opioid neurotoxicity and managing major depression in this patient population. The most common reason was lack of opportunities to implement them. Some reported that they were too busy to incorporate clinical tools like symptom screening instruments as they perceived these to be too time-consuming for them and patients.

Table 4.13 provides an indication of the frequency of each of these themes (for the CTC statements post-course and the CTC reflections 4-months post-course).

Table 4. 12. LEAP Core Commitment-to-Change (CTC) reflections 4 months post-course: Examples of impact as described by learners across the top seven most occurring themes with illustrative quotes.

Themes	Sample quotes
Early initiation of palliative care	<p><i>Through the pallium course I have realized the benefits of early referral to the palliative team for counselling, support, and many other aspects of palliative care that I did not realize before. This is a big benefit to both the patient and their families. (Physician)</i></p> <p><i>Palliative care is not just for cancer patients who are dying. I have better knowledge now to screen patients who could benefit from palliative care (Physician)</i></p> <p><i>I have been implementing the above change almost daily in both dealing with the really sick in my community and any patients on opioids who are not receiving palliative care. (Pharmacist)</i></p> <p><i>I now make a conscious effort to introduce the idea of palliative care as a symptom management modality when an illness is incurable rather than just an end-of-life toolkit. (Physician)</i></p>
Opioids and medications	<p><i>I recently had a patient in community setting being switched from one opioid to another and it required consultation with physician to correct the dosage. It had a huge impact on patient care because patient would have been significantly under dosed and pain control would have suffered. (Pharmacist)</i></p> <p><i>When doing physician rounds at the manor I have been able to advocate on behalf of residents who need additional or a change in pain medication. (Nurse)</i></p> <p><i>This course reminded me of the importance of mgmt. of side effects of opioids and various agents to treat them. (Physician)</i></p>
Increased use of screening and assessment clinical tools	<p><i>In my hospital role, as a team member in Medically Complex Care, I have been able to ensure the discussion at patient rounds includes the use of standardized tools to more appropriately engage our available palliative care team. (Nurse)</i></p> <p><i>I have used the Palliative Performance Scale and the Edmonton Symptom Assessment System. The first helps to communicate with other Health Care providers.(Physician)</i></p>
Advocacy	<p><i>We often work together with patients' families as well as physicians when it comes to covering costs of some palliative medications. If the prescribing physician does not have the PCFA license, we attempt to contact that physician to see if there is an alternate physician caring for the patient who does possess this license.... (Pharmacist)</i></p>
Pain and Symptom management	<p><i>Adjusting medications based on symptoms and addressing constipation issues early on with multiple therapies such as PEG (Pharmacist)</i></p> <p><i>I have been more compliant with ESAS and with reviewing/implementing the symptom management guidelines through an app on my phone. (Nurse)</i></p>
Grief and bereavement care	<p><i>...This remains a work in progress. I think I just need more practice and experience in this area. It has been hard to feel fully confident with managing anticipatory grief because it is a very personal experience for each individual. (Physician)</i></p> <p><i>.. I created an education session which I have provided twice on evidenced based Grief and Bereavement Care. The tools are now available. and are being implemented with the support of Management and our National Educator. I have used the tools myself and have provided several bereavement visits since the education session in November. (Nurse)</i></p> <p><i>I have taken additional training on palliative care support and grief and loss. This has helped me understand my bias with palliative care. I have weekly debriefings with my co-worker and supervisor. (Social Worker)</i></p>
Advance Care Planning	<p><i>During annual care conferences I have taken the time to discuss in more detail the meaning and importance of advance care planning. [Physician]</i></p> <p><i>I have been able to discuss advance care planning with all my patients who a frail and elderly, for</i></p>

whom I provide home visits. Also, with COPD, HF and chronic conditions [Physician]

I have become more comfortable with having this discussion the more times I implement this change. [Physician]

Using resources (advance care planning tool kit), plus added personal confidence to begin discussion earlier. [Nurse]

The knowledge I learned has helped me to have effective conversations with clients and their caregivers. For example, I had a client who was not accepting of his situation. By making little steps with the communication strategies I was able to assist him in completing POA documents and starting conversations with his family about his wishes at EOL. [Nurse]

I have set up reminders in EMR and discussed at patient subsequent visits. [Physician]

I spoke with one family on admission where their Mother had quite advanced Parkinsons and the family had not discussed with the resident her view on DNR status. The family seemed to have conflicting view on this but as the resident was cognitive I encouraged them to speak with their Mother. Several days later the resident came to see me to put a DNR in place. She thanked me for helping her open up the discussion with her family as she knew they did not agree. [Physician]

In my personal life, I have had opportunity to encourage ACP for my friend recently diagnosed with cancer and she has completed all aspects. [Nurse]

Table 4.13. LEAP Core Commitments-to-Change Post-course and 4 months post-course: Most frequently occurring statements by themes.

Themes	Number of CTC Statements Per Theme (%)*	
	Post-course	4 months Post-course
Number of CTC commitment statements	10 288	
Number of CTC commitment statements reflected on 4 months post course		1063
Early initiation of palliative care and principles of palliative care	1259	604
Opioids and other medications	1129	518
Increased use of screening and assessment clinical tools	733	134
Pain management	273	85
Advance care planning	273	74
Symptom management (other than pain)	219	57
Hydration or nutrition issues	122	38
Palliative Sedation	103	44
Grief and bereavement care	97	24

These numbers are generated through coding techniques that provide a relative indication of the frequency of occurrence, rather than an exact number (as the qualitative analysis focuses on identifying themes rather than specific numbers and frequencies). Some participants mentioned more than one theme in a single commitment statement and in other cases themes overlapped. Therefore percentages not calculated as they would not be accurate reflections.

**Percentage relative to the total number of statements submitted*

A comparison across the profession groups showed similarities in the most common themes across the profession groups. Nurses' comments showed a determination to put what they have learned in the course into practice to enhance patient care, and to be an active and informed voice in providing knowledge about how palliative care approach supports patients and seeking out additional resources to support their care. Physicians reflected a deeper understanding of the meaning and intent of palliative care, and provided examples of providing more holistic care, more interprofessional collaboration and the increased use of clinical tools. Pharmacists talked about teaching others regarding specific medication uses, speaking up to understand why certain medications were being used and the potential for screening tools to improve care for patients, including in the community. One social worker acknowledged surprise at a deeper understanding of grief specific to palliative care as she had pre-conceived ideas about her own skills in this area, and others were prompted to use more resources, including those shared in the course, to support them in their roles.

Two themes from the saliency analysis merit attention. First, learners described improved communication and collaboration with other professions because of the course. Second, a number of learners committed to improving palliative sedation, particularly better screening, application of criteria and seeking support from palliative care teams.

I almost always have discussions with the nurses and/or physicians when I see hydromorphone and midazolam continuous infusions started. This course has given me the knowledge and confidence to do all of the above. Excellent course! Thank you! [Pharmacist]

The day after this course I was asked to do palliative sedation on a client out of my district. ... did have an RN present with me to verify doses, meds, frequencies, pump settings, vitals, etc. Also had direct contact with manager and pharmacy as needed. Successful palliative sedation. Family pleased and client very comfortable. [Nurse]

Several barriers related to implementing the commitments were described by respondents who were unable to implement their commitments, even when opportunities presented themselves. These often related to lack of time because of busy clinic schedules and system-level factors. In some cases, colleagues or other professionals who had not undertaken the LEAP courses presented obstacles and frustrations as their views of palliative care who delivers it were misaligned with those of the learners. This was the source of frustration and even moral distress for some. Some learners, although they had not implemented a commitment, confirmed ongoing efforts to implement them.

Unfortunately, this goal has not been met although this change remains a commitment of mine. I had met with the director of collaborative practice within my organization with the hopes of proposing a number of changes to documentation of patient wishes as well an interdisciplinary education on end-of-life care and advance care planning. This however has been a slow moving process. I now believe the first step should focus on nursing practice until I am able to obtain greater input and influence from other disciplines. [Nurse]

I have implemented this change ...however did learn that my request [referral to a specialist team] was denied when requested early. Due to the overwhelming demand for palliative care, the palliative team did not get involved until PPS was about [30%] or [less]. They did not want to see the Client until all chemo and radiation treatments were complete even if cancer was wide spread and treatment was only to get more time. What I was taught in the course about requesting early is not the reality. [Nurse]

4.6. Impact on Competencies (Knowledge, Attitudes and Comfort)

The tables and figures for this section are provided at the end of the section (Section 4.6)

Participants and response rates

A total of 244 LEAP Core courses were held across Canada during the study period (2 fiscal years). **Table 4.14** summarizes the number of learners from the different professions who participated in the LEAP Core courses as well as the response rates to the various instruments pre- and post-course. The response rates for independent (unpaired) samples and for paired samples are provided; analyses were only undertaken of paired samples.

As described in the previous sections of this doctoral work, a total of 4636 learners participated in LEAP Core courses during this period; 2990 nurses, 878 physicians, 127 social workers, 100 pharmacists and 541 “other professions”. The physician group consists mainly of family physicians/general practitioners and some physicians training in family medicine); the nurse group includes registered nurses, nurse practitioners, registered practical nurses and licensed practical nurses; and the “other” group includes dietitians, physiotherapists, occupational therapists, personal support workers and administrators.

The overall response rates (for all professions together) were the highest in the pre-course period; 80%, 92.3% and 86.7% for the Knowledge, Attitudes and Comfort instruments respectively. The rates were lower post-course, namely 53%, 56.6% and 53.1% for the Knowledge, Attitudes and Comfort instruments respectively. The response rates for the various instruments varied across profession groups for both the pre- and the post-course periods.

Knowledge

Knowledge scores improved significantly pre- versus post-course for all learners combined and across all the profession groups, except for social workers (See **Table 4.15** and **Figure 4.3**). Medium to large effect sizes were also noted across profession groups (using Cohen’s 1988 convention for a medium effect size being $d = .50$ and large size being $d = .80$, and very large $d = 1.3$). For all learners combined, the pre-course mean score was 46.6% ($SD = 15\%$) and the post-course mean was 65.3% ($SD = 16.1\%$); $t(2301) = -55.84, p < .001; d = 1.16$. For physicians, the pre-course mean score for all physicians combined was 54.6% ($SD = 14.4\%$), which improved to 73% ($SD = 13.3\%$) post-course. This was statistically significant, $t(529) = -28.72, p < .001; d = 1.25$. For nurses the mean scores improved significantly pre- versus post-course; pre-course $M = 43.8\%$ ($SD = 14.1\%$), post-course $M = 62.7\%$ ($SD = 13.3\%$); $t(1551) = -45.74, p < .001; d = 1.14$. The pre- versus post-course difference for social workers was not significant; $M = 40.5\%$ ($SD = 18.8\%$) pre-course and $M = 48.7\%$ ($SD = 18.5\%$) post-course; $t(17) = -2.02, p = 0.60; d = 0.42$ (note small size of learners for this group).

The internal consistency (Cronbach's alpha (α)) of the LEAP Knowledge Quiz in this cohort of learners (primary health care professionals) was 0.60 and 0.66 for physicians and nurses respectively.

Attitudes

Attitude scores improved significantly pre- versus post-course for all learners combined and across

all the profession groups (See **Table 4.15** and **Figure 4.4**). Medium to large effect sizes were also noted across profession groups (also using Cohen's 1988 convention). For all learners combined, the pre-course mean score was 5.58 ($SD = 0.70$) and the post-course mean was 6.13 ($SD = 0.50$); $t(2622) = -41.38, p < .001; d = 0.81$. For the physician group, the pre-course mean score was 5.66 ($SD = 0.87$), which improved to 6.21 ($SD = 0.79$) post-course. This was statistically significant, $t(551) = -19.21, p < .001; d = 0.82$. For nurses the mean scores also improved significantly pre- versus post-course; pre-course $M = 5.58 (SD = 0.68)$, post-course $M = 6.12 (SD = 0.59)$; $t(1708) = -32.20, p < .001; d = 0.78$. The pre- versus post-course difference for social workers was also significant; $M = 5.46 (SD = 0.74)$ pre-course and $M = 6.18 (SD = 0.54)$ post-course; $t(69) = -9.92, p < .001; d = 1.05$ (note larger number of social workers completed Attitudes survey than the Knowledge survey).

The internal consistency (Cronbach's alpha (α)) of the LEAP Attitudes Survey in this cohort of learners (primary health care professionals) was 0.70 and 0.71 for physicians and nurses respectively.

Comfort

Similarly, Comfort scores improved significantly pre- versus post-course for all learners combined and across all the profession groups (See **Table 4.15** and **Figure 4.5**). Large and very large effect sizes were noted across all the profession groups (also using Cohen's 1988 convention). For all learners combined, the pre-course mean score was 4.51 ($SD = 1.23$) and the post-course mean was 5.72 ($SD = 0.89$); $t(2463) = -60.71, p < .001; d = 1.22$. For the physician group, the pre-course mean score was 4.87 ($SD = 1.01$), which improved to 6.05 ($SD = 1.11$) post-course. This was statistically significant, $t(566) = -31.96, p < .001; d = 1.34$. For nurses the mean scores also improved significantly pre- versus post-course; pre-course $M = 4.48 (SD = 1.23)$, post-course $M = 5.69 (SD = 1.36)$; $t(1639) = -47.72, p < .001; d = 1.18$. The pre- versus post-course difference for social workers was also significant; $M = 3.09 (SD = 1.37)$ pre-course and $M = 4.53 (SD = 1.03)$ post-course; $t(69) = -6.25, p < .001; d = 1.16$ (note number of social workers who completed this survey was also relatively small).

The internal consistency (Cronbach's alpha (α)) of the LEAP Comfort Survey in this cohort of learners (primary health care professionals) was 0.95 for physicians and nurses.

We compared the pre-course comfort scores (completed by learners before they did the course) with the post-course retrospective scores (post-retro). This is different to the post-course comfort level and is completed straight after completing the post-course comfort survey. In the post-retro survey, learners are asked to reflect back to before they started the course and to rate, in hindsight, what they thought their comfort levels were then. Comfort levels rated before the course (pre-course survey) were significantly higher than the post-retro scores (See **Figures 4.6 and 4.7**; and **Table 4.16**.) This applied to all learners together and all profession groups, except for social workers; for all learners together $t(2463) = 24.34, p < .001$; for physicians $t(566) = 6.92, p < .001$; nurses $t(1639) = 23.48, p < .001$; and pharmacists $t(57) = 4.09, p < .001$. The difference was non-significant in the case of social workers $t(28) = -0.56, p = 0.58$.

Table 4. 14. LEAP Core number of respondents and response rates (in brackets) for the LEAP Core instruments across profession groups (response rates for independent and paired samples are provided (Study period: 1 April 2015 to 31 March 2017)).

Profession Group	Attitudes survey		Comfort Survey			Knowledge Quiz	
	Pre-course	Post-course	Pre-course	Post-Retro ^a	Post-course	Pre-course	Post-course
All Professions (n=4636)	Independent	4280 (92.3%)	2626 (56.6%)	4020 (86.7%)	2489 (53.7%)	2489 (53.7%)	2458 (53.0%)
	Paired	2621 (56.6%)	2623 (56.6%)	2464 (53.1%)	2464 (53.1%)	2489 (53.7%)	2302 (49.6%)
Physicians (n=878)	Independent	829 (94.4%)	552 (62.9%)	826 (94.1%)	568 (64.7%)	568 (64.7%)	548 (62.4%)
	Paired	552 (62.9%)	552 (62.9%)	567 (64.6%)	567 (64.6%)	568 (64.7%)	530 (60.4%)
Nurses (n=2990)	Independent	2778 (92.9%)	1711 (57.2%)	2672 (89.4%)	1647 (55.1%)	1647 (55.1%)	1660 (55.5%)
	Paired	1709 (57.2%)	1709 (57.2%)	1640 (54.9%)	1640 (54.9%)	1647 (55.1%)	1552 (51.9%)
Pharmacists (n=100)	Independent	96 (96.0%)	70 (70.0%)	82 (82.0%)	65 (65.0%)	65 (65.0%)	65 (65.0%)
	Paired	70 (70.0%)	70 (70.0%)	58 (58.0%)	58 (58.0%)	65 (65.0%)	54 (54.0%)
Social workers (n=127)	Independent	115 (90.6%)	68 (53.5%)	71 (55.9%)	33 (26.0%)	33 (26.0%)	25 (19.7%)
	Paired	68 (53.5%)	68 (53.5%)	29 (22.8%)	29 (22.8%)	33 (26.0%)	18 (14.2%)
All others (n=541)	Independent	462 (85.4%)	225 (41.6%)	369 (68.2%)	176 (32.5%)	176 (32.5%)	160 (29.6%)
	Paired	224 (41.4%)	224 (41.4%)	170 (31.4%)	170 (31.4%)	176 (32.5%)	147 (27.2%)

^a Post-Retro: after completing the course, learners were asked to rate their comfort levels "now that you have completed the course", and then to reflect back on what they thought their comfort levels were before the course started and rate them ("Post-retro"); i.e. the comfort level before the course is rated retrospectively (in hindsight). This is separate to the Pre-course. The latter is a reflection of what their comfort levels were pre-course completed retrospectively.

Table 4. 15. LEAP Core results for Knowledge Quiz, Attitudes Survey and Comfort Survey: Paired differences pre-course versus post-course scores (paired sample t-tests)(significance set at 0.05, 2-tailed)

Profession Group	Pre-course score mean	SD	Post-course score mean	SD	Mean Difference Pre vs post ^a	SD	Std Error Mean	95% CI of mean difference (lower to upper)	t	df	p value	Cohen d	Effect size
KNOWLEDGE QUIZ SCORES (scores are % of responses correct)													
All learners	46.6 %	15.0%	65.3 %	16.1%	-18.7 %	16.1 %	.335	-19.34 to -18.02	-55.84	2301	<.001	1.16	LARGE
Physicians	54.6 %	14.4%	73 %	13.3%	-18.5 %	13.3 %	.642	-19.71 to -17.19	-28.72	529	<.001	1.25	LARGE
Nurses	43.8 %	14.1%	62.7 %	15.9%	-18.4 %	15.9 %	.413	-19.21 to -17.60	-45.74	1551	<.001	1.14	LARGE
Pharmacists	56.7 %	13.8%	74.7 %	10.7%	-17.6%	10.7 %	2.19	-21.76 to -13.41	-8.49	53	<.001	1.15	LARGE
Social workers	40.5 %	18.8%	48.7 %	18.5%	-7.3 %	18.5 %	4.05	-16.00 to 1.44	-2.02	17	.060	0.42	MEDIUM
Others	44.6 %	15.1%	63.3 %	17.1%	-18.2 %	17.1 %	1.46	-21.03 to -15.30	-12.79	146	<.001	1.03	LARGE
ATTITUDES SURVEY SCORES (Scale of 1 to 7)													
All learners	5.58	0.70	6.13	0.58	-0.55	0.58	.013	-0.57 to -0.52	-41.38	2622	<.001	0.81	LARGE
Physicians	5.66	0.87	6.21	0.79	-0.55	0.79	.029	-0.61 to -0.49	-19.21	551	<.001	0.82	LARGE
Nurses	5.58	0.68	6.12	0.59	-0.53	0.59	.017	-0.92 to -0.61	-32.20	1708	<.001	0.78	MEDIUM
Pharmacists	5.28	0.62	6.05	0.62	-0.76	0.62	.077	-0.92 to -0.61	-9.92	69	<.001	1.19	LARGE
Social workers	5.46	0.74	6.18	0.54	-0.72	0.54	0.83	-0.89 to -0.55	-8.64	67	<.001	1.05	LARGE
Others	5.53	0.69	6.07	0.57	-0.54	0.57	.043	-0.62 to -0.45	-12.59	223	<.001	0.84	LARGE
COMFORT SURVEY SCORES (Scale of 1 to 7)													
All learners	4.51	1.23	5.72	0.89	-1.22	0.89	0.02	-1.26 to -1.18	-60.71	2463	<.001	1.22	LARGE
Physicians	4.87	1.01	6.05	1.11	-1.17	1.11	0.04	-1.24 to -1.10	-31.96	566	<.001	1.34	V LARGE
Nurses	4.48	1.23	5.69	1.36	-1.21	1.36	0.03	-1.26 to -1.16	-47.72	1639	<.001	1.18	LARGE
Pharmacists	3.96	1.12	5.30	1.00	-1.34	1.00	0.12	-1.57 to -1.10	-11.43	57	<.001	1.50	V LARGE
Social workers	3.09	1.37	4.53	1.03	-1.43	1.03	0.23	-1.90 to -0.96	-6.25	28	<.001	1.16	LARGE
Others	4.01	1.30	5.33	1.41	-1.32	1.41	0.08	-1.47 to -1.16	-16.91	169	<.001	1.30	V LARGE

^a Difference between the pre-course mean and the post-course mean (pre-course minus post-course)

SD; standard deviation.

Std; standard

CI; confidence interval

V large; very large

Figure 4. 3. LEAP Knowledge Quiz: Pre- versus post-course mean scores and standard deviations (whiskers) (Paired samples). (* statistically significant differences pre- versus post-course, paired t-test)

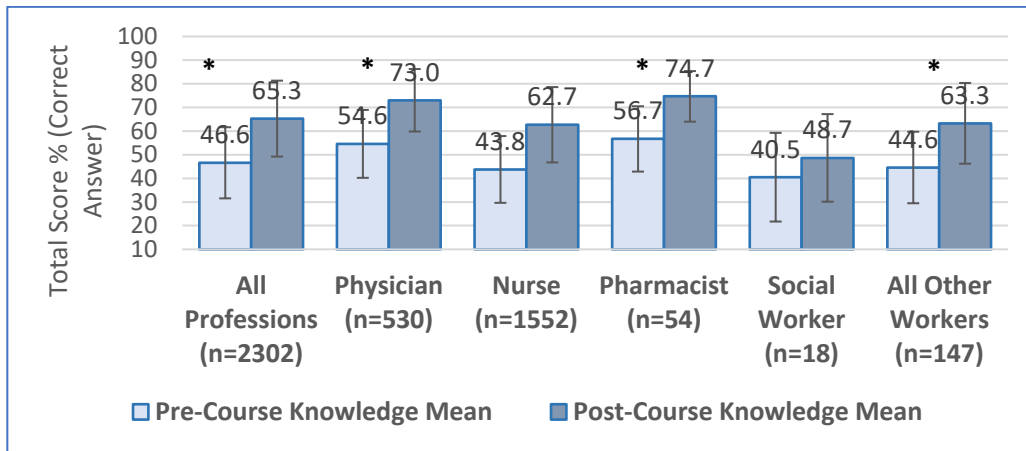


Figure 4. 4. LEAP Attitudes Survey: Pre- versus post-course mean scores and standard deviations (whiskers) (Paired samples). (* denotes statistically significant differences pre- versus post-course, paired t-test)

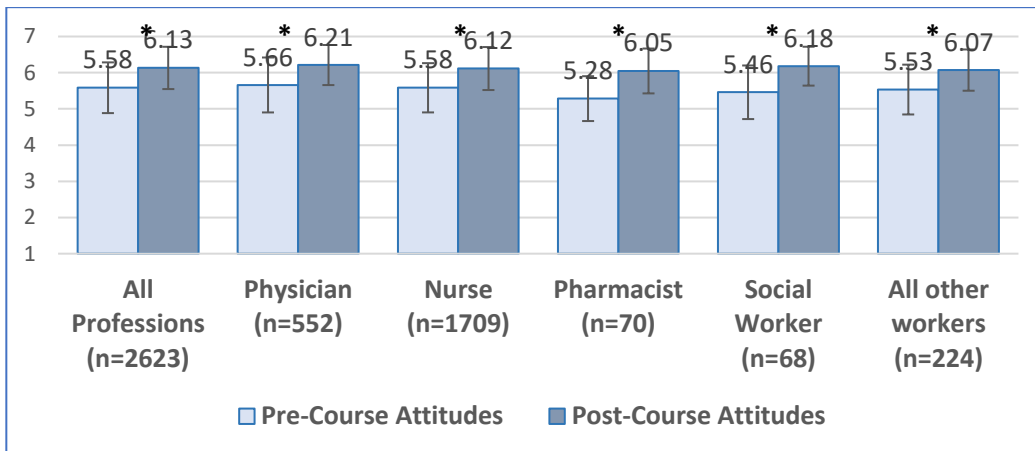


Figure 4. 5. LEAP Comfort Survey: Pre- versus post-course mean scores and standard deviations (whiskers) (Paired samples). (* denotes statistically significant differences pre- versus post-course, paired t-test)

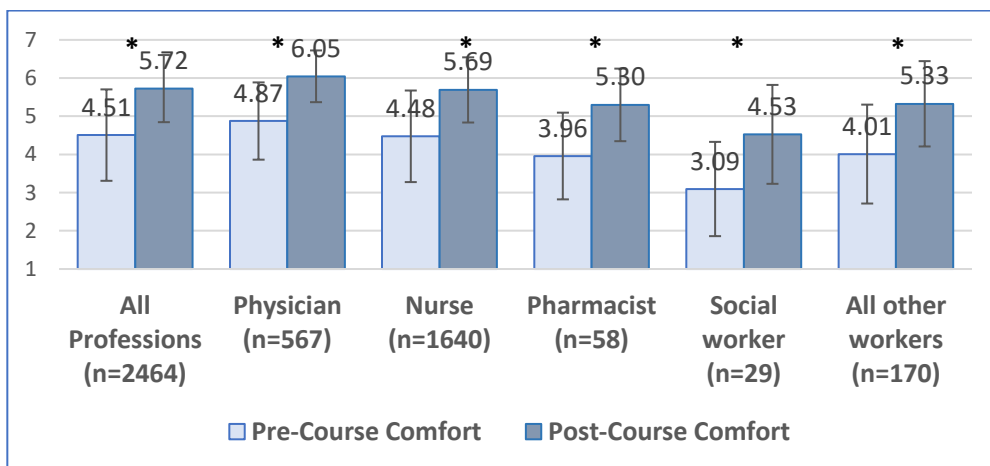


Figure 4. 6. LEAP Core Comfort with Palliative Care: Pre-course mean scores versus retrospective pre-course mean scores (after the course learners' re-score what they believe their actual comfort levels were before the course) and standard deviations. (denotes statistically significant difference.)**

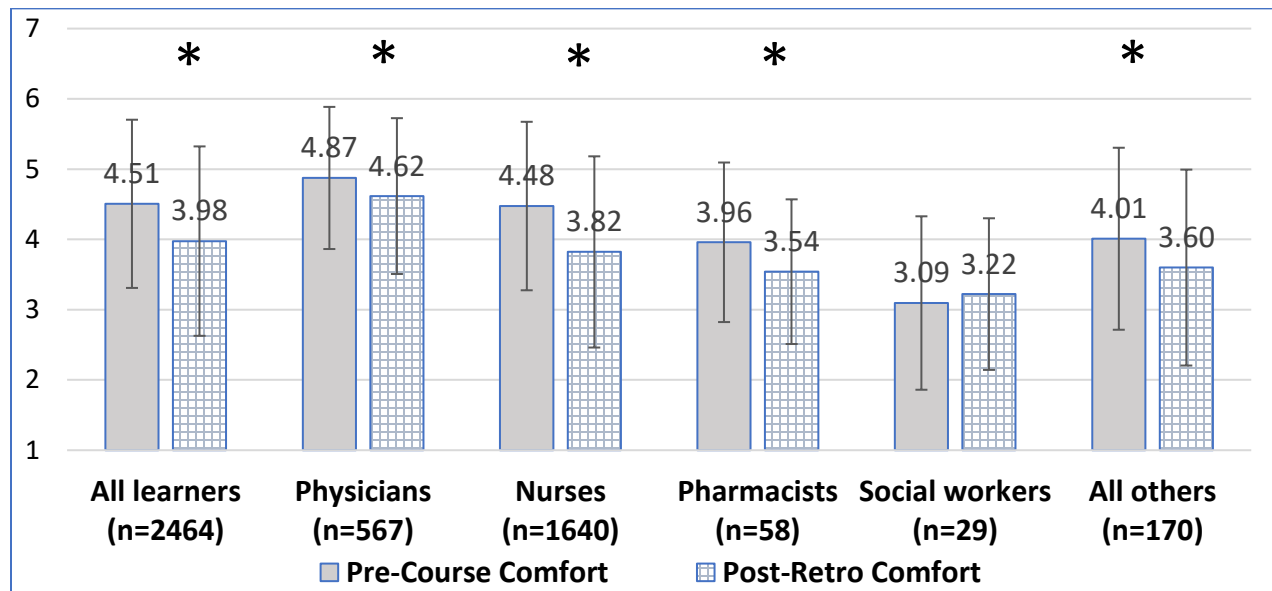
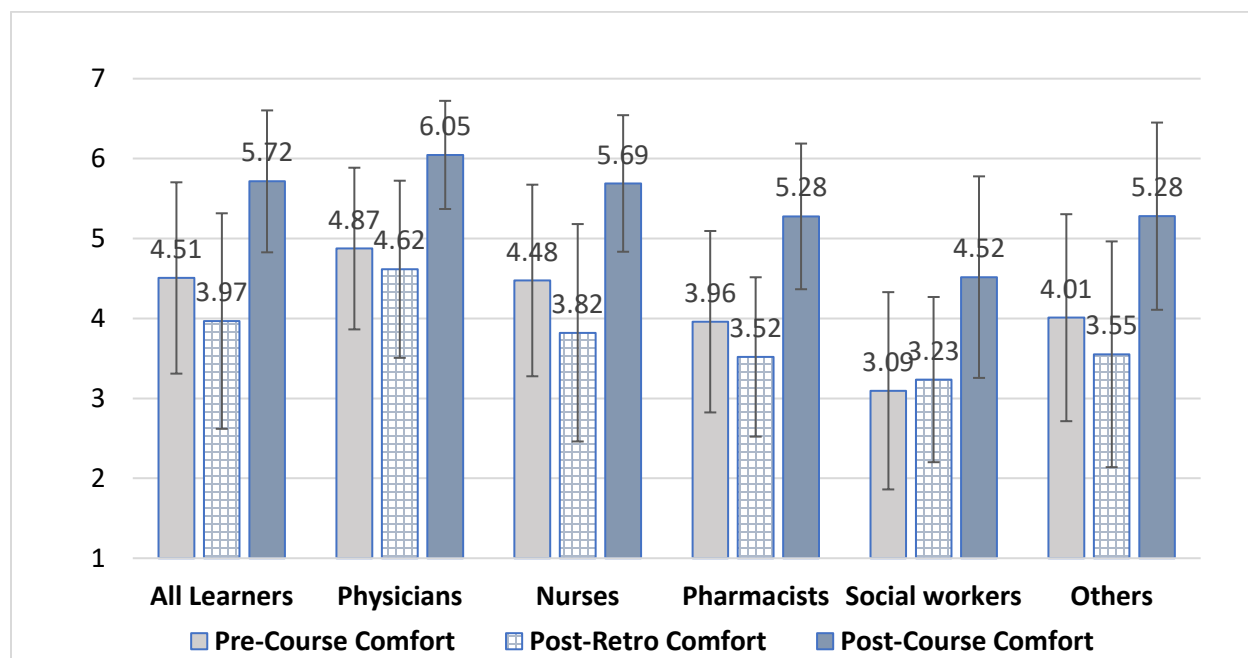


Table 4. 16. LEAP Core Comfort Survey: Mean differences pre-course mean scores versus post-course retrospective mean scores and Cohen's d effect sizes across professions (Paired samples t test).

Course Attendee	Pre-Course Comfort Level		Post-Course Retrospective		Mean Difference (SD)	95% CI of mean difference	Std Error Mean	df	t	P Value
	Mean	SD	Mean	SD						
All learners	4.51	1.20	3.98	1.35	0.53 (1.08)	0.49 to 0.57	0.02	2463	24.34	<.001
Physicians	4.87	1.01	4.62	1.11	0.26 (0.89)	0.18 to 0.33	0.04	566	6.92	<.001
Nurses	4.48	1.20	3.82	1.36	0.65 (1.13)	0.60 to 0.71	0.03	1639	23.48	<.001
Pharmacists	3.96	1.14	3.54	1.03	0.42 (0.78)	0.21 to 0.62	0.10	57	4.09	<.001
Social workers	3.09	1.23	3.22	1.08	-0.13 (1.22)	-0.59 to 0.34	0.23	28	-0.56	.580
Others	4.01	1.29	3.60	1.39	0.41 (1.09)	0.24 to 0.58	0.08	169	4.90	<.001

CI; confidence interval. SD; standard deviation. CI; confidence interval. df; degrees of freedom t; paired samples t test statistic

Figure 4. 7. LEAP Core Comfort Survey: Pre-course versus Post-retro versus Post-course (The Post-Retro refers to what learners felt their pre-course comfort was in hindsight, after completing the course).



4.7. INTEGRATE into practice

Please see **Annex 4** for the full results and corresponding Tables.

Thirty-six family physicians participated in the INTEGRATE project and study, plus their teams which consisted of nurses, pharmacists, social workers, dietitians and other allied health professionals. A total of 294 patients were identified during the study period (3 years) for early initiation of palliative care, most of whom had multiple co-morbid conditions.

Only one practice reached the hypothesized 1% of patients in primary care who are expected to die within a year and would benefit from palliative care (Gold Standards Framework, United Kingdom). The primary disease that contributed to the decision to initiate a palliative approach to treatment varied. Cancer was reported as the most common diagnosis (41%), with heart disease (17%) and dementia (10%) being the next most common diagnoses. Frailty (8%), Chronic Lung Disease (6%), and chronic kidney disease (5%) were less common. 'Other' diagnoses (10%) reported included Liver disease, Motor Neuron Disease, Parkinson's, ALS, Diabetes, Stroke, Multiple Sclerosis, Seizure Disorder, and Hypertension. More than 3 co-morbid conditions were reported by 65% of patients, likely contributing to their need for a palliative approach to care. Advance care planning was initiated in 50% to 79% of case, depending on the family health team.

The pre- and post-Implementation provider surveys yielded a 55% (n=71) and 34% (n=49) response rate, respectively. A summary of the results pre- and post- implementation across the four primary care practices is provided in **Annex 4**. The results demonstrate improvement in provider confidence to deliver palliative care and self-reported use of palliative care tools and services; 14/17 (82%) of these improvements are statistically significant ($p < 0.05$). The most prominent shifts occurred in providers' belief that they have sufficient education to provide palliative care (21% to 64%), use of the *Surprise Question* (54% to 91%), and confidence to initiate the ACP conversation (25% to 62%).

A total of 14 interviews were conducted with twelve physicians and two nurses across the four primary care practices (3-4 providers per practice). The providers reported that the INTEGRATE Project enhanced awareness of palliative care and that provider confidence and skill in delivering palliative care increased, and that ACP conversations were initiated earlier and for a broader group of patients than in previous practice.

Providers also highlighted several enablers and barriers to the implementation of INTEGRATE. Common enablers across sites included the team-based LEAP training which created a common language and approach, the dedicated CCAC care coordinator, physician champions, and the use of Electronic Medical Records (EMRs) to alert providers about eligible patients, support documentation of the *Surprise Question* and ACP conversation, and embed educational resources and referral forms. Notable barriers to the implementation and sustainability of INTEGRATE included time per patient visit and physician workload (though it was noted that this became less of a barrier over time as the new model was normalized), technical challenges with documenting in EMRs in select practices, staff turnover, persistent discomfort *initiating* ACP conversations, varying levels of patient and family readiness for ACP conversations, and sharing a person's identified goals and values across care settings.

* For more details and information, please see the accompanying paper in the following section "Annexes: Thesis Related Publications", specifically **Annex 4** [Evans JM, Mackinnon M, Pereira J, et al. Building capacity for palliative care delivery in primary care settings: Mixed-methods evaluation of the INTEGRATE Project. *Can Fam Physician*. 2021;67(4):270-278. doi:10.46747/cfp.6704270 (Paper published)]

4.8. Pallium Canada's New Evaluation and Research Framework

Pallium Canada's evaluation activities to date: strengths and gaps

Pallium's program evaluation framework has evolved over the years.(261,262) From 2003 to 2007, a multi-faceted framework was used, drawing on Health Canada's Participatory Evaluation Framework, the Logical Framework and Kirkpatrick's Evaluation Model.(91,235,262–264) In collaboration with partners across Canada, the RE-AIM Framework is being used to evaluate Compassionate Communities activities.(229,230)

The LEAP courseware evaluations have largely focused on Kirkpatrick's levels 1 and 2 and have demonstrated positive learner experiences and improvements in knowledge, attitudes and comfort levels across different professions.(256,261,265) Evidence of impact at level 3 (patient care) and level 4 (health system impact), as well as return on investment, is emerging. (57,58,266,267)

Several gaps were identified in the current evaluation framework including a) inadequate study of the contexts, processes and mechanisms of spread across the different LEAP courses; b) inadequate evaluation of return on investment (ROI) and impact on patients and the healthcare system; and c) missed opportunities for in-depth study of some learning methods.

Contemporary underlying principles

Several contemporary underlying principles in education evaluation, including those relevant to programs such as LEAP and ECHO, were identified. These included a) emphasis on evaluating impact beyond learner feedback and acquisition of competencies; b) recognition of the need to evaluate processes, implementation, spread and scale-up; and c) approaching education evaluation from a complexity lens.

Evaluating impact beyond learner feedback and acquisition of competencies

Evaluations of education programs often focus on learner experiences and the acquisition of different competencies. Evaluations of impact on patients, the health care system and return on investment (ROI) are less common. (268) This is understandable as evaluations that explore these constructs generally require methods that need more resources, expertise and complex data sources. Notwithstanding the challenges, they are important constructs to assess and increasingly encouraged by policymakers, funders, scholars, and academic journals. This rising focus parallels growing demands to curb health care costs and understand the value-added of health interventions.(268)

Evaluating processes, implementation and spread

There are growing calls for evaluation efforts that go above and beyond outcomes and impacts and consider contextual and process-oriented factors that enhance or impede learning, implementation, uptake and spread. (227,233,269) The conditions and processes that impact implementation are, for example, the focus of the Consolidated Framework for Implementation Research (CFIR).(226) The updated Kirkpatrick Model – the New World Kirkpatrick Model (NWKM) – now also includes some of these constructs, specifically strategies that reward, encourage and reinforce learning.(233) van Melle and colleagues propose a movement from attribution analysis, that looks for direct causal relationships between the program activity and outcomes, to contribution analysis that focusses on the question “How much of a difference (or contribution) has the program made to the observed outcomes?”(269)

Evaluation that recognizes complexity

Education, like public health and social interventions, are often interventions with several interacting components, which in turn are influenced by many extrinsic and intrinsic factors.(270,271) Moreover, they are undertaken within a health care system that is itself complex.(272) In addition to differentiating between the relative role of each of the components, there are additional challenges

such as the difficulty of standardising the design and delivery of the interventions across different contexts. It is sometimes difficult to attribute changes to specific programs given the multiple confounding variables in complex environments.

This calls for more realist-based approaches. (239,273) Approaches such as randomized controlled research methods, commonly valued in health care, may be inappropriate in the context of complex, real life situations. For fluid and complex contexts, Poth and colleagues call for more reflective approaches that strive to understand what initiatives are doing rather than attending to inflexible protocols and pre-determined outcomes.(274)

Evaluation Frameworks Overview

Several frameworks were deemed most pertinent for Pallium’s LEAP and ECHO programs and shortlisted for consideration (**Table 4.17**). They are organized into four categories: A) “Impact” evaluation; B) “Implementation” evaluation; C) Economic evaluation; and D) Combinations of these. Further details of each of these are provided at the end of this section in **Table 4.18**).

The Consolidated Framework for Implementation Research (CFIR), for example, is a conceptual evidence-derived framework to guide systematic assessment of multi-level implementation contexts to identify factors that might influence implementation and effectiveness.(226,227) The Developmental Evaluation (DE)(274,275), the Active Implementation Framework (AIF)(228), the Realist Model,(239)(240) Contribution Analysis (CA), (269)(276) and the RE-AIM (Reach, Effectiveness, Adoption, Implementation, and Maintenance)(230) also focus on evaluating implementation and processes. All are well suited for complex interventions and contexts. The RE-AIM Framework is especially applicable for community-based programs(229,231) The DE approach draws on insights about complex dynamic systems, uncertainty and nonlinearity, and is particularly useful within fluid contexts. (274,277) Educators can study, document and make sense of changes that occur (including unexpected ones) as the program is implemented. Patton stresses its utility in the evaluation of complex, emergent initiatives in the early stages of development.(273) Reflective approaches such as the DE are needed to respond to what initiatives are doing rather than attending to pre-determined outcomes.

Frameworks such as Moore’s Seven Levels Outcomes Model,(278) Kirkpatrick’s Model,(91) and Kirkpatrick’s New World Model (NWKM)(233) primarily focus on outcome evaluation and include different levels of evaluation, ranging from reach (number of learners) and changes in learner knowledge and other competencies, to impact on patients and the health care system. The NWKM was recently updated to include aspects of implementation evaluation, including drivers of change such as incentives and conditions.

The Realist Model, which often used mixed methods research approaches, goes beyond assuming a simple cause-and-effect association and recognizes that an educational intervention may provoke different reactions and results in different learners, contexts and even times.(239,240) Wong and colleagues stress that both context and mechanism must be systematically researched along with the intervention and outcomes.(239)

Table 4. 17. Shortlist of evaluation models, frameworks and approaches deemed most germane to Pallium Canada’s LEAP and ECHO Programs*

<p>Evaluate impact</p> <ul style="list-style-type: none"> • Miller’s Triangle(279,280) • Moore’s Model (Seven Levels Outcomes Model)(278) • Kirkpatrick’s Model(91) • Modifications to the original Kirkpatrick Model: Phillips’,(281) Stokking,(282) Kaufman and Keller,(283) Hammick et al,(284) and Barr(285) • Kirkpatrick’s New World Model (NWK)(233,234) (includes drivers of change)
<p>Evaluate processes, implementation, and spread</p> <ul style="list-style-type: none"> • Consolidated Framework for Implementation Research (CFIR)(226)(227) [https://cfirguide.org/]** • Developmental Evaluation (DE)(273–275) ** • Active Implementation Framework(228)** • The RE-AIM (Reach, Effectiveness, Adoption, Implementation, and Maintenance) Framework to Assess community-based Programs(229–231) **
<p>Evaluate economic impact and return on investment (ROI)</p> <ul style="list-style-type: none"> • Health Technology Assessment (HTA)(232)
<p>Evaluate combinations of impact, processes and/or ROI</p> <ul style="list-style-type: none"> • Kirkpatrick’s New World Model (NWK) (233,234) ** • The Medical Research Council’s Framework(270) ** • Realist Model(239,240) ** • Contribution Analysis (CA)(269,276,286) ** • Logical Framework(235,236) • 3-Wishes Project Evaluation Framework(237,238) • Stake’s Countenance Evaluation Model(287)
<p>Lenses, Considerations and Approaches***</p> <ul style="list-style-type: none"> • Complexity(271)
<ul style="list-style-type: none"> • Quality Improvement and the Triple Aim, Quadruple Aim(288,289) and the Six Dimensions of Quality(290)
<ul style="list-style-type: none"> • Participatory Research,(241) Community-Based Participatory Research (CBPR),(241–244) and Action Research(244)
<ul style="list-style-type: none"> • The Pragmatism Paradigm(291,292)
<ul style="list-style-type: none"> • Social Network Analysis (SNA)(293–295)
<ul style="list-style-type: none"> • Theories of Change <ul style="list-style-type: none"> • Theory of Planned Behaviour(296–298) • Michie et al’s Behaviour Change Wheel(299) and the COM-B-System(300)
<p>*With Pallium’s LEAP and ECHO Programs as examples **Particularly suited for complex interventions and contexts. *** Those deemed relevant to programs such as Pallium Canada’s LEAP and ECHO Programs</p>

The different models have their respective strengths and limitations.(301)(234) These are relative and depend on the context and needs of the evaluation; a strength in one context may represent a limitation in another.

There is considerable overlap across some of the models and frameworks in terms of the levels of evaluation and constructs they include. In terms of impact on learners' knowledge, attitudes, and self-efficacy, for example, there is overlap between the NWKM and Moore's Model. The Realist Model poses the question "What works, for whom, in what circumstances, in what respects, to what extent, and why?";(239) while the Contribution Analysis Model asks "How much of a difference (or contribution) has the program made to the observed outcomes when multi-pronged approaches are used?".(269)

Some models and approaches were not designed for education but are transferrable to educational contexts. The RE-AIM,(229,231) the Active Implementation Framework,(228) and Developmental Evaluation are examples.(273,274)

Some frameworks, such as Kirkpatrick's models, provide guidance on constructs and levels, but do not specify the outcomes to assess, methods to use and the sources of data. The onus is on educators to determine these, relying on various factors to inform their choices, including resource and expertise availability and ease of access to data. Others, such as Moore's model (278) and DE, do provide recommendations to evaluators. The DE, for example, suggests approaches such as service and care provider interviews, stakeholder interviews and surveys, patient and stakeholder interviews, program data, and document and chart reviews.(275)

The outcomes from Moore's Seven Levels model and the DE, and other approaches and lenses (see below), can in some cases apply to frameworks that provide only levels of constructs. The outcome measures and data collection methods should align with the frameworks' levels and constructs, as well as available resources and evaluation goals. Sources of data for higher level evaluations could include administrative claims, electronic and medical health records, healthcare provider surveys, and patient surveys. Methods to assess learner competencies in undergraduate and postgraduate education have been elucidated.(302,303)

There is flexibility in the application of most frameworks. In the case of the CFIR, for example, users are instructed to select the constructs that best meet their needs, circumstances, and contexts.(226,227)

Environmental scan: Lenses and other approaches.

Further, there are several approaches or lenses that, although not formal models or frameworks, help educators design and implement their evaluation plans. These include Quality Improvement and its related Triple and Quadruple Aims,(288–290,304) the Pragmatism Paradigm(291), Social Network Analysis (SNA),(293–295) Theories of Change, Participatory Action Research (PAR) and Community-Based Participatory Research (CBPR). (241–244) See **Table 4.18** for summaries of these.

New Evaluation and Research Framework for Pallium Canada's LEAP and ECHO Programs

Several overall recommendations emerged for the new framework (or plan). These included:

- Pallium should attempt to evaluate both impact and implementation (including what works, when and how, contexts and processes).
- Evaluating the impact and implementation of LEAP and ECHO programs requires multiple evaluation and research activities (sub-studies). Evaluation and research are closely aligned; some evaluation activities would require research methods and mixed methods research approaches lend themselves well to this.
- Given the breadth of Pallium's educational efforts, three approaches will be needed; a) activities conducted by Pallium alone (*Internal*); b) activities undertaken by Pallium in collaboration with partners (*Partnership*); and c) activities undertaken by third parties independent of Pallium, through outsourcing or crowdsourcing, or independently driven by the third parties (*Third-party*).
- Any LEAP and ECHO activity related to Indigenous Peoples should be led and informed by Indigenous persons, consistent with the guiding principles of ownership, control, access, and possession (OCAP) that includes Indigenous Knowledge.(305) Participatory Action Research (PAR) and Community Based Participatory Research (CBPR) provide useful approaches in this area.(241,306)

Pallium Canada's LEAP and ECHO Evaluation Framework

The new framework is shown in **Figure 4.8**. It is divided into three boxes and leverages two existing frameworks while drawing on some constructs from other frameworks and approaches. The first box lists key considerations and overall approaches, the second describes the priority constructs related to evaluating outcome (largely drawn from the NWKM), while the third describes constructs related to evaluating implementation (largely drawn from the CFIR).

The NWKM (233) was chosen as the model to inform impact (outcomes) evaluations and highlight drivers, while the CFIR (226,227) informs implementation evaluations. Adopting them allows us to leverage existing reputable and empiric-based frameworks and build on approaches Pallium has previously used. While "Impact" and "Implementation" evaluations may be done simultaneously, one or the other may predominate at times. For example, in a new ECHO community of practice (COP) the focus may initially be on implementation rather than impact.

These frameworks are augmented by elements from other frameworks, approaches and lenses. To the NWKM, we added "reach" from Moore's Framework for Level 1, to Levels 1 to 3 some aspects of interprofessional learning evaluation proposed by Hammick et al,(284) and to Level 4 Phillips' economic assessment construct. As leading indicators and desired outcomes for Level 4, we adopted constructs from the Quadruple Aim (288,289) and the concepts of value, transferability, and sustainability from the 3-Wishes Project (228,238) as these are well aligned the LEAP and ECHO programs.

While evaluations of satisfaction levels, or changes in knowledge and other competencies are insufficient, (234,301) the learner experience remains a necessary component of any evaluation.(223) Although good satisfaction ratings do not necessarily guarantee learning, bad

ratings may decrease the probability of it occurring and may undermine promotional efforts.(223)

Only those domains and constructs from the CFIR deemed most pertinent to the LEAP and ECHO programs are incorporated in the framework (226,227). We selected them based on priority, relevancy, and practicality.

The use of these two models in the overall framework, and drawing elements from other approaches, provides Pallium with the flexibility needed to undertake evaluations across different products, contexts and stages of development. There may also arise situations where a funder or partner may require a specific evaluation approach such as the Logical Framework or RE-AIM Framework.(229)

For each level and construct in the framework, we identified specific research questions to help operationalize them, as well as possible study methods and data sources. Many of the data sources and collection methods, infrastructure and processes are already in place, including the standardized and validated pre/post surveys and questionnaires, commitment-to-change approach(93)(201), and Pallium Canada's LMS. Given the growing partnerships, multi-site collaborations with the LEAP and ECHO programs, and data sources, additional database capacity through the LMS and online database platforms like the Research Electronic Data Capture (REDCap) is needed; REDCap is an open source, browser-based, metadata-driven electronic data capture (EDC) software and workflow platform that also includes surveying capabilities.

Figure 4. 8. Pallium Canada New LEAP and ECHO Programs Evaluation Framework

- Overall Approach**
- Use Pragmatist Approach
 - Practical elements from several key models and approaches (given different LEAP and ECHO products at different stages and in different contexts and settings)
 - Program of evaluation with several sub-studies contributing to evaluation and research
 - Different methods (quantitative, qualitative, and mixed) and different approaches (prospective, retrospective)
 - Prioritize impact, while understanding implementation
 - Dedicated evaluation and research resources: Internal (from Pallium) and external (grants and partners)
 - Evaluation and research activities to be undertaken by (all three models):
 - Pallium itself (*Internal*)
 - Pallium in collaboration with partners (*Partnership*)
 - Pallium crowdsourcing or outsourcing to others (*Third Party*)



EVALUATION PRIORITIES RELATED TO IMPACT		
Level	Domain	Construct
Level 1	Reach and learner experience	Reach (number of participants and organizations)
		Relevancy, engagement, learning experience, interprofessional experience
Level 2	Impact on learning	Knowledge, attitudes, confidence, and skills
		Commitment-to-change (post course/program)
Level 3	Behaviour and drivers	Changes in practice months post (self-described or observed)
		Commitment-to-change reflection months post course/program
		Impact on interprofessional teamwork
		Palliative care-related quality improvement activity in workplace
Level 4	Impact on Quadruple Aim	Patient and family experience
		Health provider experience
		Facilitator or user experience
		Value to managers and administrators
		Quality of care
		Costs and return on investment (ROI)
		<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="border: 1px solid black; width: 20px; height: 10px; background-color: #d9e1f2;"></div> In all LEAP and/or ECHO activities </div> <div style="display: flex; justify-content: space-around; align-items: center; margin-left: 100px;"> <div style="border: 1px solid black; width: 20px; height: 10px; background-color: #d9d9d9;"></div> Where feasible </div>

Mainly derived from New World Kirkpatrick Model (NWKM) and modifications that incorporate Quadruple Aim, "Reach" from Moore's 7-Levels of CME education and modifications by Barr for interprofessional training



EVALUATION PRIORITIES RELATED TO IMPLEMENTATION (for new products and where feasible)
What factors enhance uptake of the course or program?
What factors impede uptake of the course or program?
What strategies reinforce, encourage, or support implementation of what is learned?
What works for whom, in what circumstances, and why?*
To what extent does LEAP/ECHO [®] contribute if multi-pronged intervention?
Adaptability (and affordability) of the program to different contexts and needs?
Mainly derived from Consolidated Framework for Implementation Research (CFIR) with elements from Realist Evaluation Model, Contribution Analysis Model, and NWKM's drivers * includes interprofessional collaboration

Table 4. 18. Summaries of Evaluation Models, Frameworks, Approaches and Lenses

	Description	Strengths* and Limitations*
Evaluation of impact		
Miller’s Pyramid(279,280)	<p>Describes 4 levels of competency in education and workplace settings:</p> <p>Level 1: Knows (declarative knowledge)</p> <p>Level 2: Knows how (procedural knowledge)</p> <p>Level 3: Show how (performance)</p> <p>Level 4: Does (behaviour in everyday practice)</p>	<p>Strengths</p> <ul style="list-style-type: none"> • Ease of application (not necessarily of data collection). • Well established. <p>Limitations</p> <ul style="list-style-type: none"> • Does not specify which methods or approaches to use. • Excludes impact on patient and healthcare system levels. • Excludes evaluations of processes, implementation and spread.
Moore’s Seven Levels Outcomes Model(278)	<p>Builds on Miller’s Pyramid.</p> <p>Level 1: Participation (e.g. number of learners, professions, units trained, % of workforce trained in organization, etc);</p> <p>Level 2: Satisfaction of Learners;</p> <p>Level 3a: Learning: Declarative Knowledge (knows);</p> <p>Level 3b: Learning Procedural Knowledge (knows how, skills);</p> <p>Level 4: Learning: Competence (shows how; performs in education settings like simulated patients)</p> <p>Level 5: Performance (does, behaviour in practice/workplace)</p> <p>Level 6: Patient Health;</p> <p>Level 7: Community Health.</p>	<p>Strengths</p> <ul style="list-style-type: none"> • Adds additional levels to Miller’s Pyramid and higher levels. • Ease of application (not necessarily of data collection). • Provides examples of data sources <p>Limitations</p> <ul style="list-style-type: none"> • Excludes other competencies such as attitudes, self-perceived comfort or efficacy. • Excludes evaluations of processes, implementation and spread.
Kirkpatrick’s Model(91)	<p>Describes four levels of evaluation:</p> <p>Level 1: “Reaction” (learner satisfaction) and relevance of program and quality of content, quality of instruction</p> <p>Level 2: “Learning” (changes in knowledge, skills, attitudes, confidence)</p> <p>Level 3: “Behaviors” (changes in practice), degree to which learning implemented</p> <p>Level 4: Organizational performance.</p>	<p>Strengths</p> <ul style="list-style-type: none"> • Ease of application (not necessarily of data collection). • Flexibility allows educators to select measure or approaches for each level that is most practical and applicable to their context. <p>Limitations</p> <ul style="list-style-type: none"> • Does not include implementation, processes, contributions, economic and impact at society or community level. • Implied causal chain in model.
Modifications to original Kirkpatrick’s Model	<p>Some evaluators and researchers have suggested modifications to Kirkpatrick’s Model to address gaps in the model or specific applications of the model:</p> <ul style="list-style-type: none"> • Phillips’(281): Level 5 added to assess return on investment. (ROI) • Kaufman & Keller(283): Level 6 added to assess “Impact on Society”. “Implementation” added to Level 	<p>Strengths</p> <ul style="list-style-type: none"> • Address some gaps or limitations of Kirkpatrick’s Model.

	Description	Strengths* and Limitations*
	<p>2. Added implementation component (what conditions and factors can the results be attributed to?)</p> <ul style="list-style-type: none"> • Stokking(282): Move implementation related domain suggested by Kaufman and Keller’s from Level 2 to a higher level or chronologically later. • Hammick et al and Barr(284,285): Modifications made to each Kirkpatrick level to specifically evaluate interprofessional education. 	
<p>Kirkpatrick’s New World Model (NWKMM) (233,234)</p>	<p>Similar four levels as original Kirkpatrick’s Model (above), but with some additions that address some of the original model’s limitations:</p> <p>Level 1 (“Reaction”) now includes “Engagement” (the degree to which participants are actively involved in and contributing to the learning experience) and “Relevance” (the degree to which participants will have the opportunity to use or apply what they learned).</p> <p>Level 2 now includes “Confidence” (perceives that they will be able to actually apply the learned knowledge/skills) and “Commitment” (intend to apply the new learning).</p> <p>Level 3 (behaviours) incorporates “Required Drivers” of learning such as processes and systems that reinforce, encourage, and reward performance of critical behaviours on the job</p> <p>Level 4 (organizational performance) has “Leading Indicators” added to it, which are short-term observations and measurements suggesting that critical behaviors are on track to create a positive impact.</p>	<p>Strengths</p> <ul style="list-style-type: none"> • As for Kirkpatrick’s Model. • Modifications that address some of the original model’s limitations, including evaluations of processes and implementation. <p>Limitations</p> <ul style="list-style-type: none"> • Evaluation of processes and implementation relatively rudimentary. • Accompanying new diagrammatic depiction of model may be confusing
<p>Evaluation of processes, implementation, spread and scale-up</p>		
<p>Consolidated Framework for Implementation Research (CFIR) (226,227) [https://cfirguide.org/]</p>	<p>The CFIR is composed of five major domains, each of which may affect an intervention’s implementation. There are 39 constructs within these domains:</p> <ul style="list-style-type: none"> • <i>Intervention characteristics</i>, which are the features of an intervention that might influence implementation. Eight constructs are included in intervention characteristics (e.g., stakeholders’ perceptions about the relative advantage of implementing the intervention, complexity). • <i>Inner setting</i>, which includes features of the implementing organization that might influence implementation. Twelve constructs are included in inner setting (e.g., implementation climate, leadership engagement). • <i>Outer setting</i>, which includes the features of the external context or environment that might influence implementation. Four constructs are included in outer setting (e.g., external policy and incentives). • <i>Characteristics of individuals involved in implementation</i> that might influence implementation. 	<p>Strengths</p> <ul style="list-style-type: none"> • Provides educators a comprehensive, single-point compilation of factors that may influence intervention implementation and effectiveness. • Organized into five, easy-to-understand, domains and corresponding elements. • Flexibility in that educators can tailor the framework to the specific intervention design, factors, and context being studied. <ul style="list-style-type: none"> • Suited to guide rapid-cycle evaluation of the implementation of complex health care delivery interventions (multi-level contexts)

	Description	Strengths* and Limitations*
	<p>Five constructs are related to characteristics of individuals (e.g., knowledge and beliefs about the intervention).</p> <ul style="list-style-type: none"> • <i>Implementation process</i>, which includes strategies or tactics that might influence implementation. Eight constructs are related to implementation process (e.g., engaging appropriate individuals in the implementation and use of the intervention, reflecting, and evaluating). 	<p>that can influence implementation).</p> <ul style="list-style-type: none"> • Provides practical guide for systematically assessing potential barriers and facilitators in preparation for implementing an innovation or education program. <p>Limitations</p> <ul style="list-style-type: none"> • Many constructs may be overwhelming and challenging to select from.
<p>Developmental Evaluation (DE) (273–275)</p>	<ul style="list-style-type: none"> • Approach to evaluate the implementation of complex, emergent initiatives that are in the early stages of development. • Embraces continuous reflection, learning, and adaptation. • The process, based on reflective practices, is used mainly to respond to what initiatives are doing rather than attending to pre-determined outcomes. • Examples of evaluation questions that can be addressed with DE include: 1) To what extent is or has the program helped to improve the care for people living with serious illnesses who experience challenges to accessing services? 2) To what extent has the program facilitated access of the service to patients or populations? 3) To what extent has the program connected patients to existing services? 4) To what extent has the program facilitated education and built capacity around palliative approaches to care for targeted patients or populations? 	<p>Strengths</p> <ul style="list-style-type: none"> • Particularly useful to evaluate community-directed interventions. • Useful within changing and fluid contexts. • Very adaptive (and embracing of) to nonlinear dynamics of real-world social interventions and complex interventions in complex contexts. • Flexible and can be used for multiple purposes (e.g. development, evaluation, quality improvement) <p>Limitations</p> <ul style="list-style-type: none"> • Evaluation of impact is not explicit and unclear. • Largely limited to programs in the relatively early stages of development.
<p>Active Implementation Framework(228)</p>	<ul style="list-style-type: none"> • Outlines five components for implementation and evaluation success integrated within four implementation stages. Within each of the four stages are a set of processes and activities. • The five components for implementation and evaluation success include: (1) A Usable Intervention, (2) Implementation Stages, (3) Implementation Teams (e.g., implementation experts, intervention stakeholders, and intervention experts), (4) Implementation Drivers (e.g., competency drivers, organizational drivers, leadership drivers), and (5) Quality Improvement Cycles (e.g., Model For Improvement Plan Do Study Act (PDSA) cycles). Institute for Healthcare Improvement (IHI). Plan-Do-Study-Act (PDSA) Cycles. http://www.ihl.org/resources/Pages/Tools/PlanDoStudyActWorksheet.aspx 	<p>Strengths</p> <ul style="list-style-type: none"> • Evidence-based synthesis of frameworks. • Strong focus on program development, quality improvement, and understanding implementation to enhance success. • Multipurpose <p>Limitations</p> <ul style="list-style-type: none"> • Impact analysis is not explicit.

	Description	Strengths* and Limitations*
	<ul style="list-style-type: none"> The four implementation stages are: A) Exploration; B) Installation; C) Initial Implementation; and D) Full implementation. 	
The RE-AIM (Reach, Effectiveness, Adoption, Implementation, and Maintenance) Framework(229–231)	<p>Specifically designed to evaluate the impact of community-based public health programs and interventions, and public services.</p> <p>Consists of five evaluation dimensions:</p> <ul style="list-style-type: none"> Reach (Represents the absolute number and proportion of individuals who are willing to participate in a given initiative and how representative participants are compared to the target population). Effectiveness (Describes the impact of an intervention or program on important outcomes, including potential positive and negative effects, quality of life, and economic outcomes) Adoption (absolute number and proportion of settings and intervention staff who are willing to initiate an intervention or program). Implementation (Refers to the degree to which the intervention or program staff deliver the initiative as intended as well as the related costs. Also refers to participants’ use of the intervention’s strategies or the program’s services. Maintenance (Refers to the sustained delivery and effectiveness of the initiative) 	<p>Strengths</p> <ul style="list-style-type: none"> Well suited to assess community-based public health programs like Compassionate Community programs and public services, especially complex interventions and tasks as they often rely on multiple partners and input from different sources in often complex settings <p>Limitations</p> <ul style="list-style-type: none"> Impact analysis is not explicit.
Evaluation of economic impact and return on investment (ROI)		
Health Technology Assessment (HTA) (232)	<ul style="list-style-type: none"> Used for systematic evaluations of properties, effects, and/or impacts of health technologies. Can also be used to evaluate health interventions; and social, economic, organizational, and ethical issues of a health intervention or health technology. Recognizes differences in the evaluation of costs and outcomes (e.g. perspectives of economic analysis such as society overall, a third-party payer, clinician, hospital, and/or patient) Calls for transparency of costing reporting; e.g. whether average costs (total or absolute costs) or marginal costs (outcome changes with changes in cost) are being used in the analysis. Requires that economic evaluation be integrated in overall evaluation of technology or intervention from outset. 	<p>Strengths</p> <ul style="list-style-type: none"> a multidisciplinary process. Covers direct, intended consequences and indirect, unintended consequences. <p>Limitations</p> <ul style="list-style-type: none"> Requires specialized expertise See “evaluation of impact” section above.
Evaluations of processes, impact and/or return on investments		
Kirkpatrick’s New World Model (NWK) (233,234) (includes drivers of change)	<ul style="list-style-type: none"> See “evaluation of impact” section above. 	<ul style="list-style-type: none"> See “evaluation of impact” section above.

	Description	Strengths* and Limitations*
Logical Framework Approach (LFA) (235,236)	<ul style="list-style-type: none"> Essentially an approach and tool for planning, managing and evaluating programs and projects. Provides a structure to help specify the components of a project, its activities, input and resources, anticipated challenges, influencing factors, indicators and for relating them to one another. Involves identifying strategic elements (inputs, outputs, outcomes, impact) and their causal relationships, indicators, and the assumptions or risks that may influence success and failure. It includes analyses of the need and stakeholders and determination of the programs overall and intermediate goals and activities and strategies to achieve these. These are displayed as a 4 X 4 matrix or more linear logical model graphic; referred to as the Logical Framework Matrix or Logframe. The first column captures the project's development pathway or intervention logic and usually includes, at the top, the overall goal and long-term goals, then the intermediate objectives, followed by the outputs and then activities that are predicted to result in the objectives. Below or alongside are also listed the inputs, which include financial, human, and material needed for the program or project. The second and third columns summarize how the project's achievement will be monitored with the second column specifying the indicators (quantitative or qualitative measurements which provide a reliable way to assess changes connected to the intervention) and the third column listing the sources of data to provide evidence for the indicators. The final column lists the assumptions, which include the external factors or conditions outside of the project's control that are required to ensure success. Useful resource is The World Bank Logframe Handbook Guide: https://documents.worldbank.org/en/publication/documents-reports/documentdetail/783001468134383368/the-logframe-handbook-a-logical-framework-approach-to-project-cycle-management 	Strengths <ul style="list-style-type: none"> Provides an overview of a project for purposes of planning, monitoring and evaluation. Guides project management, including implementation and monitoring Facilitates common understanding and better communication between stakeholder (decision makers, managers, workforce, partners, etc). Ensures that key questions are asked, and weaknesses are analyzed. Guides systematic and logical analysis of the inter-related key elements. Improves planning by highlighting linkages between project elements and external factors. Limitations <ul style="list-style-type: none"> Tendency towards rigid application and risk of lack of flexibility to adjust to changing or new developments and opportunities. Can stifle innovation and adaptive management. Does not inform what and how to evaluate. LFA is only one of several tools to be used during project preparation, implementation and evaluation, and does not replace impact analysis (e.g. target-group analysis, cost benefit analysis)
3-Wishes Project Evaluation Framework (237,238)	<p>Not designed for evaluating education interventions, but well suited to do so.</p> <p>Evaluates an intervention across four dimensions:</p> <ul style="list-style-type: none"> Value (as experienced by friends, family, clinicians, managers, administrators), Transferability (related to signs of successful implementation beyond the original centre), Affordability (related to cost, per patient in this case); and 	Strengths <ul style="list-style-type: none"> Ease of application Evidence gathered largely through interviews, focus groups and surveys (so practical) Aligns well with quality improvement philosophy and approach. Limitations

	Description	Strengths* and Limitations*
	<ul style="list-style-type: none"> • Sustainability (related to project continuation beyond 1st year of evaluation). Evidence for value, transferability and sustainability is largely through qualitative data collected through interviews and other artifacts (e.g. reports) 	<ul style="list-style-type: none"> • May not appeal to funders or decision-makers who place value on quantitative data and results.
The Medical Research Council's Guidelines (270)	<p>Provides guidance on the development, evaluation and implementation of complex interventions to improve health. Although not specifically designed for education, it can be applied to education interventions.</p> <p>Includes guidance on experimental and non-experimental methods for educators and researchers to select from. It is divided into five main sections; each section provides key questions to use:</p> <p>A) Developing an intervention; B) Piloting and feasibility; C) Evaluating the intervention; D) Reporting; and E) Implementation.</p> <p>Provides frameworks to use experimental designs such as randomized trials, or alternatives if these are not feasible or appropriate. However emphasizes the need to evaluate other aspects of impact and of implementation. Not framework or model as such, but set of guidelines.</p>	<p>Strengths</p> <ul style="list-style-type: none"> • Provides advice on how to select an experimental design to assess the impact of a complex health related intervention. • Provides useful questions to inform development, evaluation and implementation. • Recommends inclusion of an economic evaluation and inclusion of evaluation of implementation processes. <p>Limitations</p> <ul style="list-style-type: none"> • The guidelines or recommendations are not specific to education interventions.
Realist Model(239,240)	<p>Seeks to answer the questions:</p> <ul style="list-style-type: none"> • "What works for whom, in what circumstances and why?" • "What kinds of educational interventions will tend to work, for what kinds of learners, in what kinds of contexts, to what degree, and what explains such patterns?" <p>In seeking to answer these questions, it sets out to identify three fundamental components of an intervention; context, mechanism, and outcome (CMO). Aims to identify underlying causal mechanisms and how they work under varying conditions.</p>	<p>Strengths</p> <ul style="list-style-type: none"> • Particularly suited to evaluating complex education interventions. • Flexible and stresses evaluation of interventions as they occur in the real world (not manipulated for experimental purposes). • Realist research uses mixed methods (qualitative and quantitative) approach to gather data and reach understanding; recognizes need to use different approaches for different questions, contexts and needs (urges judiciousness and flexibility) • Does not assume a simple cause-and-effect association <p>Limitations</p> <ul style="list-style-type: none"> • Does not provide specific direction on domains or constructs to specifically evaluate
Contribution Analysis (CA) (269,276,286)	<ul style="list-style-type: none"> • Well suited to evaluate complex interventions • A theory-based approach to program evaluation that provides a systematic way to make credible causal claims when complex conditions exist. • Looks for full understanding of both how and why a program has been implemented. One searches for 	<p>Strengths</p> <ul style="list-style-type: none"> • Particularly suited to evaluating complex education interventions. • Useful when an intervention is influenced by many external factors, has multifaceted

	Description	Strengths* and Limitations*
	<p>plausible descriptions of linkages between many program activities, their relationship to proximal and distal outcomes, and the underlying assumptions informing these connections. Understanding these helps to describe the “impact pathway”, which helps to describe the theory of change. Requires multiple sources of evidence to describe the whole story over time, linkages, and impact</p> <ul style="list-style-type: none"> • One approach to CA is Mayne's step model.(307) Step 1: Set out the cause-and-effect issue to be addressed. Step 2: Develops a postulated theory of change Step 3: Evidence is gathered for processes and outcomes (often using mixed methods approaches). Step 4: Assemble the contribution story Step 5: Educators and researchers seek out additional evidence (gathered through multiple methods; triangulation of findings enhances process). Step 6: The contribution story is revised and finalized. 	<p>objectives, and the impact unfolds over time.</p> <ul style="list-style-type: none"> • Moves evaluators from attribution analyses (looking for direct causal relationships between the intervention and outcomes) to an approach that focusses on the question: “How much of a difference (or contribution) has the program made to the observed outcomes?” <p>Limitations</p> <ul style="list-style-type: none"> • Does not provide specific direction on domains or constructs to specifically evaluate
Stake’s Countenance Evaluation Model(287)	<p>The model has two major domains (or “countenances”); “Description” and “Judgment”. “Description” relates to the characteristics of the education intervention, while “Judgement” relates to making a ruling as to whether the program attained standards or not.</p> <p>The Model then describes three phases in each of the two domains, namely the “antecedent” phase (the conditions and circumstances existing prior to the education intervention), the “transaction” phase (successive engagements of encounters during the actual instruction), and the “outcome” phase (the effects of the instructional experience).</p> <p>The domains, phases, and streams collectively give rise to a matrix with 12 cells, 6 for the “Description” domain and 6 for the “Judgement” domain.</p>	<p>Strengths</p> <ul style="list-style-type: none"> • Highlights the need to evaluate and understand connections (convergence or divergence) between what was intended and what actually materialized. • The matrix helps identify points at which instruments or other methods (such as interviews) should be used to collect data. <p>Limitations</p> <ul style="list-style-type: none"> • Complicated to navigate and execute. • Impact analysis is not explicitly highlighted.
LENSES, PARADIGMS AND OTHER APPROACHES		
Quality Improvement (QI) and the Triple and Quadruple Aims(288,289,304,308)	<p>The overarching goals of undertaking continuous QI are expressed in the Triple and Quadruple Aims.</p> <p>Triple Aim: (304)</p> <ul style="list-style-type: none"> • Improve the patient experience, • Achieve better health outcomes (including quality of care and patient safety), • Improve efficiencies (and lowering health care costs). <p>Quadruple Aim(288,289)</p> <ul style="list-style-type: none"> • As for Triple Aim, PLUS improve the care provider experience, and these four goals are collectively referred to as the Quadruple Aim. <p>Institute of Medicine’s six dimensions of quality(290)</p> <ul style="list-style-type: none"> • Timeliness, efficiency, equitability, safety, effectiveness and patient-centredness. <p>The aims and dimensions provide constructs with which to approach the impact of education interventions on patients, care, the health care system and healthcare providers.</p>	
The Pragmatism	Pragmatism does not commit itself to a specific epistemology or reality. Rather,	

	Description	Strengths* and Limitations*
Paradigm (291,292)	methods are selected on their relevance to the issue or program being evaluated, or aspect of a program being evaluated.	
Social Network Analysis (SNA) (293–295)	Social networks are important at individual and organization levels, particularly in terms of spreading knowledge, expertise, experiences, and innovations. Different factors and dynamics determine the structure and strength of the network(s). These connections, or lack thereof, can be studied and can provide insights into the spread and scale-up of an intervention or innovation. Analysis can be carried out via phenomenological, ethnographic, or diagramming techniques.	
Theories of Change	<p>Some experts advocate for the importance of identifying theories that underpin an education program as these inform the design of the interventions, their implementation and spread, and ultimately their evaluation, especially if using a Realist model or approach.(240)</p> <p>Examples of these theories include:</p> <ul style="list-style-type: none"> • Design: • Social constructivism, Cognitive flexibility theory and Collaborative Learning(133,309) • Change and Dissemination: <ul style="list-style-type: none"> ○ Roger’s Diffusion of Innovation theory). (137,143) ○ Theory of Planned Behaviour (TPB). (296–298) ○ Michie et al’s Behaviour Change Wheel(299) ○ The COM-B-System(300) 	
Participatory Action Research (PAR) and Community-Based Participatory Research (CBPR). (241–244)	While not an evaluation model or framework per se, participatory action research and CBPR provide approaches that can be useful in some evaluation needs, goals and contexts. PAR is an approach to research that emphasizes participation and action. It seeks to understand the world by trying to change it, collaboratively, and following reflection. PAR emphasizes collective inquiry and experimentation grounded in experience and social history. PAR practitioners make a concerted effort to integrate three basic aspects of their work: participation, action, and research.	

CHAPTER 5: DISCUSSION

5.1. Main findings

The overall goal and the specific objectives of this doctoral work have been achieved by way of a series of studies, case studies, an environmental scan and literature studies. Collectively they provide insights into the evolution and spread of a large national-level palliative care continuing education program, the development and design of its corresponding courseware (the LEAP courses) and the impact of that courseware (as a standalone intervention with a component of a multipronged intervention in general practices).

The various studies and activities undertaken, and their corresponding papers (of some), are all complementary in that each one explores a different facet of the larger enterprise of building primary level capacity through education at a national level. Each one serves as a building block. When placed together, as in this thesis, they form a collective whole, that helps us understand the bigger picture and that can inform not only the future development of Pallium Canada and its LEAP program, but also provide learnings and insights to educators in other jurisdictions who are tasked with rolling out a large national education program.

The various studies are also linked in that the findings of one study have implications for one or more of the others. In the Curriculum Design (**Annex 3**) work, for example, through a case study approach, we identified and explored the instructional design of the LEAP course, including the underlying applicable learning theories and learning methods. The study that explores the learner experience (Objective 4) provides evidence that supports and endorses the design decisions described in the Curriculum Design work (Objective 3), as do the results found in the study of Commitment-to-Change (Objective 5). The latter demonstrates that learners acquired the competencies through the course design and its learning methods, and are applying it in practice. Similarly, the results of the INTEGRATE project, Objective 7 (**Annex 4**), also show that health care professionals apply what they learned; and what they learned was explored in the study of pre- versus post-course changes to knowledge, attitudes and comfort related to providing a palliative care approach as well as in the study that explored the learners' commitments-to-change statements and reflections 4-months post course. Finally, the insights from the various studies informed the development of a new evaluation framework for Pallium Canada.

The results show that the LEAP Core course improved learners' knowledge, attitudes and comfort levels related to providing a palliative care approach, promoted interprofessional collaboration, and that these competencies were applied with examples of benefits to patients, practices (clinics), colleagues and the learners themselves and in some cases their own family and friends. This is reassuring; it aligns with studies that show short courses are effective in improving healthcare providers' competencies and applying these into their practices, (24,114–119,278) and it challenges the notion that short courses may not be effective.(120–122)

This work adds further understanding to interprofessional palliative care education. The findings confirm that interprofessional palliative care CPD courses that include nurses, physicians,

pharmacists, social workers and other professionals are possible and can provide a positive learning experience across profession groups. However, the study also highlights the challenges of addressing all the needs and scopes of practice equally across all profession groups simultaneously in one course. Some compromises are required while some curriculum design adjustments can be made to make the courses even more relevant for each targeted profession group.

Although educators should be evaluating education programs at higher levels such as impact on patients and the health care system, they should not ignore the learner experiences as these remain relevant, especially if we are to fully understand and optimize IPE in palliative care education.(100) Future work should incorporate instruments that specifically evaluate attitudes to and impact of interprofessional learning and collaboration in courseware such as LEAP.

In the following section, I discuss each of the studies or activities related to Objectives 1 to 8.

5.2. Specific Discussions: related to each objective

5.2.1. Program Evolution

The case study undertaken of Pallium Canada and its LEAP and compassionate community programs reveals vibrant, active programs that have spread, and in some cases, scaled-up, across all the 13 provinces and territories of Canada. The reader is referred to **Annex 1** which discusses the goals and origins of Pallium Canada, the tenets it is founded on, its spread, and the factors that have facilitated and impeded this spread.

The types of LEAP course versions delivered over the years was mapped. LEAP Core, directed at primary care providers, accounted for 51% of all 540 LEAP courses delivered in 2019 alone, followed by LEAP Mini (condensed one-day course) accounting for 15.3%, then LEAP Paramedics (14.9%) and LEAP LTC (7%). For the other versions, including LEAP ED, LEAP Hospital, LEAP Peds, LEAP Renal and LEAP Onco.

Courses like LEAP Core, LEAP LTC and LEAP Paramedics, and the compassionate community program meet the criteria of spread (beyond the original site where it started) and scale-up (beyond the original region and accompanied by resources, infrastructure and processes to ensure it is sustained and viable).(141) Courses like the LEAP Renal (for professionals caring for patients with advanced kidney diseases) have spread within one province, aided by support from the health ministry office that oversees kidney care in the province. Courses such as LEAP Hospital, LEAP ED (emergency department) and LEAP Oncology have seen local spread but not broadly across any one province or into other provinces. This reflects that these latter courses are much more recent additions to the LEAP program than the long-established courses like LEAP Core, LEAP Mini and LEAP LTC (which we will refer to as the “older courses” herein).

In comparing these courses as smaller case-studies within the larger case study, one finds that several additional factors may be contributing to the older LEAP courses spreading more than the newer ones. One reason is that the marketing efforts for the newer ones like LEAP Renal and LEAP ED have not been as robust or as extensive as LEAP Core. Another relates to the size of the market; primary care (and hence LEAP Core and LEAP Mini) constitute relatively a much larger portion of the

market (number of learners and sites) than those newer ones targeting specialist markets.

LEAP Renal is an interesting mini case study. It is a course that has spread throughout one province (Ontario) but made no inroads into other provinces. Part of the reason relates to the concept of scale-up; while in Ontario significant funding, championing and support was provided by the Ontario Renal Network (ORN) to spread it in the province, similar ministries in other provinces have not done the same. This has impeded spread. Similarly for courses like LEAP Onco.

LEAP Paramedics provides another example of a course that has spread and scaled-up, at one of the fastest rates of the different courses.(58,251) As a mini case study, several major factors have propelled this expansion; a) significant funding from provincial and federal authorities, b) early evaluation results that showed a major impact and hence helped spread the innovation c) a receptive learner group who quickly realized the difference they could make, and d) early and strong support from mid-level and senior-level leadership. All these constitute important lessons for spread and scale-up.

In terms of spread across profession groups, an interesting phenomenon merits some attention. The fastest growth in terms of registration has been among nurses over the last few years. Physician groups continue to grow but at a much lesser rate than nurses. Some external observers hold the view that the LEAP program (or similar education continuing professional development program) is not viable in jurisdictions that do not require health care professionals to undertake, record and report ongoing professional development annually through continuing professional credits) to their professional bodies for the purpose of ongoing certification. This phenomenon from nurses contradicts that. In Canada, while nurses are encouraged to maintain a continuing education portfolio, there is no requirement on them for collecting and reporting credits. Of interest is that amongst the physician participants, only less than half claim their continuing medical education credits as there are many other ways now to obtain credits, including quality improvement activities and reading journals. I posit that while CPD or CME credits serve as incentives, a combination of inherent desire by the health care professionals and other uptake strategies like champions and success stories, are major drivers of enrollment.

The rapid growth in nurses taking the courses may simply represent a re-balancing in that it would be expected that many more nurses than physicians would take the course because nurses make up a much larger proportion of the workforce than physicians. In our case study, some did postulate an additional explanation. This hypothesis relates to narrative. In the early years of Pallium Canada and the LEAP program, phases 1 to 3 (2000 to 2012- these are described in detail in the accompanying paper in Annex 1), there existed the notion that LEAP courses were designed only for physicians. I personally encountered at many conferences or events where I was presenting the program, comments from attendees or through other communication that the courses were not designed for nurses. This was contrary to the design, which had been designed by an interprofessional curriculum team that included nurses and with the intent of addressing the learning needs of nurses as well. In the last few years, experience in the field and possibly through other media such as social networks, has demonstrated that the course does address nursing needs. This “erroneous narrative” hypothesis in which an incorrect narrative (sometimes unwittingly and sometimes intentional) serves to undermine a program may need further exploration.

The paper (**Annex 1**) goes on to describe other factors that have aided spread, including a train-the-

trainer model with large facilitator pool across the country, a robust information technology ecosystem that includes a versatile, user-friendly and multi-functional online learning management system (LMS). Two important spread and scale-up factors relate to the critical role of partnerships with different local, provincial and national organizations to support spread and scale-up, and the importance of financial viability. The latter has required that Pallium Canada adopt a social enterprise model that partly receives funding from organizations like health ministries and philanthropic entities, and partly through generation of funds through course registration revenues.

Another phenomenon that the case study uncovered relates to implementation science. Pallium Canada has generally turned to Roger's Diffusion of Innovation theory to frame its approach to spread and scale-up.(143) This theory posits that once a group of early adopters – approximately 13.5% of the targeted population join the innovators (about 2.5% of the targeted population have taken on the innovation and made it part of what they do (in this case the LEAP course and the palliative care approach), then there is sufficient momentum created for the innovation to take hold and rapidly spread, spreading more rapidly to an early majority (an additional 34% of the target population). This theory has also been articulated in a partly modified form by Gladwell in his book *The Tipping Point*. (310)

While we have observed this phenomenon in some cases (such as LEAP Core and LEAP Paramedics at a pan-Canadian level; LEAP Renal at a provincial level; and LEAP PSW at provincial levels), the total number of health care professionals across the country and across all settings trained with LEAP is estimated to still be below 8% (higher in some cases). The factors that have facilitated it include resources, funding, support, champions. The factors that have impeded it (largely absence of the facilitators) may explain much of this lag. However, a large part may also lie in the marketing (or absence of it in some places) and the nature of messaging. Moore has posited that one needs to understand that the five adopter categories (innovators, early adopters, early majority, late majority and laggards) actually constitute very different populations with different characteristics and intrinsic and extrinsic motivations. (311) As one reaches a threshold, such as having reached out to the early adopters

(which has occurred in some jurisdictions across Canada and some circles with the LEAP courses), one should not sit back and expect it to ramp up based on its own momentum. Moore cautions that sitting back at this time is detrimental to spreading. Instead, the marketing should continue and even ramped up and the messaging should change. In the case of moving from the early adopters to the early majority, the message should change from “be a leader in the field, adopt this innovation” to “you should adopt this because others have already done so.”

* For more details and information, please see the accompanying paper in the following section “Annexes: Thesis Related Publications”, specifically **Annex 1** [Pereira J, Chary S, Faulkner J, et al. Primary-level palliative care national capacity: Pallium Canada [published online ahead of print, 2021 Jul 27]. *BMJ Support Palliat Care*. 2021;bmjspcare-2021-003036. doi:10.1136/bmjspcare-2021-003036 (Paper published)]

5.2.2. Curriculum Development

Pallium Canada's curriculum development framework leverages Kern's curriculum development framework (129). The Framework is made up of eight phases: 1) Concept; 2) Decision; 3) Curriculum Planning; 4) Prototype Development; 5) Piloting; 6) Dissemination; 7) Language Adaptation; and 8) Ongoing Maintenance and Updates. Several of these phases include iterative, cyclical activities. The framework allows multiple courses to be developed simultaneously, staggered in a production line with each phase and their corresponding activities requiring different levels of resources and stakeholder engagement. The full discussion related to this paper can be found in **Annex 2**.

However, a key approach embedded within the framework warrants special attention in this Discussion section, namely the rapid prototyping method. This method is similar to the Plan-Do-Study-Act (PDSA) cycle from quality improvement methodology, and is a key feature of the Successive Approximation Model (SAM) for curriculum development.(254)(255) In this approach, a prototype is developed, informed by the palliative care approach competencies to be addressed (for the professionals in that setting of care) and an understanding of the realities of providing palliative and end-of-life care in those settings. The prototype, after being planned (PLAN) and developed, it is then submitted to cycles of DO (in other words deliver to two to four times to groups of learners), STUDY (evaluate and get their input and input from the facilitators), and ACT (make modifications based on the input). The cycle recurs with rapid iterative improvements until most learners and facilitators rate the course as excellent.

This rapid cycling approach is contrary to the more traditional one where educators strive for a close-to-perfect or perfect version that is formally launched and then gradually evaluated over time. Educators may spend many weeks designing, developing and finetuning it before launching it. The rapid prototyping or SAM approach aims to get a good and workable version into the field (or market) and then to make modifications on the fly, rapidly as input comes in. The goal is to get to a product into the field within a short time, without jeopardizing quality.

The framework has allowed Pallium Canada to develop, launch and maintain numerous versions of its Learning Essential Approaches to Palliative Care (LEAP) courses concurrently. It leverages existing LEAP courses and curriculum materials to produce new LEAP courses, allowing significant efficiencies and maximizing output.

As experienced world-wide, the COVID-19 pandemic caused significant disruptions in health care, education and many other aspects of social life, industry and the economy. It brought new and urgent needs, including the need to pivot rapidly to virtual care and education. Health professionals with limited palliative care training had to be trained (using virtual methods) and mobilized rapidly across different settings to provide end-of-life care in many settings.

The framework, particularly its rapid-prototyping approach, proved effective and useful for the purpose of pivoting and developing different course and delivery version rapidly, often within a few weeks only. The list of courses developed during the short time frame from the onset of the pandemic in mid-March 2021 until the submission of this thesis can be found in the Results section, section 4.2

* For more details and information, please see the accompanying paper in the following section “Annexes: Thesis Related Publications”, specifically **Annex 2** [Pereira J, Chary S, Moat JB, et al. Pallium Canada's Curriculum Development Model: A Framework to Support Large-Scale Courseware Development and Deployment. *J Palliat Med.* 2020;23(6):759-766. doi:10.1089/jpm.2019.0292 (Paper published)]

5.2.3. Instructional Design

While there are many definitions for *curriculum*, *curriculum development* and *curriculum design*, they broadly include the competencies to be acquired, learning objectives, teaching and learning strategies, delivery methods, course content and materials, learner assessment and program evaluation approaches.(127) They also encompass planning, which involves identifying the needs, resources required, and drivers and barriers to implementation. The term *instructional design* is often used interchangeably with *curriculum development*, but some reserve it specifically to that element of curriculum development that relates to the learning experience, including the delivery and learning strategies.(128) This is also referred to as *learning design*.

To be effective, palliative care education interventions such as the LEAP course need to be informed, among others, by evidence and best practices related to curriculum development and design. (123,134,312–314)

Designing palliative care continuing professional (CPD) courses for large-scale, national deployment requires decisions about various design elements, including competencies and learning objectives to be addressed, overall learning approaches, content, and courseware material. Designing for interprofessional education (IPE) adds additional design complexity. (105,108)

Several design elements present themselves in the form of polarities, resulting in educators having to make choices or compromises between the various options. These include, among others, which professions to target and how to best support interprofessional learning, class sizes, course length and content volume, courseware flexibility, regional adaptations, facilitator criteria and learning methods. In some cases, compromises have had to be made between optimal perfect design and pragmatism. I and my team explore these in more depth in the accompanying paper (see **Annex 3**-published).

The specific use of the term “design polarity” is unique in this paper as we found no other literature that uses this terminology and explicitly calls out the polarities. I believe that this is a unique contribution of this paper not only to palliative care education, but also to health care continuing professional education (CPD) and interprofessional education (IPE).

I and the team I led also describe in the paper (**Annex 3**) the learning theories and approaches that underpin Pallium Canada’s interprofessional Learning Essentials (LEAP) courses. The design is particularly anchored in social constructivism theory, cognitive flexibility theory and collaborative learning.(133). We believe these lend themselves well to CPD and IPE.

The results of the Commitment-to-Change, Change in Competencies and Integrate studies reported in this doctorate work largely endorse our design assumptions and decisions, including the theories

to apply and the learning methods to use.

Future directions and research

This paper presents multiple opportunities for research in several areas, including palliative care education, interprofessional learning and continuing professional in general. There are several opportunities, for example, for empiric evidence around some of the learning methods used, such as the “Not Quite Right” video approach in which the communication videos show behaviour that has both good and bad elements and is in essence mediocre. This approach was deliberately chosen because in the early phases of Pallium (2000 to 2003) we found that videos that demonstrated either very good behaviour or very poor behaviour seemed to stimulate less cognitive engagement and reflection than videos that were mediocre and made the learners feel “not bad but there is something about it that is not quite right”, thereby soliciting more discussions (which is what trigger videos should do).

The area of communication skills is also ripe for further study. What, for example, given the constraints of a short course that is deployed at a national level, the optimal way of teaching communication skills? Simulated patients are often an optimal approach, but not viable or realistic for the goals of this program. (260) While we have used communication trigger videos and, to a lesser degree, role play in our courses, there are opportunities for comparative studies.

Strategies to better address specific profession groups’ learning needs and scopes of practice need to be explored and tested. Online learning, including flipped and hybrid options, provide a potential solution to addressing the design challenge related to addressing profession-specific learning needs in IPE. We have started to develop profession-specific self-learning modules to complement the other course components. Moreover, content that introduces learners to contributions by other professions can also be introduced and then highlighted in the live webinars.

Increasingly, nursing aides are also being included in LEAP training (LEAP Nursing Aide or LEAP NA), particularly as these providers play key roles in providing care in the home and long-term care (nursing homes) settings in Canada. A new LEAP Personal Support Worker (PSW) course has also just been launched. These LEAP PSW and LEAP NA courses are online self-learning modules. The plan is to then have them participate in interprofessional classroom or live webinar sessions alongside other professions. The premise is that they will feel more confident to participate alongside other professions once they are empowered with some basic knowledge and understanding of the field. These assumptions need to be studied.

* For more details and information, please see the accompanying paper in the following section “Annexes: Thesis Related Publications”, specifically **Annex 3** [Pereira J, Giddings G, Sauls R, et al. Navigating Design Options for Large-Scale Interprofessional Continuing Palliative Care Education: Pallium Canada's Experience. *Palliative Medicine Reports* 2021 2:1, 226-236. doi.org/10.1089/pmr.2021.0023 (Paper published)]

5.2.4. Learner Experience

Main findings and implications

In this study involving over 3000 participants, a large majority of professionals (75% to 99.6%) across different professions – including physicians, nurses, pharmacists, social workers and other allied health professionals – rated an interprofessional CPD palliative care course highly across several facets related to the learning experience. These results confirm decisions made about the LEAP course instructional design, including its learning methods and interprofessional approach.(315) This is particularly encouraging as designing for large scale deployment while simultaneously addressing the learning needs of several professions through an interprofessional CPD curriculum can be challenging.(89,107,315–318)

Designing an interprofessional CPD curriculum can be challenging.(89) (315) Designing for large scale national deployment adds another layer of complexity. (315) Intentional instructional design is required to, among others, address different lenses used by different professions in their clinical and learning activities.(316)(107)(317)(318) To this end, Pallium Canada’s LEAP courses incorporate instructional strategies such as integrating cases that resonate with and solicit input from various professions, facilitator training to support IPE, and interprofessional curriculum and facilitator teams.(315)

Satisfaction with the learning experience across different facets, while overall favourable across professions, did show variability across and between profession groups. With some exceptions, alignment was generally noted between physicians and nurses as a pair, and pharmacists and social workers as a separate pair. Physicians and nurses, for examples, rated the course highest with respect to being relevant to their practices and addressing their learning needs. The level of endorsement on the part of pharmacists and social workers, although favourable, was lower. The variability in experience can be explained by the professions’ respective scopes of practice and competencies.

The variability in experience can be explained by the professions’ respective scopes of practice and competencies. Some “palliative care approach” competencies are shared across professions, others are shared but vary in depth and breadth from one profession to another, while others are profession specific. There are more competency overlaps between physicians and nurses, than there are between these and pharmacists and social workers. Pharmacists focus more on pharmacological aspects of care (recognizing that competencies related to communication and recognition of psychosocial distress also apply) and consequently may find the modules and materials related to psychosocial and spiritual care less relevant. Conversely, social workers may find pharmacological and physical symptom aspects less relevant, and social aspects of the course perhaps not sufficiently addressed.

The responses of the “other” profession group (mainly of physiotherapists, occupational-therapists, dieticians, spiritual care workers and administrators) aligned with those of physicians and nurses. This was unexpected given their practice scopes. An explanation, hinted at by the open-ended responses, may be that these professions appreciated being included in the course and learning of the many facets of palliative care and the experiences of other professions.

Learners drew attention to several advantages of learning with other professions, including exposure to what different professions offer to provide a wholistic approach. The findings are consistent with emerging evidence on interprofessional education (IPE) that shows it is generally well received.(108,284)

Support for IPE in this course was however not universal. Some real or perceived concerns and some ambivalence was described by some learners across professions. Differences in scopes of practice again appear to be a key driver. Underlying these may be factors related to respect of the role of different professions, trust, professional roles, and unequal power.(98,109,319–322)

Within the same profession, there were some different thoughts noted about their profession's scope of practice. Some nurses, for example, did not see medication management and opioid dose calculations as part of their role, while others did. Similarly, differences of opinion were noted amongst physicians with respect to the relevance of the psychosocial domain.

Not all participants who reported issues with IPE in the course were necessarily opposed to it; some were not opposed but offered ideas on how to improve the experience. These included profession-specific breakout sessions or learning activities.

Overall, this study demonstrates that interprofessional palliative care CPD is possible and can be a positive learning experience for most learners across professions. It requires sound adult and IPE learning approaches, guided by the competencies to be acquired and their corresponding learning objectives.(323)

Educators and policymakers may be inclined to recommend courses based on the extent to which they address a specific profession's competency needs and scopes of practice. This may disadvantage courses such as LEAP that promote IPE and interprofessional collaboration. Excluding them or opting to develop separate courses for each profession may ultimately undermine the goal of advancing interprofessional learning and collaboration.(88)

Of interest is that within the same profession, there was ambivalence about some competency areas and scopes of practice. Some nurses, for example, did not see medication management and opioid dose calculations as part of their role, while others did. Similarly, differences of opinion were noted amongst physicians with respect to the relevance of the psychosocial domain.

Educators may at times need to take a position in some competency areas. In select cases, despite calls from some learners to remove or reduce a certain component of the curriculum, educators may need to insist on its inclusion. Removing medication-related knowledge from the nursing component of the curriculum may compromise nursing influence and patient safety. (324) Similarly, limiting psychosocial and spiritual care content from physician curricula will compromise wholistic person-centred care.

This study highlights the importance, especially in IPE, of including the learner experience in program evaluations and using mixed methods to explore it. While good satisfaction ratings do not necessarily guarantee changed behaviours and improved patient care, bad experiences likely decrease the probability of learning occurring and attracting new learners.(223)

Strengths

This constitutes a very large study with over 3000 participants, with relatively high response rates across profession groups (overall 65.7%). The mixed methods approach was used, allowing for insights into several phenomena that may not have been captured had solely one or the other method been used. The qualitative and quantitative methods were therefore very complementary. In evaluating the learning experience, the two global scores (net promoter score and relevancy score) were not solely relied upon; several other facets of the learner experience were included.

Limitations

Two key limitations are identified. First, an instrument that specifically explores learners' attitudes to IPE or interprofessional collaboration was not used. While a number of such tools exist, there is no gold standard and adding one would have added additional burden to the learners who are already completing a battery of pre- and post-course instruments.(325) Second, the limitations of satisfaction-related evaluations is recognized.(234,278)

Future directions and research

Future studies should include specific items in both the closed-ended and the open-ended parts of the questionnaire related to interprofessional learning. Saliency analyses of the qualitative data identified support for interprofessional learning, as well as some ambivalence or dissatisfaction with it. The full extent of these sentiments is not however known. It can be deduced from the quantitative analyses, as inferred from the relevancy and net promoter score (whether one would recommend the course to colleagues) as well as items such as relevancy of cases and overall learning experience, that it meets the needs of different professions to a large degree (with some nuances), but further studies are needed to explicitly study in more depth the phenomenon of interprofessional learning in this course.

The responses of the "other" profession group – which consists mainly of physio- and occupational-therapists, dieticians, spiritual care workers and administrators – aligned mainly with those of physicians and nurses. This was unexpected as their respective scopes of practices are also more differentiated. While an explanation may reside in the qualitative results where participants expressed a greater appreciation for the full scope of palliative care and for being included in the course (as they are often excluded of education programs), this phenomenon warrants further exploration.

5.2.5. Commitment to Change (CTC)

Main findings and implications

This study provides evidence that core palliative care competencies related to providing a palliative care approach acquired during LEAP Core (a two-day continuing education course) were implemented by primary health care professionals across profession groups (physicians, nurses, pharmacists, social workers, other allied health professionals), at least up to 4 months after participating in a course.

Examples were provided by learners of beneficial impact across several domains. These included initiating palliative care early in cancer and non-cancer illnesses, better pain and symptom management, earlier and more advance care planning and goals of care discussions, increased use of standardized clinical instruments to assess patient needs, and improved grief and bereavement care. Learners, especially nurses and allied health professionals, provided examples of how the course empowered them to advocate for improved palliative care for individual patients and services. There were also examples of learners engaging in advance care planning for themselves, family members and friends. Benefits related to interprofessional collaboration were also described, with learners describing improved communication and collaboration with colleagues from other professions.

Overall, 63.7% and 66% of physicians and nurses respectively submitted post-course (immediately after the course) commitment statements. The rates for the other professions were lower, partly because during the study period participation by these profession groups in the CTC statements and reflections were not as actively promoted as for physicians and nurses who needed it to claim continuing education credits or certificates to add to their continuing professional portfolios required by their professional bodies. There were also concerns that placing too many survey demands on the other allied health professionals may have deterred them from participating in the courses. Dolcourt and colleagues, in a study of CTC's submitted by various professions following a 3-day interprofessional CPD program that covered various topics related to cardiology, genetics, pediatrics, dermatology and infectious diseases, noted a differential participation between professions with more autonomy (physicians and advanced practice nurses) versus the professions with less autonomy (nurses and physician's assistants).(204)

Four months after the course, 41.7% of learners who had submitted post-course commitment statements (or 23% of all learners who participated in the courses) completed their 4-months post course commitment reflections. This completion rate for the CTC statements post course is similar to those reported by others, but the CTC reflection completion rate (in this case four months after the course) is lower than expected. (92,119,190–193,195,196,201,326) This may be because of the voluntary nature of this activity (except for those physicians who applied for continuing professional credits).

For learners who did complete the 4-months post course reflections, almost three quarters (72.5%) of all commitments were self-reported as having been implemented. This does not mean that the remainder did not apply what they learned into practice. First, there is evidence that learners who do not submit CTC statements, with or without CTC reflections sometime later, still apply what they learned. Shershneva et al., for example, have discussed challenges related to interpreting CTC implemented versus non-implemented rates.(93) In their studies, they found that a case of a low number of CTC statements does not necessarily mean lack of implementation or lack of any change. Learners do implement what they learned whether or not they submitted CTC statements, but CTC statements is predictive of implementation. (191,196) Opportunities to record additional changes are also lost if the CTC reflection exercise (weeks or months after making the CTC statements after the course) does not include opportunities to report additional changes or new commitments made (this was not done in the LEAP Core and will be added in to future improvements on the CTC approach in LEAP Core).(190)

Low implementation rates may also signal issues with the curriculum, according to Shershneva and

colleagues.(93); for example, the content was insufficiently engaging or challenging to trigger the change, or learners were already practicing what the course is teaching. In our study, the pre- versus post-course changes in knowledge, attitudes and comfort level , as well as the post-course evaluations, indicate that the content was engaging, and relevant and addressed gaps in competencies related to the palliative care approach.

The most common reason for non-implementation was that no opportunity presented itself to implement the commitment (almost 20% of the commitments). These were more likely commitments linked to clinical practices that did not present themselves very often in a general practice, such as use of continuous infusion pumps for opioid delivery and opioid neurotoxicity. Only a small number of commitments (8%) had not been implemented despite opportunities to do so. Others have reported that amongst the most common reasons for non-implementation were time constraints and heavy workloads, and lack of support from leadership or services to implement what they learned.

Other studies have reported similar barriers to implementing commitments. (191,327,328) Rehring et al., for example, described barriers across five categories, namely time barriers (competing demands), clinician (hard to change habits, worry about clinical or legal consequences), staff (staff shortages, lack of training and incentives), organizational (lack of support from managers or leaders, costs, computerized aids, organizational priorities), and patient-related barriers (complexity, beliefs and expectations).(191) The latter is pertinent in palliative care where many patients and professionals are fearful of activating palliative care early.

In our study, some participants reported frustration not being able to implement what they had learned because of workplace challenges such as limited resources or policy barriers. This was also previously reported by Kruse and colleagues in their study related to changing acute care nurse's perceptions on end-of-life care.(122)

Strengths

Foremost, is the large size of the study relative to other commitment-to-change studies. Although only about a quarter of learners who participate in the courses submitted CTC reflections four months after the course, this represents over 1000 health care professionals and over 4000 statements reflected on. Post course over 2500 learners submitted responses, with over 10 000 statements. The post course CTC response rate was very acceptable and welcome (62% to 66% for physicians and nurses), given that submission of a post course commitments statements predict implementation into practice (whether or not there were reflections weeks to months later). (191,196) The information gathered from these large number of statements and reflections is invaluable to understand what the "low-hanging" fruit are in terms of implementation into practice and what the more challenging ones are. These are already being used by Pallium to develop quality improvement (QI) toolkits to aid in the implementation of what is learned in LEAP courses into practice. They also shed light on what the barriers for implementation are, which can in turn inform course updates QI toolkit development.

Limitations

Foremost is the concern that commitment reflections, including degree of implementation and examples of implementation (or non-implementation) are self-reported and therefore vulnerable to several biases, including social-desirability and attribution biases, a limitation that is acknowledged by educators and researchers who use the CTC approach. (93,191,204) This concern is amplified by studies from physician-related CPD or CME that show that physicians have limitations in their abilities to accurately self-assess their performance.(329) Our study was not designed to independently confirm the implementation rates and verify the examples provided by the learners; whether they occurred and their quality or effectiveness. It must be noted that CTC approach in the LEAP courses is a low-stakes activity in that the issuance of CPD activities is not linked to whether learners implemented a change or not. Simply submitting a reflection suffices. The similarity of the non-implementation rates (with examples of barriers and reasons) with non-implementation rates in other studies indicate for us trustworthiness of our results. Reassuringly, self-reporting in CTC has been shown to be a valid indicator of clinician behavioural change and of implementation in practice. (93,191,196,202,204,330,331) Gillan and colleagues have noted that many items in instruments meant to assess change in behaviour and impact on patient care and the health care system rely on self-reporting. (325) While the lack of objectivity is recognized, in the absence of a gold standard and in the absence of pragmatic, easily available methods to collect reliable objective data at that level, self-reporting remains an acceptable approach. Others had previously expressed similar concerns.(284)

There may be a self-selection bias in learners who completed the CTC; those who submitted them may have been more motivated to implement change. However, there is also the possibility that our rate is an underestimate in that changes implemented by those who did not complete a CTC were not captured (because they had not been self-reported), and those who did report likely implemented many other changes in practice, above and beyond those they committed to reflected on.(190)

Lastly, the CTC statements were not, as is suggested by some, classified into categories such as practice changes, additional learning activities, attitude changes, and confirmed existing practice.(93)(326)

Future research and work

Future studies should explore the extent to which non responders (learners who did not submit CTC statements post course, or only submitted post-course statements and not the 4-months post-course) implemented changes into practice because of participating in the courses. Studies corroborating the self-reporting by learners with actual clinical practice, such as clinical audits, may also provide further insights.

Several modifications can be done to improve the CTC methods used in the LEAP courses. Some recommend that several options be offered when undertaking CTC reflections, options that reflect various degrees of implementation, such as “fully implemented”, “partially implemented”, “could not be implemented at this time”, and “will not be implemented”.(190) This would be preferable over a dichotomous scale of “yes (implemented)”/“no (not implemented)”. Some learners opt to

learn more about a topic or approach as their post-course commitment, rather than going directly to implementation at a practice level. (93,192) Sometimes learners find educational events useful to confirm their current practices and our questionnaire did not explicitly allow learners to use the CTC statements for this, although this is covered in the LEAP courses' evaluation surveys that learners complete post-course about the learning experience. (93,192,196,202) Opportunities to describe new commitments or changes should also be included. (326)

Strategies should also be explored to enhance the implementation of commitments. These may include periodic reminders and follow-up support activities and implementation guides.(194,200) Commitments are also more likely to be implemented if they are clear, measurable, relatively easy to do, realistic, are linked to completion timelines, periodic reminders are provided, learners have direct influence and control over the changes, are supported by the organization and leadership, and learners feel strongly about them.(57,92,330,332) Vague or unmeasurable commitments are less likely to be implemented. Other strategies may include checking in with colleagues to discuss progress. Pre-emptive education about potential barriers (gleaned from the CTC reflections of previous learners) did not bring about a greater number of changes.(198,204) While most such statements are aligned with the course goals and learning objectives, some studies report unanticipated commitments. (189) This was very uncommon in our study. However, Pallium Canada needs to implement policies on how to address this should it occur and involve a commitment that represents poor or even dangerous practice. (93,189) It could be argued that there is an ethical obligation on the part of the course organizers and presenters to address these with the learners. For this reason, some recommend that CTC statements and reflections be linkable to learners.(93).

5.2.6. Impact on Knowledge, Attitudes and Comfort

Main findings and implications

In this large study of primary care health care professionals working mainly in primary care settings (community clinics, family health clinics, home care), significant improvements were noted across profession groups in the domains of knowledge, attitudes, and comfort related to providing a palliative care approach. These were accompanied by high effect sizes, again across the three domains and across professions. This is encouraging and provides evidence that, at Kirkpatrick's Level 2, (233) and Moore's Levels 3A and 3B, (234) there is a positive impact of this relatively short course of two days duration (total 14 hours). These findings align with previous studies that report improvements in different competency areas following relatively short education interventions, including in palliative care, (24,114–119,278) Short education interventions, such as this two-day LEAP Core course may, if designed appropriately,(123) could therefore have a positive impact.

The improvements in the attitudes domain are noteworthy, especially because attitudes constitute an important competency.(333) The LEAP Attitudes survey explores three main constructs related to attitudes toward providing a palliative care approach; attitudes to caring for persons with serious illnesses and who are dying, attitudes towards initiating palliative care early in the illness trajectory and across cancer as well as non-cancer illnesses, and attitudes towards one's own role in providing a palliative care approach.

Attitudes to various aspects of care are however generally notoriously difficult to measure and

researchers are challenged with the ceiling effect phenomenon, often noticed in social and behavioural sciences.(334,335) Social desirability biases and response-shift bias may contribute to the ceiling effect in these situations.(336) By *ceiling effect* here, it is meant a measurement limitation that occurs when the highest possible scores or close to the highest scores on a test or measurement instrument are reached, leaving little room for improvement (at least in measurement). A ceiling effect can occur with questionnaires, standardized tests, or other measurements used in research studies, including in the survey we used in this study.(337)

In the study, the significant improvements in the pre- versus post-course Attitudes scores could be interpreted in different ways: a) there was indeed a positive shift in attitudes towards caring for persons with serious illnesses (which is believed to be the case as there is corroborating evidence from the Commitment to Change accompanying study; b) there was a change and it could be larger than what the survey results show; and c) the changes were statistically significant but not “clinically” (educationally) significant. Again, the results of the commitment to change study suggests that there was a shift.

The pre- versus post-course improvements in the comfort scale are notable, especially for their large effect sizes. In the LEAP Comfort survey, self-perceived comfort is used as a proxy for self-efficacy. (338,339) Bandura proposes, in his concept of self-efficacy, embedded within social cognitive theory, that the greater the individual’s perceived efficacy, and the more rewarding the outcome expectancy, the more likely the individual is to successfully perform a specific behaviour or skill. For example, if learners believe that they do not have the skills to initiate end-of-life care discussions and they feel that if they attempt, they will be unsuccessful or cause distress, they are less likely to initiate such discussions.

To assess the concept of self-efficacy, we chose to use the language of “comfort” in the LEAP Comfort scale; if one is not comfortable doing something, if it places one at ill-ease, one is less likely to perform it. We used the language of “comfort” rather than self-perceived competency or effectiveness because it was felt that it is less vulnerable to social desirability biases or to erroneous self-assessments of one’s ability or effectiveness in doing something; it is believed that the language of “competency” or “confidence” (which are often used when assessing self-efficacy) may be more vulnerable to these biases than recording ones feelings – in this case of comfort). This does not however necessarily mean that feeling comfortable translates to high quality or effective performance.

The significant differences found between the learners’ pre-course comfort scores compared to the post-course post-retro scores warrant attention. As a reminder, learners completed the LEAP Comfort instrument pre-course, and then again immediately post course (post-course). After completing the instrument post-course, learners were asked to complete another identical Comfort survey, but this time learners were asked to reflect back to before they did the course and then rate their comfort levels then, in hindsight (Post-retro survey). This approach has previously been used by others and is also referred to as “retrospective post-then-pre”.(340–342) It has been proposed as a method of assessing the response-shift. (343,344) The “response shift bias” phenomenon is a source of contamination of self-report measures that result in inaccurate pretest ratings. (343,344) In the traditional “pre-post” design, learners answer questions before an educational program, participate in it, and then complete the same questionnaire upon completion. In the “post-retro” or

“retrospective post-then-pre” design, both before and after information is collected at the same time, namely at the end of the course. The difference between the “pre-post design” and “retrospective post-then-pre design is referred to as response shift, which our study found. (343,344)

Although in this study, only short-term changes in knowledge, attitudes and comfort were studied (immediately after completing the course), the results of an accompanying study reported in this doctoral work on commitment to change statements and reflections provides evidence for longer term impact, at least up to four months after completing the course. Others have also reported long term impact of short courses. (114,115,119)

Strengths

There are several strengths, foremost of which is the very large numbers and relatively high response rates for a study of this type. The internal consistency of the instruments, one measure of reliability, is moderate to good, particularly as they are relatively short instruments. The findings in this study were able to be corroborated with an accompanying and simultaneous study of the same cohort using commitment to change analyses to show implementation of what is learned into practice four months after the end of the course.

Limitations

The study has several limitations. First, self-reporting as in the Comfort survey may be problematic as limitations in the accuracy of clinicians’ self-assessment are recognized.(329,345,346) Second, only short-term impact in the knowledge, attitudes and comfort domains were assessed . These competencies may change over the long term. The findings though of the commitment to change analysis of this same cohort of learners shows significant implementation into practice of what was learned at 4 months post course. Third, limitations of effect sizes is recognized. Reported cut points for interpreting effect sizes are arbitrary.(216) Effect sizes are also sensitive to false influences such as which standard deviation is used (pooled SD being preferred), whether there have been corrections for bias, distribution of the data, and reliability of the instrument or measurement. Fourth, only the assessment of the knowledge, attitudes and comfort domains were conducted and not “higher evidence” of impact such as use of simulated patients or objective standardized clinical stations to assess performance. The nature of the course – short and meant for large scale national deployment – does not lend itself to these more objective assessment as they require considerable resources. Fifth, the small number of pharmacists and social workers makes it difficult to interpret and generalize the results related to those profession groups. Last, the instruments for the social workers, particularly the Knowledge Quiz, may have limitations in assessing the scope of practice of this profession group.

Future research

This work generates several questions that warrant future research. These include further analyses of the psychometric properties of the instruments, including item analyses. These could inform further refinements to the instruments. This is particularly applicable to instrument versions for social workers, pharmacists and other professionals; they seem to be robust for physicians and

nurses. The long term impact of the course on knowledge, attitudes and comfort retention needs to be studied. Finally, the concept of “comfort” relative to “competency” and “confidence” also needs exploration. Emerging evidence suggests that confidence appears to be associated with competency after training.(347)

5.2.7. INTEGRATE into practice

In this study, a 3-year intervention to build capacity for early palliative care delivery in primary care was evaluated. The intervention (called the INTEGRATE model) was multi-pronged and included LEAP Core training, formal integration into the four practices of clinical tools such as the *Surprise Question* to identify patients needing a palliative care approach earlier, enhanced advance care planning processes and tools, and more rapid and clearer connections to home care services. The study revealed significant increases in confidence to deliver a palliative approach to care across healthcare providers from different professions, increase used palliative care tools leading to increased advanced care planning discussions and earlier identification of patients with palliative care needs (especially in non-cancer populations). Participants also reported increased and improved goals of care discussions, home visits for palliative care, and referrals to community palliative care services.

Education alone may not necessarily change behaviour and lead to changed outcomes in clinical practice. Education is a required condition, but alone may be insufficient. In this project (and accompanying study), we combined education with resources and push functions like integration of the tools into the practices’ electronic medical records and early referrals to the home care services. The use of “push” or other strategies that complement education and enhance their application into practice are well described in the quality improvement, implementation science and in the continuing medical education literature.(112,277,348–350) The commitment to change approach, is another way to encourage application of what was learned into practice.(190)

In our study, while there were some similarities across the participating clinics (such as interprofessional care, caring for a rostered population which are assigned to that clinic, and providing primary care), there were also several differences which ultimately affected the implementation of the intervention and could explain the varying results across the clinics (rates of advance care planning, identification of patients who required a palliative care approach, and referrals to home care services). The variations included team constitution and roles of various team members, operations, the type of electronic medical record used by the practice (there are different vendors and platforms), and ultimately (but not explicitly studied) readiness for change. These variations present special challenges for evaluators.

Education, like public health and social interventions, are often interventions with several interacting components and influenced by many extrinsic and intrinsic factors.(271) Moreover, they are undertaken within a health care system that is in itself complex. The family clinics involved in this study constituted four micro complex systems, each one operating within a larger complex system (where factors like external care providers such as home care agencies and their respective processes and interventions influence care as well).

Some of the barriers that influenced the success of the project were experienced in some clinics but not in others. These included technical challenges with documentation in electronic medical records

in select practices, staff turnover, and practice type. Practices with more internal interprofessional resources generally experienced fewer barriers integrating the model into their routine workflow compared with those that did not. These need to be accounted for in evaluations that attempt to explore the impact of an education intervention.

It is therefore difficult to distinguish the extent to which each component of the INTEGRATE intervention, including the LEAP Core course, led to the observed results. This is a common challenge in education research or research of any complex healthcare intervention. As a result, education researchers and evaluators call for approaches such as the realist approach, developmental evaluation and contribution analysis to evaluate these types of multipronged interventions in complex environments.(239,240,273,275,286)

Providers also highlighted several enablers that facilitated the implementation of the INTEGRATE Project. Common enablers across sites included the team-based LEAP training, which created a common language and approach; the dedicated home care coordinator; physician champions; and the use of electronic medical records to alert providers about eligible patients (e.g., based on age), to support documentation of the *Surprise Question* and ACP conversation, and to embed educational resources and referral forms. The critical role of education was highlighted in an accompanying study of the use of the INTEGRATE Model in cancer centres in the same regions as the primary care practices in this study, where the training also contributed to success of implementation and improved patient identification, earlier initiation of advance care planning and improved goals of care discussions, and earlier referrals to home care services.(266) It has also been highlighted by many others.(43,49,51,77) One strategy that was not used in the project and that could have enhanced success further was the use of practice facilitators.(351) Practice facilitators have different roles, but largely support and help practices, usually through quality improvement strategies, to implement and sustain change.(352) These however required funding and dedicated resources, which were not available to the project at the time.

Of interest is that only 1 practice in the four reached the hypothesized 1% of patients in primary care who are expected to die within a year and would benefit from palliative care.(353) The rates varied from 0.2% to 1.5% across the four clinics. While studies have looked into what proportion of decedents at a population level are in need of palliative care (primary or specialist level palliative care) – and found that it ranges from 35% to 75% depending on the criteria and approach used (354–357) – there is a paucity of studies that have systematically identified what percentage of a primary care practice’s population require palliative care (recognizing variations in practices’ case mixes).(47,56,358,359) A recent Dutch study of two general practices, when using a standardized approach to identifying patients with palliative care needs (using the SPICT instrument which is similar to the Gold Standards Framework instrument), found that 0.7% of the practice population and 2.6% of the other practice’s population needed palliative care.(359) These numbers do not include patients with serious illnesses who did not meet the SPICT criteria (i.e. patients with life expectancies of years or who have high functional statuses). The numbers of 1% or 0.7% to 2.6%, as well as the numbers attained at these four clinics, may therefore be an underestimate of the numbers of patients rostered in general practices who would benefit from a palliative care approach.

Our study identified some of the reasons that could be contributing to this lower-than-expected identification rates in the participating practices. These included persistent discomfort initiating

advance care planning conversations, varying levels of patient and family readiness for these conversations, and concerns by some that initiating a palliative care approach (including engaging in advance care planning discussion and assessing patients' needs with instruments such as the Edmonton Symptom Assessment System/Scale added to physician workload. Interestingly, the latter diminished with time as the INTEGRATE model was normalized over time.

Study limitations are discussed in Annex 4, as are the study strengths. The latter included a mixed methods approach with surveys and with interviews that allowed a deeper understanding of the phenomena and the nuances across the four practices. Future implementation efforts of the INTEGRATE model should also consider doing readiness for change assessments prior to initiating the change and undertaking strategies such as socializing the concept in preparation for implementation.

The INTEGRATE model, which included the LEAP Core course as a key component, was shown to be effective in improving patient care.

5.2.8. Pallium Canada's New Evaluation and Research Framework

The work related to this objective revealed the presence of multiple frameworks, models, approaches and lenses that can be adapted or adopted for the purposes of evaluating and researching palliative care education programs. The presence of so many models, frameworks and approaches can be overwhelming to an educator. We synthesized these and developed a cohesive framework for Pallium Canada's LEAP and ECHO programs.

Several underlying principles in education evaluation were identified. These included: a) need to evaluate impact beyond learner feedback and acquisition of competencies; b) evaluate implementation alongside impact and outcomes; and c) approach education evaluation from a complexity lens. Evaluators need to be cognizant of these as they move forward with evaluating their education programs.

Two trends warrant additional discussion. These include increasing attention on evaluating implementation and not only impact and outcomes (the latter two are often the foci of evaluations) and increasing recognition that education evaluation needs to incorporate a complexity lens, especially evaluations of large continuing education programs like the LEAP program.

Campbell and colleagues stress that education programs are often interventions with several interacting components and influenced by many extrinsic and intrinsic factors.(271) They also occur in complex systems that is the health care system. In addition to differentiating between the relative role of each of the components, there are additional challenges such as the difficulty of standardising the design and delivery of the interventions across different settings, contexts, and jurisdictions.(270) In many cases, this reduces the appropriateness of using approaches such as controlled and randomized controlled research methods that are commonly valued in health care. There are also organizational and logistical difficulties of applying experimental methods to service or policy change interventions and accounting for the various causal chains linking intervention with outcome and the relative strengths of each. More realist-based approaches,(239) embedded within real-life contexts, are called for.

The Realist Model, for example, seeks to establish what works, for whom, in what circumstances, in what respects, to what extent, and why.(239,240) In health education it aims to answer the

questions: What kinds of educational interventions will tend to work, for what kinds of learners, in what kinds of contexts, to what degree, and what explains such patterns? Wong and colleagues stress that both context and mechanism must be systematically researched along with intervention and outcome. This implies that *“research or evaluation designs that strip away or ‘control for’ context with a view to exposing the ‘pure’ effect of the intervention limit our ability to understand how, when and for whom the intervention will be effective.”*(239)

A realist evaluation of a medical education intervention is ultimately an iterative explanation-building process and might draw from one of several approaches, using them judiciously, flexibly, and in combination. Realist research uses a mixed methods (qualitative and quantitative) approach to gathering data in order to test the proposed context-mechanism-outcome (CMO) configurations of the intervention under investigation.

Van Melle et al propose the Contribution Analysis approach.(269) They argue that education interventions are often approached using an attribution analysis lens, which works well for reproducible interventions with clearly definable objectives that can be achieved relatively quickly. Under these conditions, a direct causal relationship between the education intervention and the outcomes may be inferred. Typical attribution approaches include positivist, traditional reductionist experimental methods such as comparison groups and randomization.(269) However, they are less useful when complex real-world contexts and interventions apply. Controlling for variables is challenging, as is the task of ensuring standardization across settings and context to try and achieve consistency and reproducibility. Contribution Analysis is therefore designed to evaluate complex interventions by moving from attribution analyses, where evaluators look for direct causal relationships between the program activity and outcomes, to an approach that focusses on the question: “How much of a difference (or contribution) has the program made to the observed outcomes?”.(269)

In the environmental scan, 21 frameworks (including models and approaches) that were deemed most germane for the future evaluations and research of the LEAP program were shortlisted. They were organized into four categories based on their focus; a) “Impact”, b) “Implementation”; c) Economic evaluation; and d) Combinations. Several additional concepts were identified, including pragmatism, quality improvement, and theories of change which serve as useful lenses through which to approach evaluation.

The large number of existing frameworks and their numerous corresponding constructs presents educators with the quandary of selecting between them. Several factors influence selection. These include the goals of the evaluation, the requirements of stakeholders and funders, and the available resources.

Educators need to choose strategically what to evaluate as it is not possible to evaluate everything. A critical question is “In this program, what are the key evaluation goals?” Although program improvements and implementation decisions are often key drivers, in some cases reputational risk and demands from funders or policymakers may need to be considered. Compromises are often needed as long as rigor and relevance are not undermined. Outcome measures and goals must be selected judiciously to ensure they are appropriate, accessible, realistic, feasible, and relevant.(303,360)

The Evaluation and Research Framework (referred to as the framework) that we developed as a result of the environmental scan plan incorporates two main frameworks, namely the New World Kirkpatrick Model (233,234) and the Consolidated Framework (226,227) for Implementation Research. However, it also draws elements from several lenses and other frameworks and approaches, including quality improvement and pragmatism. The Quadruple Aim (improved patient experience, improved quality of care and patient safety, reduced costs and improved efficiencies, and improved healthcare provider experience), which stem from quality improvement, have been used to determine the constructs to be evaluated going forward to assess the impact of LEAP courses.(288)

The flexibility built into Pallium Canada's new evaluation framework allows one to incorporate some aspects and constructs from other approaches that help fill-in gaps or address program evaluation priorities and realities. Flexibility may however risk losing the integrity and robustness of proven approaches. Furthermore, it reduces opportunities to compare across programs. Flexibility, given the context of complex interventions in complex environments, is essential but excessive modifications may lead to loss of focus and direction.

Interpreting evaluation and research findings requires prudence. Positive learner reactions may ultimately not improve care.(301) Complexity has several evaluation repercussions.(270) First, a lack of impact may reflect implementation failure rather than intervention design flaws. Second, identifying a single primary outcome may not make best use of the data; a range of measures is often needed, including unintended consequences. Third, ensuring strict adherence to a protocol may be inappropriate and adaptation to local settings may be needed.

Finally, consideration needs to be given to whether evaluation and research activities require research ethics board (REB) reviews and approval. Although much of program evaluation can be considered quality improvement and possibly exempt from these reviews, some do require it and the prudent approach is to obtain REB advise when uncertain.(361–363)

Limitation

The major limitation of the new framework for Pallium Canada is that it is untested and over time its effectiveness, feasibility and utility will itself need to be tested and evaluated.

5.3. Limitations: Overall

The limitations of each of the studies are described in the previous section, Section 5.2, separately. Collectively they make up the limitations of the total body of work.

There are several additional limitations at a higher level. The first limitation is one that is well described in qualitative research methods, relates to reflexivity.(162) Reflexivity is often not described in health education qualitative studies.(163) This doctoral work represents over 20 years of work and considerable personal investments and sacrifices. I have believed strongly in the need to build primary level palliative care capacity and in the role of education (supported by other strategies) to spread those core competencies. As such, my objectivity in designing and leading the studies, analyzing and interpreting the results, and reporting them, may be compromised. While I

have tried my best to keep in mind this relationship and not let it cloud my scholarship, I cannot guarantee that that has not happened. Fortunately, throughout all of this, I have worked with teams that have included experienced researchers that have worked at an arm's length from Pallium's work, and they have not hesitated to call to attention analyses, interpretations or reporting that did not align with the actual findings. This has mitigated any loss of objectivity I may have experienced. (364)

Second, at the outset of the doctoral work, I had not envisioned the last objective; namely developing a new evaluation and research framework for Pallium Canada's LEAP Program. However, as the work progressed and I become more acquainted with the literature through my studies, and started analyzing the results, I came to the realization that Pallium Canada's evaluation framework used over the last decade needed a complete overhaul. The last objective was therefore added later in the doctoral work. While it may represent an add-on, I believe that it is important and relevant to include in the doctoral and a critical component in any educators' toolbox. The science of implementation and of evaluation, and best practices associated with each of these, necessitates that any educational lead have advanced knowledge and expertise in this area.

There are clearly many aspects of deploying a large national palliative care CPD program, designing the curriculum and studying it, that I have not studied in this doctoral work. This includes more in-depth analysis of implementation in different sites and in different jurisdictions. Canada's geopolitical reality, including how health care is federally organized and delivered, differs from one province to another. The INTEGRATE project was undertaken in one province; the implementation may unfold differently in another province. Canada's reality is also that a large part of it geographically consists of rural and remote regions. I did not specifically tease this out in the work, although many learners in the courses worked in rural and remote communities.

I have not conducted a large-scale return on investment (ROI) study of the LEAP program or its LEAP courses. However, other have, particularly with the paramedics program and its LEAP paramedics in the provinces of Nova Scotia and Prince Edward Island. That study serves as a guide for future ROI studies.

There were some unique limitations of the methods I used, most of which I have already elaborated on in the preceding discussion. This included case study limitations, self-reporting by learners and limitations of environmental scans that do not include systematic reviews when reviews are done.

5.4. Strengths: Overall

The strengths of each of the studies are described in Section 5.2 individually. Collectively they make up the strengths of the total body of work. At a higher level some additional strengths are identified.

First, to understand palliative care CPD, I have approached it from several angles simultaneously, constituting a triangulation approach. This has included studying different facets, using different activities and research approaches, and included mixed methods approaches to better understand the topic. In doing so (specifically the studies on the Learner Experience, the Commitment to Change and the INTEGRATE model study demonstrate), a deeper understanding has emerged, which also captures in some cases nuances that may not have been evident had only one study and one method

been used.

In the context of using CTC to evaluate the impact of an education intervention or program, experts have stressed the need to include different sources of evaluation information, and not relying solely on CTC statements and reflections.(93,190,201) Change in clinical practice is complex and the extent to which a single educational activity effected change is often not clear. In the studies undertaken, we tried to take that approach of using different methods and studies to understand the phenomenon.

Second, the main body of the work has involved large cohorts – thousands in most cases. These studies constitute amongst some of the largest reported in the palliative care education literature.

Third, in stepping back to reflect on the quality of the work, I applied the lenses of some tools that assess the reporting of different types of papers. This included the checklist proposed by Crowe et al. and Stake’s checklist to rate a case study proposal(151) (365), and two guidelines to assess the quality of qualitative studies, namely those by Mays et al., and Lockwood et al.,(364,366,367) I approached the environmental scan using the guidelines of the American Agency for Healthcare Research and Quality (AHRQ).(368) By these I believe that the reporting of these studies largely meets the criteria.

5.5. Future work and research

The opportunities and directions for future work and research are described in Section 5.2 in each of the studies separately. Collectively they make up the strengths of the total body of work. These can be divided into the following categories: a) Spread and Scale of Pallium Canada and its LEAP Courseware; b) Curriculum development and instructional design; c) Assessing competencies; d) Assessing impact; and e) Assessing implementation.

a) Spread and Scale of Pallium Canada and its LEAP Courseware

Some of the LEAP courses, including courses such as LEAP Hospital and LEAP ED have been successfully piloted and launched. The uptake to date has been very localized with minimal spread and no signs of scale-up. This could be explained by the fact that a few months after their launch (having undergone the cycles of piloting), the COVID-19 pandemic struck. The attention became pivoting the principal courses, namely LEAP Core and LEAP LTC, to online delivery and then spreading and scaling these. With the pandemic now less intense, it is time to start remarketing and promoting LEAP Hospital and LEAP ED, especially since the pandemic had exposed needs in these areas (See Pallium COVID-19 webinars at <https://www.pallium.ca/palliative-care-resources/>)

There should also be more attention placed on understanding the implementation of the different courses, especially the new versions, in different settings, jurisdictions and contexts. This is discussed below under bullet (d).

The social enterprise model, which has proven very helpful in making the LEAP program sustainable over the last few years, may come under threat with the “normalization” of virtual learning following the COVID-19 pandemic. This offers opportunities but also new risks, especially around a growing

expectation by learners for access to free learning materials and resources. One sees, for example, the increasing emergence of concepts such as *massive open online courses* (MOOCs)(369–372) They are proving to be disruptive technologies in their own right, technologies that change the usual way of doing or looking at things, much like online shopping has done in the last half-decade, accelerated by the COVID-19 pandemic.

While they present opportunities, concerns of the viability of established resources and infrastructure are being expressed.(373–376) Who, for example, pays for their development and maintenance? Who oversees their quality and maintains them? In the case of Pallium Canada, funding would have to come from sources other than course registrations and government funding. Total reliance on volunteerism is neither appropriate nor feasible as these programs are often developed by persons who need to secure a career and livelihood. Advertising in health education circles, for justifiable reasons, is discouraged to avoid undue influence by industry and large pharma on learners and on curriculum content.(377,378) These same concerns have, in jurisdictions like Canada, significantly reduced funding from these sources for even more traditional classroom or web-based learning.

Various business models are proposed for MOOCs.(374–376) Pallium Canada needs to study these and likely pivot itself again to ensure staying relevant and maintaining its mission and vision of spreading the palliative care approach so that every Canadian who needs palliative care receives it, no matter by whom and which care setting they find themselves in.

Perhaps these concerns are misplaced as the radical change of health and medical education was also forecast in the late 1990's and early 2000's with the increasing appearance of e-learning and online learning.(379–381) While online learning did materialize and proved very useful in certain circumstances (256–258), it did not accelerate at the large scale that was initially predicted. However, the COVID-19 pandemic has changed many things, and it could be argued that virtual learning, like virtual care and visits (382), and virtual shopping, is here to stay in a significant way.

b) Curriculum development and instructional design

Following up the discussion in the preceding paragraphs, considerable opportunities exist to study in more depth the dynamics and differences, in terms of impact and roles, between classroom-based learning and virtual learning, as well as with hybrid or flipped learning models.(383–385)There are also opportunities to harness virtual learning to address some of the nuances uncovered in our study of the learner experience related to interprofessional education. While supporting interprofessional learning, which this doctoral work confirms is possible and viable, there are opportunities to fill in the gaps with respect to better addressing different professions' learning needs and scopes of practice. Some of these are described in the different sections of the studies presented in this thesis.

Ongoing efforts are needed to further integrate palliative care in undergraduate and postgraduate curricula of the health professions. While there have been some advances over the last two decades in Canadian medical and nursing schools in this area, many gaps still remain.(84)

c) Assessing competencies

Ongoing work is needed to fine tune the various instruments and approaches used to assess the

impact at a learner level of the LEAP courses (while still retaining their primary use as learning tools rather than assessment tools). This includes more work on exploring the psychometrics of the tools, and determining which are most relevant to reduce the burden on learners. Smart phones and their new media such as apps also present new opportunities for doing “on-the-spot” surveying in a way that is non-burdensome while increasing response rates and capturing input from what is happening at the practice level (to better assess impact).

The commitment to change approach has surprisingly not been widely used in palliative continuing education. It is a multipurpose tool that, among others, serves to promote application of new learnings into practice and to serve as a program impact evaluation tool. There are opportunities to broaden it and, in the case of the LEAP program, finetune it and study its role further.

In our study, for example, through the CTC approach, we identified barriers to implementation of what was learned in the courses. Some course participants reported frustration at not being able to implement what they had learned because of workplace challenges such as limited resources or policy barriers. This was also previously found by Kruse and colleagues in their study related to changing acute care nurse’s perceptions on end-of-life care.(122) There are opportunities to leverage this to spread a new LEAP course, namely LEAP Leader, in partnership with Canadian health care leader organizations, to introduce leaders and managers at different levels (senior, mid and junior) to the principles of palliative care and the importance of integrating in the healthcare system.

Studies indicate that learners reporting high levels of confidence (or efficacy or comfort) after a course were more likely to implement the changes into practice than those with less confidence.(201) This merits further study in the LEAP courses, particularly as comfort is an important component of the evaluation strategy. Having said this, research is also needed to better understand the links (or not) between the concepts of comfort, confidence and self-efficacy.

d) Assessing impact and implementation

Efforts need to be scaled up to assess the impact of the LEAP program at the levels of patients, the health care system and return on investment.

However in evaluating education programs at the “higher” levels, we should not ignore the learner experiences as these remain relevant, especially if we are to fully understand and optimize interprofessional learning in palliative care education.(100)

Efforts are also needed to incorporate instruments or items in the existing evaluation and other instruments that specifically evaluate attitudes to and impact of interprofessional learning and collaboration resulting from participating in LEAP courses.

While assessing impact, we need to also evaluate implementation. This includes understanding what works, why and how, and what happens in different settings and jurisdictions.

CHAPTER 6: CONCLUSIONS

1. Pallium Canada has evolved since this doctorate candidate co-founded it over twenty years ago in 2000 into a large, well-established non-profit program that demonstrates all the features of an innovation that has spread and scaled-up at a national level. Its interprofessional Learning Essential Approaches to Palliative Care (LEAP) courses are offered regularly in each of its thirteen provinces and territories.
2. Over 40,000 health care professionals working in different care settings across Canada have received LEAP training since 2000. In addition, over 14,000 registered for and completed one or more of Pallium Canada's self-learning LEAP online modules or COVID-19 related webinars during the pandemic. Almost all the health care professionals who have undergone LEAP training are health care professionals who, although not palliative care specialists, care for patients with serious progressive illnesses. This represents a significant primary-level palliative care capacity building endeavor across care settings.
3. Several factors have facilitated or impeded the growth and spread of Pallium and the LEAP courses over the years. Among others, facilitators have included an active national community of educators to develop curricula; standardized high-quality interprofessional courseware; a large train-the-trainer program with a pool of over 900 certified LEAP teachers (referred to as facilitators); an information technology ecosystem that includes an online learning management system (LMS); and a social enterprise funding model. A major barrier has been competing time, clinical and funding priorities experienced by health care professionals and health service organizations.
4. An innovative curriculum development framework has evolved to develop multiple LEAP course versions that target different care settings and disease groups. There are currently over 20 course versions, each reflecting the realities and contexts of the setting or disease group it targets. These include, among others, versions for community-based primary care, hospitals, long term care and nursing homes, emergency departments, community emergency first-responder services, nephrology and dialysis services, cancer centres, personal support workers and nurse aides, paediatrics, respirology, and health care leaders and managers. Most courses are also available in French versions (to address the bilingual needs of Canada). Several of the key LEAP course versions, such as LEAP Core (the focus of some of the studies reported in this doctorate work), are available for delivery by different formats, including classroom-only (presential), hybrid or flipped with online and classroom components, and all virtual delivery.
5. Designing short palliative care courses like LEAP for large scale national deployment requires intentional design, the integration of best practices and evidence related to continuing professional development education (CPD), and the application of several learning theories and approaches. The LEAP courses primarily use a constructivist learning approach as this aligns well with CPD and interprofessional learning. It uses several learning methods that promote

interactivity, including case-based learning. Designing for large-scale national deployment adds additional complexities. In these situations, educators often have to choose between different design options that present polarities, each with their respective pros and cons. The high ratings across profession groups of the learning experience, as well as evidence of impact on competencies and on patients, supports the instructional design choices made. and consideration of several design options and polarities. adds another layer of complexity. Intentional instructional design is required to, among others, address different lenses used by different professions in their clinical and learning activities.

6. Three of the studies reported in this doctorate work demonstrate impact of the learning at several levels. These levels range from the learner experience and improvements in knowledge, attitudes and comfort related to providing a palliative care approach, to finding evidence of implementation of these competencies into practice and the impact on patients and practices, as well as on other colleagues and the learners themselves.
7. One of the studies, the analyses of the commitment-to-change statements and reflections by LEAP learners, demonstrates that education alone can have a positive impact on learners' behaviours, with application of what was learned into practice. In another study reported in the thesis – the INTEGRATE study - LEAP training was part of a multipronged approach that incorporated other strategies to improve primary palliative care delivered in primary care clinics. The results showed positive impact on practices and patients. The findings support education as a key strategy to build primary palliative care capacity.
8. This doctorate work confirms that interprofessional learning, despite many challenges, is feasible and can result in positive learning experiences and improved knowledge, attitudes and comfort across different profession groups (specifically physicians, nurses, pharmacists, social workers and other allied health) as they learn side-by-side in the LEAP course. While all professions rated the relevancy of the courses highly, there are opportunities for further design modifications that can improve the relevancy even more for social workers, pharmacists and other allied health professions.
9. The doctorate work culminated with an environmental scan and a critical review of evaluation frameworks, models and approaches related to evaluating education programs. This resulted in a synthesis of existing frameworks to help palliative care educators navigate the large and muddled field of education program evaluation. It also produced a new integrated model to guide Pallium Canada's education evaluation efforts. This model draws on two existing frameworks, namely Kirkpatrick's New World model (NWKM) and the Consolidated Framework for Implementation Research (CFIR); the former informs evaluations of program impact (or outputs) and the latter implementation in different settings and context.

CONCLUSIONES

1. Pallium Canadá ha evolucionado desde que este candidato a doctor co-fundó hace más de 20 años (en el año 2000), un gran programa sin ánimo de lucro que muestra todas las características de una innovación que se ha extendido a nivel nacional. Su curso Aprendiendo Enfoques Esenciales a Cuidados Paliativos (LEAP) se ofrece regularmente en cada una de las trece provincias y territorios del país.
2. Más de 40000 profesionales sanitarios trabajando en distintos contextos en Canadá han recibido formación LEAP desde el año 2000. Además, más de 14000 se registraron y completaron uno o más módulos *online* de auto-aprendizaje LEAP, o seminarios web relacionados con el Covid-19 durante la pandemia. Casi todos los profesionales sanitarios que han participado en la formación LEAP son profesionales sanitarios que, si bien no son especialistas en cuidados paliativos, cuidan de pacientes con enfermedades progresivas graves. Esto representa un esfuerzo de capacitación en cuidados paliativos de los profesionales de atención primaria en los diversos contextos.
3. Varios factores han facilitado o impedido el crecimiento de Pallium y los cursos LEAP a lo largo de los años. Entre otros, los facilitadores han incluido una comunidad nacional activa de educadores para desarrollar el currículo; material didáctico interprofesional estandarizado de alta calidad; un gran programa para formar a los formadores (*train the trainers*) con una base de más de 900 profesores certificados en LEAP (conocidos como facilitadores); un ecosistema de información tecnológica que incluye un sistema de gestión de aprendizaje online (LMS), y un modelo de financiación social de empresa. Una importante barrera ha sido la competencia entre las prioridades temporales, clínicas, y de financiación experimentadas por los profesionales de la salud y las organizaciones de servicios sanitarios.
4. Un marco de desarrollo del currículo innovador ha evolucionado hacia el desarrollo de múltiples versiones del curso LEAP dirigidas a distintos contextos y grupos de enfermedades. Existen actualmente más de 20 versiones del curso, cada cual adaptándose a las realidades y especificidades del contexto o grupo de enfermedad al que se dirigen. Estos incluyen -entre otros- versiones de atención primaria comunitaria, de hospitales, de centros y residencias de larga duración, departamentos de urgencias, servicios de primeros auxilios comunitarios de urgencia, servicios de nefrología y diálisis, centros oncológicos, trabajadores de apoyo personal y auxiliares de enfermería, pediátricos, respiratorio, y líderes y gestores sanitarios. La mayoría de los cursos están también disponibles en francés (para satisfacer las necesidades bilingües de Canadá). Varios de los principales cursos LEAP, como el LEAP *Core* (el foco de algunos de los estudios presentados en este trabajo doctoral), están disponibles en diversos formatos, incluyendo sesiones de clases presenciales, híbridos o combinados con componentes online, y los de entrega exclusivamente virtual.
5. El diseño de cursos cortos de cuidados paliativos como LEAP, para un despliegue nacional a gran

escala, requiere un diseño intencional, la integración de las mejores prácticas y evidencia relacionada con la educación de desarrollo profesional continua (CPD) y la aplicación de varias teorías y enfoques del aprendizaje. Los cursos LEAP utilizan principalmente un enfoque de aprendizaje constructivista, ya que esto se alinea bien con el CPD y el aprendizaje interprofesional. Utiliza varios métodos de aprendizaje que promueven la interactividad, incluido el aprendizaje basado en casos. El diseño para un despliegue nacional a gran escala agrega complejidades adicionales. En estas situaciones, los educadores a menudo tienen que elegir entre diferentes opciones de diseño que presentan polaridades, cada una con sus respectivos pros y contras. Las altas calificaciones en los grupos profesionales de la experiencia de aprendizaje, así como la evidencia del impacto en las competencias y en los pacientes, respaldan las elecciones de diseño educativo tomadas. La consideración de varias opciones de diseño y polaridades agrega otra capa de complejidad. Se requiere un diseño educativo intencional para, entre otras cosas, abordar las distintas perspectivas empleadas por las diversas profesiones en sus actividades clínicas y de aprendizaje.

6. Tres de los estudios reportados en este trabajo de doctorado demuestran el impacto del aprendizaje en varios niveles. Estos niveles van desde la experiencia del alumno y las mejoras en el conocimiento, las actitudes y el confort relacionados con la prestación de un enfoque de cuidados paliativos, hasta encontrar pruebas de la implementación de estas competencias en la práctica y el impacto que ésta tiene en los pacientes, en otros colegas y en los propios alumnos.
7. Uno de los estudios, el análisis de las declaraciones y reflexiones de los alumnos del curso LEAP sobre el compromiso de cambiar, demuestra que la educación por sí sola puede tener un impacto positivo en los comportamientos de los alumnos con la aplicación de lo aprendido en la práctica. En otro estudio reportado en la tesis, el estudio INTEGRATE, la capacitación LEAP fue parte de un enfoque múltiple que incorporó otras estrategias para mejorar los cuidados paliativos básicos brindados en las clínicas de atención primaria. Los resultados mostraron un impacto positivo en las prácticas y los pacientes. Los hallazgos apoyan la educación como una estrategia clave para desarrollar la capacidad de cuidados paliativos en atención primaria.
8. Este trabajo de doctorado confirma que el aprendizaje interprofesional, a pesar de muchos desafíos médicos, es factible y puede resultar en experiencias de aprendizaje positivas y mejores conocimientos, actitudes y confort para diferentes profesionales (específicamente, enfermeras, farmacéuticos, trabajadores sociales y otros relacionados con la salud), tal y como aprenden conjuntamente en el curso LEAP. Si bien todas las profesiones calificaron altamente la relevancia de los cursos, existen oportunidades para modificaciones de diseño adicionales que pueden mejorar la relevancia aún más para los trabajadores sociales, farmacéuticos y otras profesiones de la salud afines.
9. El trabajo de doctorado culminó con un análisis ambiental y una revisión crítica de los marcos, modelos y enfoques de evaluación relacionados con la evaluación de los programas educativos. Esto resultó en una síntesis de los marcos existentes para ayudar a los educadores en cuidados paliativos a navegar por el amplio y confuso campo de la evaluación de programas educativos. También produjo un nuevo modelo integrado para guiar los esfuerzos de evaluación de la

educación de Pallium Canadá. Este modelo se basa en dos marcos existentes: el Modelo Kirkpatrick para el Nuevo Mundo (MKNM) y el Marco Consolidado de la Investigación de la Implementación (CFIR). El primero informa las evaluaciones del impacto del programa (o los resultados) y el último la implementación en diferentes entornos y contextos.

CONCLUSIONS (français)

1. Pallium Canada a évolué depuis que ce candidat au doctorat l'a cofondé il y a plus de vingt ans, en 2000. Pallium est devenu une organisation sans but lucratif importante et bien établie, et présente toutes les caractéristiques d'une innovation qui s'est déployée et étendue à l'échelle nationale. Ses cours interprofessionnels LEAP (Les essentiels de l'approche palliative) sont offerts régulièrement dans toutes les provinces (10) et tous les territoires (3).
2. Plus de 40 000 professionnels de la santé travaillant dans différents milieux de soins partout au Canada ont suivi une formation LEAP depuis 2000. En outre, plus de 14 000 personnes se sont inscrites et ont suivi un ou plusieurs des modules d'autoapprentissage en ligne LEAP de Pallium Canada ou des webinaires liés à COVID-19 pendant la pandémie. La quasi-totalité des professionnels de la santé qui ont suivi la formation LEAP, bien que n'étant pas des spécialistes des soins palliatifs, s'occupent de patients atteints de maladies évolutives graves. Il s'agit d'un effort important de renforcement des capacités en matière de soins palliatifs au niveau primaire dans tous les milieux.
3. Plusieurs facteurs ont facilité ou entravé la croissance de Pallium et le déploiement des cours LEAP au fil des ans. Entre autres, les animateurs ont fait appel à une communauté nationale active d'éducateurs pour élaborer des programmes d'études; des didacticiels interprofessionnels normalisés de haute qualité; un vaste programme de formation des formateurs avec un bassin de plus de 900 enseignants du LEAP certifiés (appelés animateurs); un écosystème de technologies de l'information qui comprend un système de gestion de l'apprentissage en ligne (SGA); et un modèle de financement d'entreprise sociale. Les professionnels de la santé et les organisations de services de santé se heurtent à un obstacle majeur, à savoir les priorités concurrentes en matière de temps, de soins et de financement.
4. Un cadre innovant d'élaboration de programme d'études a permis de mettre au point plusieurs versions du cours LEAP ciblant différents milieux de soins et groupes de maladies. Il existe actuellement plus de 20 versions des cours, chacune reflétant les réalités et les contextes du milieu de soins ou du groupe de maladies qu'elle cible. Il s'agit, entre autres, des versions pour les soins primaires communautaires, les hôpitaux, les soins de longue durée et les maisons de soins infirmiers, les services d'urgence, les services communautaires d'intervention d'urgence, les services de néphrologie et de dialyse, les centres de cancérologie, les préposés au soutien personnel et les aides-infirmiers, la pédiatrie, la pneumologie, ainsi que les responsables et les gestionnaires des soins de santé. La plupart des cours sont également offerts en français (pour répondre aux besoins de bilinguisme du Canada). Plusieurs des versions clés du cours LEAP, comme les Fondements du LEAP (qui fait l'objet de certaines des études rapportées dans ce travail de doctorat), peuvent être dispensées sous différents formats, notamment en classe uniquement (présentiel), en format hybride ou renversé avec des composantes en ligne et en classe, et en mode entièrement virtuel.

5. La conception de cours de courte durée sur les soins palliatifs comme le LEAP en vue d'un déploiement national à grande échelle nécessite une conception intentionnelle, l'intégration des meilleures pratiques et des données probantes liées au développement professionnel continu (DPC), ainsi que l'application de plusieurs théories et approches d'apprentissage. Les cours LEAP utilisent principalement l'approche constructiviste qui s'harmonise bien avec le DPC et l'apprentissage interprofessionnel. Plusieurs méthodes d'enseignement sont utilisées et favorisent l'interactivité, notamment l'apprentissage basé sur des cas. La conception en vue d'un déploiement national à grande échelle ajoute des difficultés. Dans ces situations, les éducateurs doivent souvent choisir entre différentes options de conception qui présentent des polarités, chacune ayant des avantages et des inconvénients. Les notes élevées attribuées à l'expérience d'apprentissage par tous les groupes professionnels, ainsi que les preuves de l'impact sur les compétences et sur les patients, soutiennent les choix de conception pédagogique effectués. De plus, la prise en compte de plusieurs options et polarités relatives à la conception ajoute un degré de complexité. Une conception pédagogique intentionnelle est nécessaire pour, entre autres, prendre en compte les différentes optiques utilisées par les différentes professions dans leurs activités cliniques et d'apprentissage.
6. Trois des études rapportées dans ce travail de doctorat démontrent l'impact de l'apprentissage à plusieurs niveaux. Ces niveaux concernent l'expérience de l'apprenant et l'amélioration des connaissances, des attitudes et du degré d'aise liés à l'application de l'approche palliative; la recherche de données probantes sur la mise en œuvre de ces compétences et sur l'impact sur les patients et la pratique ainsi que sur les autres collègues et les apprenants eux-mêmes.
7. L'une des études, l'analyse des engagements à effectuer des changements et des réflexions des apprenants du LEAP, démontre que la formation à elle seule peut avoir une influence positive sur les comportements des apprenants avec la mise en pratique de ce qui a été appris. Dans une autre étude rapportée dans la thèse – l'étude INTEGRATE – la formation LEAP faisait partie d'une approche multidimensionnelle qui incorporait d'autres stratégies pour améliorer les soins palliatifs primaires dispensés dans les cliniques offrant de tels soins. Les résultats ont montré un impact positif sur la pratique et les patients. Ils démontrent en effet que la formation est une stratégie clé pour renforcer les capacités en soins palliatifs primaires.
8. Ce travail de doctorat confirme que l'apprentissage interprofessionnel, malgré ses nombreux défis, est réalisable et peut donner lieu à des expériences d'apprentissage positives et à une amélioration des connaissances, des attitudes et du degré d'aise au sein de différents groupes de professions (notamment les médecins, les infirmières, les pharmaciens, les travailleurs sociaux et d'autres professions paramédicales) lorsqu'ils apprennent côte à côte dans le cadre des cours LEAP. Si toutes les professions ont attribué une note élevée à la pertinence des cours, il est possible d'apporter des modifications supplémentaires à la conception afin d'améliorer leur pertinence pour les travailleurs sociaux, les pharmaciens et les autres professions paramédicales.
9. Le travail de doctorat a culminé avec une analyse de l'environnement et un examen critique des cadres, modèles et approches d'évaluation des programmes de formation. Il en est résulté une synthèse des cadres existants pour aider les éducateurs en soins palliatifs à naviguer dans le

vaste domaine de l'évaluation des programmes de formation. Nous avons également produit un nouveau modèle intégré pour guider les efforts d'évaluation des formations offertes par Pallium Canada. Ce modèle s'inspire de deux cadres existants, à savoir le Modèle du Nouveau Monde de Kirkpatrick (NWKM) et du Cadre consolidé pour la recherche sur la mise en œuvre (CFIR); le premier étaye les évaluations de l'impact (ou des résultats) des programmes et le second la mise en œuvre dans différents milieux de soins et contextes.

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ANNEXES: THESIS RELATED PUBLICATIONS

Annex 1: Pereira J, Chary S, Faulkner J, et al. Primary-Level Palliative Care National Capacity: Pallium Canada [published online ahead of print, 2021 Jul 27]. *BMJ Support Palliat Care*. 2021;bmjspcare-2021-003036. (Paper published) (Open Access)



OPEN ACCESS

Primary-level palliative care national capacity: Pallium Canada

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ABSTRACT

The need to improve access to palliative care across many settings of care for patients with cancer and non-cancer illnesses is recognised. This requires primary-level palliative care capacity, but many healthcare professionals lack core competencies in this area. Pallium Canada, a non-profit organisation, has been building primary-level palliative care at a national level since 2000, largely through its Learning Essential Approaches to Palliative Care (LEAP) education programme and its compassionate communities efforts. From 2015 to 2019, 1603 LEAP course sessions were delivered across Canada, reaching 28 123 learners from different professions, including nurses, physicians, social workers and pharmacists. This paper describes the factors that have accelerated and impeded spread and scale-up of these programmes. The need for partnerships with local, provincial and federal governments and organisations is highlighted. A social enterprise model, that involves diversifying sources of revenue to augment government funding, enhances long-term sustainability. Barriers have included Canada's geopolitical realities, including large geographical area and thirteen different healthcare systems. Some of the lessons learned and strategies that have evolved are potentially transferrable to other jurisdictions.

INTRODUCTION

Palliative care is needed across many settings of care and for patients with cancer and non-cancer illnesses.^{1–4} This includes initiating a palliative care approach earlier in the illness trajectory and integrating it in chronic disease management.^{5,6} Achieving universal access requires a multipronged approach that incorporates appropriate policies, services, funding and education.⁷

All the palliative care needs of a population cannot be met by palliative care specialists alone.⁸ If equipped with core palliative care skills and supported by specialist palliative care teams, providers

Key messages

What was already known?

- Primary-level and specialist-level palliative care services are needed to meet the palliative care needs of a population, but professionals across many settings of care lack core palliative care skills.
- Pallium Canada, a non-profit organisation founded in 2000, builds primary palliative care capacity through education and compassionate communities.

What are the new findings?

- The programme has spread across Canada; from 2015 to 2019 alone, 1603 courses were delivered and over 28 000 professionals trained.
- Several factors have helped or impeded spread and scale-up; drivers include strategic partnerships and a social enterprise model.

What is their significance?

- The lessons learned offer insights into large-scale, national-level deployment of palliative care continuing professional programmes.
- Large-scale interprofessional continuing professional development is viable and impactful.

across many care settings and specialty areas can provide what is referred to as the *palliative care approach*.^{9,10} However, many healthcare professionals lack the competencies and confidence to provide this approach.^{11–13} This calls for palliative care education, including undergraduate and postgraduate training, and continuing professional development (CPD) for those already in practice.

Achieving widespread uptake of a palliative care education programme involves 'spread' (replicating an initiative elsewhere) and 'scale-up'.¹⁴ The latter requires infrastructures, processes and policies to support full-scale, system-wide implementation and sustainability.

Pallium Canada (Pallium) is a non-profit organisation founded in 2000 to build primary palliative care capacity nationally across Canada. This paper discusses Pallium's evolution and the national spread and scale-up of its education and compassionate communities programmes and the factors that have facilitated and impeded their spread and scale-up.

PALLIUM CANADA'S GEOPOLITICAL CONTEXT, APPROACH AND EVOLUTION

Canada has a diverse and multicultural population of 37.2 million and an area that equals Europe. Most of the population lives in urban areas close to its southern border, but up to 16% of the population lives in rural and remote communities. Canada is a confederation of thirteen provinces and territories, each with responsibility over its own publicly funded healthcare system. This creates 13 different healthcare systems, with variability in terms of funding and the delivery of palliative care.

Pallium's approach is guided by several tenets. First, patients with palliative care needs and their families are found across many care settings. Second, care is provided across these settings by providers from various professions and specialty areas. Third, palliative care requires an interprofessional and multidisciplinary approach that is promoted through interprofessional education.¹⁴ Lastly, palliative care requires a public health approach that includes engaging communities.^{7 15}

Pallium positions itself as a Knowledge-to-Action broker and a health system change agent.¹⁶ It brings together palliative care subject matter experts from across the country to identify best practices and evidence and synthesise and spread them to health

professionals via its interprofessional Learning Essential Approaches to Palliative Care (LEAP) courses and complementary materials.¹⁷ The LEAP courses address core palliative care competencies. While most are 1-day to 2-day classroom events with a maximum of 30 learners, flipped, hybrid and entirely online virtual versions are also available.

Pallium draws on Rogers' diffusion of innovations model.¹⁸ Rogers posits that once a critical mass of innovators and early adopters—about 16% of the target audience—adopt a new approach, a tipping point is reached after which wider adoption accelerates.¹⁹

Pallium has evolved in phases.²⁰ Activities and learnings from each phase have informed subsequent phases. The six phases from 2000 to date are summarised in online supplemental appendix A.

SPREAD OF PALLIUM CANADA'S PROGRAMMES AND ACTIVITIES

The growth in number of LEAP course sessions delivered from 2001 to 2019 is shown in figure 1. In phase 1 (2001–2003), 17 LEAP courses were delivered, compared with 537 in 2019. The number of course sessions delivered from 2006 to 2014 was not tracked because of a decentralised distribution model with no course registration mechanism.

Prior to 2013, there was only one type (version) of the LEAP course, an interprofessional 2-day workshop for community-based primary care professionals. Since 2014, 1-day or 2-day versions have evolved or are being developed to target different settings and disease groups.¹⁷ These include versions for different settings (community, hospitals and long-term care (LTC)), services (paramedic services, emergency departments,

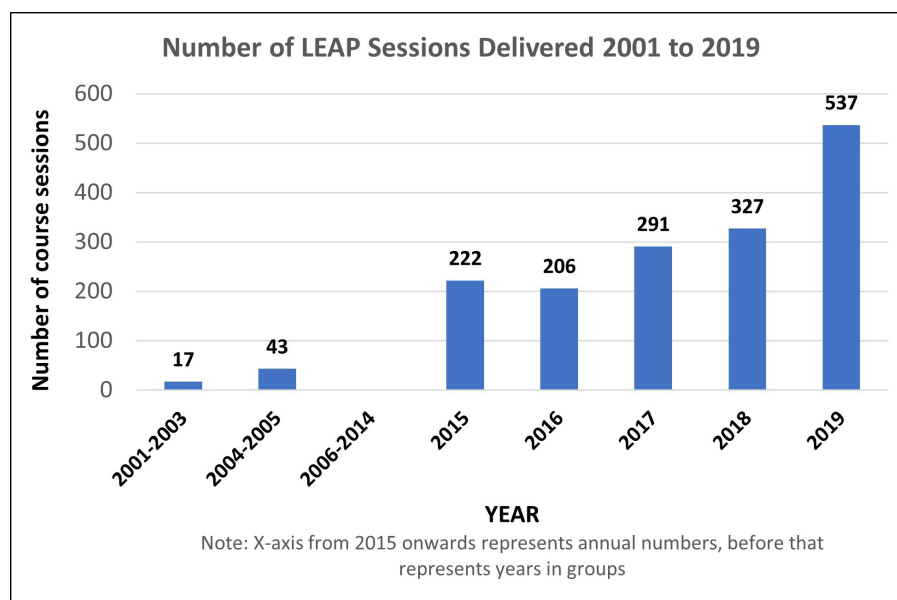


Figure 1 Number of Learning Essential Approaches to Palliative Care (LEAP) course sessions delivered across Canada from 2001 to 2019.

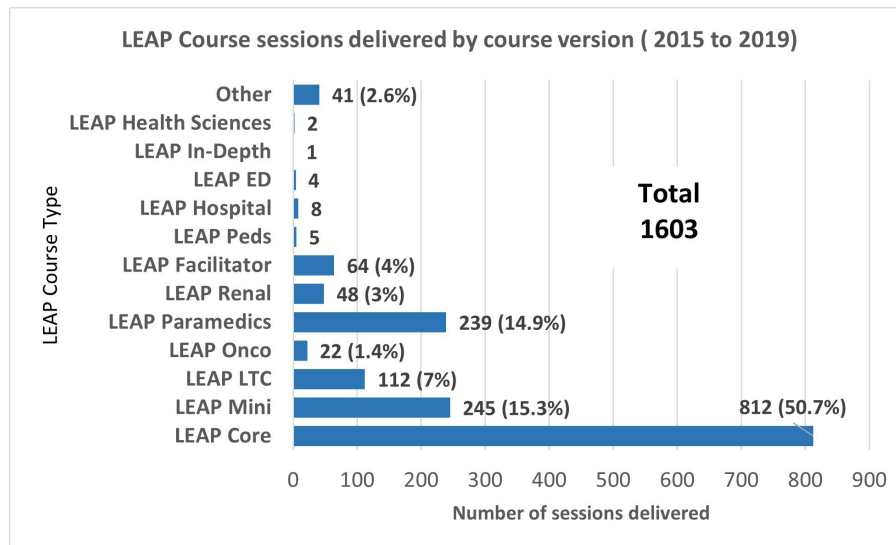


Figure 2 Learning Essential Approaches to Palliative Care (LEAP) course sessions delivered by course type from 2015 to 2019. ED, emergency department; LTC, long-term care; Onco, Oncology; Peds, paediatrics.

paediatrics and healthcare leaders) and specific disease groups (cancer, renal, lung, heart and liver diseases).

From 2015 to 2019, 1603 course sessions were delivered across Canada (figure 2). The course version most often delivered has been LEAP Core (50.7% of all sessions). To date, over 17 undergraduate and post-graduate programmes have adopted the courseware.

A total of 28 123 learners from different professions participated in LEAP courses from 2014 to 2019. Nurses make up the largest proportion of learners (15 560; 55.3%), followed by physicians (4023; 14.3%) and paramedics (3636; 12.9%). Social workers (835; 3%), pharmacists (380; 1.4%), support workers (730; 2.6%) and other professions (2959; 10.5%) have also

participated. The latter includes physiotherapists, counsellors, dietitians, and clinical managers. The largest growth in terms of course participation has been with nurses (figure 3). Physician numbers, and those of the other professions, have seen more gradual increases.

The geographical spread of the 537 LEAP course sessions delivered in 2019 is shown in online supplemental appendix B. Their distribution reflects Canada's population distribution and includes large and small urban centres and rural and remote communities.

In March 2020, in response to the COVID-19 pandemic, Pallium opened its suite of online self-learning modules for free access over 6 months; 11

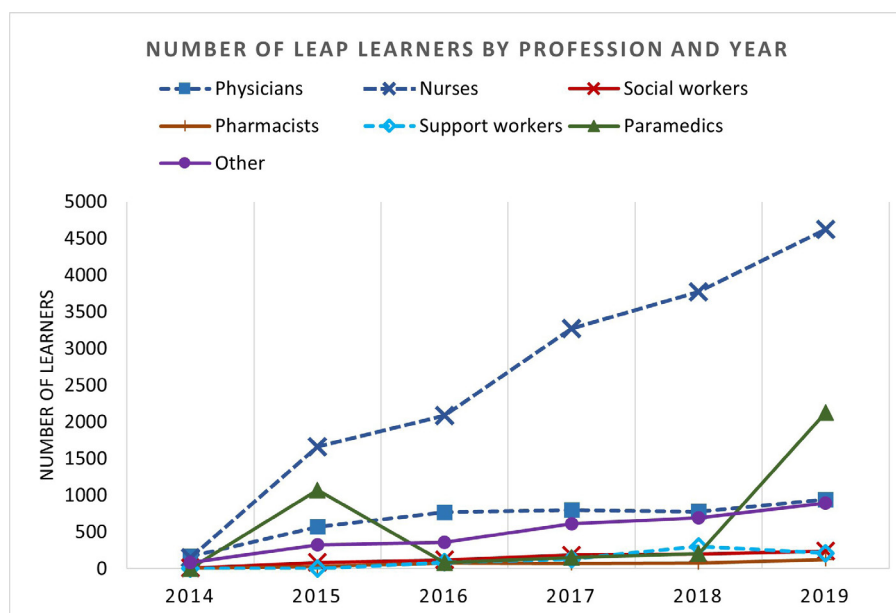


Figure 3 Number of Learning Essential Approaches to Palliative Care (LEAP) learners by year and profession (June 2014 to Dec 2019).

672 healthcare professionals and students registered. In April 2020, Pallium launched a fully online version of its LEAP Core course, which complements the self-learning modules with live interprofessional, case-based webinars. As of February 2021, 103 courses were delivered to 1979 participants. Pallium also hosted a series of national webinars to address emergent pandemic-related topics. From April 2020 to February 2021, 25 webinars were delivered in English and French, with an average of 288 registrants per webinar (available at www.pallium.ca). The two with the most attendees were webinars in April 2020 on providing virtual palliative care and the dealing with the psychological impact of the pandemic on palliative care providers with 703 and 592 participants from across Canada and internationally respectively.

From 2001 to 2005, community town hall get-togethers on palliative and end-of-life care were organised to engage communities where LEAP course sessions were delivered. Our Compassionate Communities (CC) advocacy work was reactivated in 2015 with a national symposium and the development of a CC start-up toolkit in 2018 and online community of practice. From June 2018 to December 2020, Pallium's CC start-up toolkit, which provides communities with information and links to useful resources, has been downloaded 3263 times (English and French versions) across all Canadian provinces and internationally.

FACTORS THAT HAVE FACILITATED OR IMPEDED SPREAD AND SCALE-UP

Success factors and spread accelerators

The factors that have contributed to the spread and scale-up of Pallium and its initiatives warrant discussion as some lessons learnt may be transferrable to other jurisdictions. The key factors are listed in [box 1](#).

Pallium has used a '3C' approach: coordinating, collaborating and communicating across jurisdictions to maximise know-how and resources. The 3C approach involves bringing together educators, clinicians and stakeholders from across regions and provinces to work together and to leverage expertise and best practices with the goal of codeveloping high-quality standardised curricula. This has created an extensive national community of practice and network including clinicians, educators, policymakers, leaders and community champions. The collective expertise has promoted knowledge sharing and reduced duplication of effort.

The availability of standardised, credible, high-quality courseware has provided educators, who are often busy clinicians with few resources and time, with ready-made courseware. Many palliative care providers, particularly in rural regions, do not have academic affiliations and access to academic resources. The courseware helps them stay current with best practices and evidence. Online supplemental appendix C provides a summary of the courses, their instructional

Box 1 Factors that have facilitated spread and scale-up of Pallium Canada's programmes

Products

- ▶ Standardised, ready-to-use, competency-based courseware

Personnel and infrastructure

- ▶ Large national multiprofessional community of practice
- ▶ Interdisciplinary staff
- ▶ Information technology ecosystem

Approaches and strategies

- ▶ Train-the-Trainer model, facilitator programme and large facilitator pool
- ▶ Curriculum development framework for large-scale development and deployment of multiple courses for different settings and disease groups
- ▶ Strategic partnerships
- ▶ Centralised course development but decentralised delivery
- ▶ Continuous quality control and improvement and data-informed
- ▶ Responsiveness, flexibility and adaptability while retaining clarity of mission...agility
- ▶ Customer support programme
- ▶ Persistent advocacy and resilience
- ▶ A social enterprise model for self-reliance and sustainability

Governance and funding

- ▶ Non-profit foundation with board of directors of community leaders
- ▶ Social enterprise approach

designs and examples of the course programmes. A full description of the courses and their design elements is provided elsewhere.^{17 21}

The curriculum development framework provides an economy of scale that accelerates the development of course versions.¹⁷ It does this by leveraging existing courseware to develop new courses for different settings and disease groups, thereby promoting common messages and approaches across care settings. Courseware credibility and quality are promoted through a quality-assurance process that includes extensive peer reviewing and periodic updates.

A multifaceted information technology (IT) ecosystem with several interconnected software platforms has accelerated operational efficiencies and spread. This ecosystem includes a customised learning management system built with the open-source programme Moodle. It serves to distribute course materials, register courses and learners easily, collect precourse and postcourse data, deliver the online course versions or modules and manage course and facilitator evaluations. Financial programmes support registration-fee processing. Recent enhancements have included business intelligence software programmes that improve real-time data analysis and reporting

and client support and management. The data in turn inform quality improvement and growth strategies. Facilitator feedback and the ability to push custom communications and announcements to different user groups have been boosted.

Strategic partnerships have been critical and have required sustained and deliberate efforts at all levels of government and service delivery. At local and regional levels, these have included hospitals, home care agencies, family health clinics, paramedic services, universities and colleges. Provincial partners have included palliative care associations, provincial service agencies and government ministries, while at a national level, these have included national organisations, professional societies and the federal health ministry. The successes of the paramedics programme prompted two national healthcare improvement organisations to fund spread across several other provinces.²²

A decentralised course organisation and delivery approach have aided spread. A centralised distribution model was initially used (2001–2005); course sessions were organised by Pallium's office and facilitators deployed to course venues. In 2006, a decentralised model was introduced in which LEAP courseware was made available for purchase using an end-user licensing model. Once purchased, educators could use the material as often as they wished; no registration fees were charged by Pallium, although course providers were able to charge a fee to cover costs.

Although this approach facilitated spread from 2006 to 2013, it had drawbacks. The quality of the courseware and the learning experience were compromised as some educators failed to apply optimal facilitation practices while others made unapproved modifications to the courses, bypassing peer review and other quality-assurance processes. It also significantly reduced revenue, challenging Pallium's sustainability when government funding ended from 2008 to 2013.

The model was therefore modified in 2014. Courseware development and maintenance are now centralised (coordinated by Pallium's office), but courses are organised by local or provincial groups and presented by local facilitators. All courses and learners are registered online, at which time course registration fees are collected. A portion of the fee is retained by Pallium and the remainder distributed to the organising group to cover expenses.

The large pool of over 900 trained and certified LEAP facilitators across the country is a key success factor. This has required intentional design, including a structured Train-the-Trainer Programme, facilitator support and facilitator criteria. Facilitators are required to be palliative care clinicians (doctors, nurses, social workers and pharmacists) with advanced palliative care training and experience. They also need to demonstrate ongoing facilitation proficiency as assessed by learner evaluations.

Registration of Pallium as a non-profit foundation with a board of directors made up of community leaders has promoted governance, transparency and accountability.

The main source of funding over the years has been from federal government through project contribution agreements, totalling \$13.5 million over 20 years. This funding has been key to start the project, develop the courses and courseware, spread them across the country and implement the IT ecosystem. Some funding (\$1.2 million) has also been received from philanthropic sources. Funding from the Canadian Medical Association and an unrestricted education grant from an industry partner have supported virtual programming during the COVID-19 pandemic.

A social enterprise model that involves diversifying sources of revenue to augment government funding has therefore evolved to support self-sufficiency and long-term viability. Reliance solely on government funding has become too tenuous for long-term sustainability.

Approaching scale and spread-up across three health system levels—namely, micro, meso and macro—has proven strategically useful. *Micro* here refers to small or local teams or services such as a family health clinic or hospital ward or service, while *meso* refers to a whole hospital, cancer centre or nursing home. *Macro*-level spread, on the other hand, is exemplified by dissemination of a course across a whole province or the country. See [table 1](#) for examples of spread at these various levels. Multiple successes at a micro level within a province or region have helped reach meso or micro levels. However, in some cases, spread started at meso or even a macro levels, depending on the opportunity or partnership.

Sustainability and spread have required resilience, patience, sustained advocacy, flexibility and agility to leverage new opportunities and emerging needs, without detracting from the mission. Customisation for special situations and needs is periodically required. For example, LEAP courses were rapidly transformed for full-online delivery in response to the COVID-19 pandemic.

Challenges and barriers

Several factors have impeded spread and scale-up including the need to engage 13 different healthcare systems and their multiple subregions individually.

While funding has made the project possible, the lack of sustained funding, proportionate to the need at hand, has been challenging. Reaching the 'tipping point' in terms of workforce training has, with some exceptions, been elusive in many regions; on average, less than 5% of the Canadian healthcare workforce has been trained. On a meso level, the tipping point has been reached in some provinces with paramedic and home care training and on a micro level in services and clinics that have trained all their staff. Support by local and provincial healthcare service leaders and

Education

Table 1 Examples of spread of Pallium Canada’s programmes across micro, meso and macro levels

Health system level	Examples in each level	Examples of spread and programmes*
Micro	<ul style="list-style-type: none"> ▶ Individual health professional or health professions student ▶ Family health clinic ▶ Hospital unit/ward or service ▶ Medical or nursing school course ▶ Unit of floor in a long-term care (LTC) or nursing home ▶ Home care team 	<ul style="list-style-type: none"> ▶ Petawawa, Bruyere and Jane Finch Family Health teams in Ontario, Canada (LEAP Core) ▶ Select medical units in Lakeridge Health hospitals in Ontario (LEAP Hospital) ▶ Select medical units in North York Hospital in Ontario (LEAP Hospital) ▶ Health Sciences Undergraduate Degree Programme at Brock University (LEAP Health Sciences) ▶ Family Medicine and Medicine Residency Programmes, McMaster University (various LEAP courses)
Meso	<ul style="list-style-type: none"> ▶ Large groups of family health clinics ▶ Whole hospital ▶ Whole cancer centre or centre dedicated to disease group (eg, heart or lung cancer and renal centre) ▶ Whole long-term care facility or nursing home ▶ While undergraduate or postgraduate university or college training programme 	<ul style="list-style-type: none"> ▶ Bayshore Home Care Nursing Agency (LEAP Core and LEAP Home Care) ▶ William Osler Health System emergency departments (ED) (LEAP ED) ▶ LEAP Renal across all Ontario renal and dialysis units ▶ LEAP Inuktitut version for Inuit personal support workers and nurses in the far north ▶ INTEGRATE Project across cancer centres in Ontario and eastern Quebec
Macro	<ul style="list-style-type: none"> ▶ Across a whole region or whole province ▶ Across the whole country ▶ Across a whole national organisation 	<ul style="list-style-type: none"> ▶ LEAP Core and LEAP LTC across the whole country ▶ New Brunswick province (LEAP In-Depth and LEAP Core) ▶ LEAP Paramedic across the following provinces: Nova Scotia, Prince Edward Island, New Brunswick, Alberta, British Columbia and Ontario ▶ Compassionate communities programme ▶ COVID-19 webinars across Canada

*These are only select examples. There are many other examples for each level across Canada. For a full list, please contact Pallium Canada directly.
LEAP, Learning Essential Approaches to Palliative Care.

policymakers, who actively integrated palliative care education in their respective portfolios, has been a common success factor in all these cases.

Provincial and government funding remains critical. There are some activities that do not generate revenues, including developing and testing programmes directed at undergraduate and postgraduate education, compassionate communities, indigenous populations, refugees, vulnerably housed persons and rural and remote communities. Moreover, publicly funded organisations such as hospitals, home care services and LTC homes face ongoing financial constraints, reducing their ability to pay for large-scale training. Universities and colleges face similar challenges.

While change science learnings have been applied in Pallium’s spread and scale-up efforts,²³ we have underestimated some insights. Moore, for example, argues that a messaging chasm exists at the tipping point, necessitating a change in strategy.²⁴ Because the motives for adoption are different between the early adopters and the early majority, the messaging should change from ‘adopt and be a leader’ to ‘adopt and join the others’ at that critical juncture.

A culture that prevails in many universities that rewards new innovations over supporting spread and research of existing ones is another challenge. As Downar, with respect to palliative care education in Canada, explains, ‘a more efficient system would be to have one or two standardised curricula; this would allow academic physicians to put their efforts towards broad dissemination rather than duplication’.²⁵ Moreover, fundraising is a necessity for many Canadian

palliative care and hospice organisations, leading some to duplicate educational initiatives to generate revenue.

PROGRAMME EVALUATION AND IMPACT

In phase 2 (2003 to 2007), a multifaceted framework was used, drawing on Health Canada’s Participatory Evaluation Framework and Kirkpatrick’s Evaluation Model.²⁴ The evaluation results are described elsewhere.^{26 27}

The LEAP courseware evaluations have largely focused on Kirkpatrick’s levels 1 and 2 (learners’ experiences and changes in knowledge, attitudes and comfort). These have demonstrated positive learner and facilitator experiences and improvements in knowledge, attitudes and comfort levels across different professions and postgraduate learners.^{22 27–29} The largest study to date involved almost 7000 professionals who participated in LEAP courses from April 2015 to March 2017.³⁰

Evidence of impact at level 3 (patient care) and level 4 (health system impact) was noted in the 2007 evaluation and continues to emerge. In the 2015–2017 study, analyses of the 4-month postcourse commitment-to-change reflections submitted by learners provide signals and examples that learners are implementing what they learnt.³¹ Evaluations of the INTEGRATE Project, a multipronged intervention that included training of staff at cancer centre programmes and family health clinics with LEAP courses, found improved earlier identification of patients with palliative care needs, increased use of palliative care

services and improved professionals' skills.^{29 32} In an evaluation of the 'Paramedics Palliative Care' Project in two provinces, in which LEAP Paramedic training was applied alongside policy and procedure changes, patients and families reported high degrees of satisfaction, particularly being able to be cared for at home.²² Paramedics reported increased comfort, confidence and joy providing palliative care, while patients and families reported better symptom control, quality of life and gratitude for being cared for in their homes. A return of investment assessment found net savings of \$C2.5 million over an 18-month period; savings were largely attributed to avoided hospital transfers and reduced time spent by paramedics per patient.³³

INTERNATIONAL CONTEXT

Large national CPD-level programmes targeting primary-level or generalist-level palliative care skills exist in other countries.^{34–36} Each initiative has its respective strengths, limitations and challenges. Some similarities exist across the initiatives. The large geographical area covered, attention to Canadian geopolitical realities, the promotion of interprofessional learning, the availability of multiple course versions for different settings of care and diseases and a unique IT ecosystem are stand-out features of Pallium's approach.

FUTURE DIRECTIONS

Strategic partnerships with local, regional, provincial and federal partners and stakeholders will be critical in ongoing efforts to build primary palliative care capacity across different settings and professions and to foster compassionate communities. The structures and processes put in place, including the IT ecosystem and curricula development approaches, will allow more customisation of the products to address local, jurisdictional and specific professions' needs. The respective roles of the various delivery methods, including their strengths and limitations, need to be better understood. While classroom learning will return post COVID-19 pandemic, virtual learning will likely be more widespread, through flipped or entirely online learning approaches.

The LEAP courses will continue to be updated periodically based on ongoing learner and facilitator input and emerging evidence and best practices. Minor modifications are made annually, while each course undergoes a major overhaul every 3–4 years. A full description of the instructional design considerations and decisions of the LEAP courses, as well as future design modifications being planned, is provided elsewhere.²¹ To enhance interprofessional learning and increase efficiencies in this area, for example, Pallium Canada will develop self-learning online modules that are profession-specific or highlight the roles and contributions of various professions. This will allow learners to learn and acquire knowledge and concepts that are

relevant to their professions or help them understand and value the contributions of other professions and then come together for live interprofessional learning in classroom or webinar sessions.

Additional strategies such as linking CPD with quality improvement in the workplace could enhance integration of the approach into daily practice.^{37 38} Finally, Pallium should incorporate emerging evaluation frameworks that help understand multipronged interventions within complex systems.^{39 40}

CONCLUSION

Pallium Canada provides a case study on developing primary-level palliative care at a national level. It has developed infrastructure, processes, products, strategies and tools to advance the palliative care approach across different care settings, professions and communities. It has also championed interprofessional learning and the development of compassionate communities across Canada.

The work to date, while impactful at local and some provincial levels, still requires considerable spread and scale-up efforts if primary-level palliative care is to be fully integrated in the healthcare system. Education, while necessary, is alone insufficient. Multipronged approaches that combine education of healthcare professionals and the community, with other strategies such as policies, processes, funding and resources, are required. Linking education with quality improvement approaches holds potential.

Spread and scale-up of primary-level palliative care necessitate collaboration with local, provincial and federal governments and organisations. A social enterprise model that involves diversifying sources of revenue to augment government funding is evolving to support self-sufficiency and long-term viability. Some of the lessons learnt over Pallium's twenty years may be transferrable to other jurisdictions engaged in, or considering, similar national education initiatives.

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Contributors JP is the cofounder of Pallium Canada and has provided leadership as scientific lead and officer since its inception. This has included input on programme design, development, evaluation and deployment. JBM and JF have provided programme coleadership for the last three years and have contributed significantly to its operations, development and recent scale-up and spread, including its IT infrastructure and the development of the social enterprise model. SC has served as coclinical lead of the programme since 2007, is a member of the programme's board of directors since 2010 and has provided input on various aspects of the programme's deployment. BT has led the implementation and spread of

Pallium's compassionate communities initiatives. All authors contributed to this work, prepared this manuscript and approved the final draft.

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Competing interests JLP (scientific officer), JF (vice president of operations) and JBM (CEO, Pallium) are all paid staff members of Pallium Canada. The other authors have, over the years, received stipends by Pallium Canada for their curriculum development and delivery contributions.

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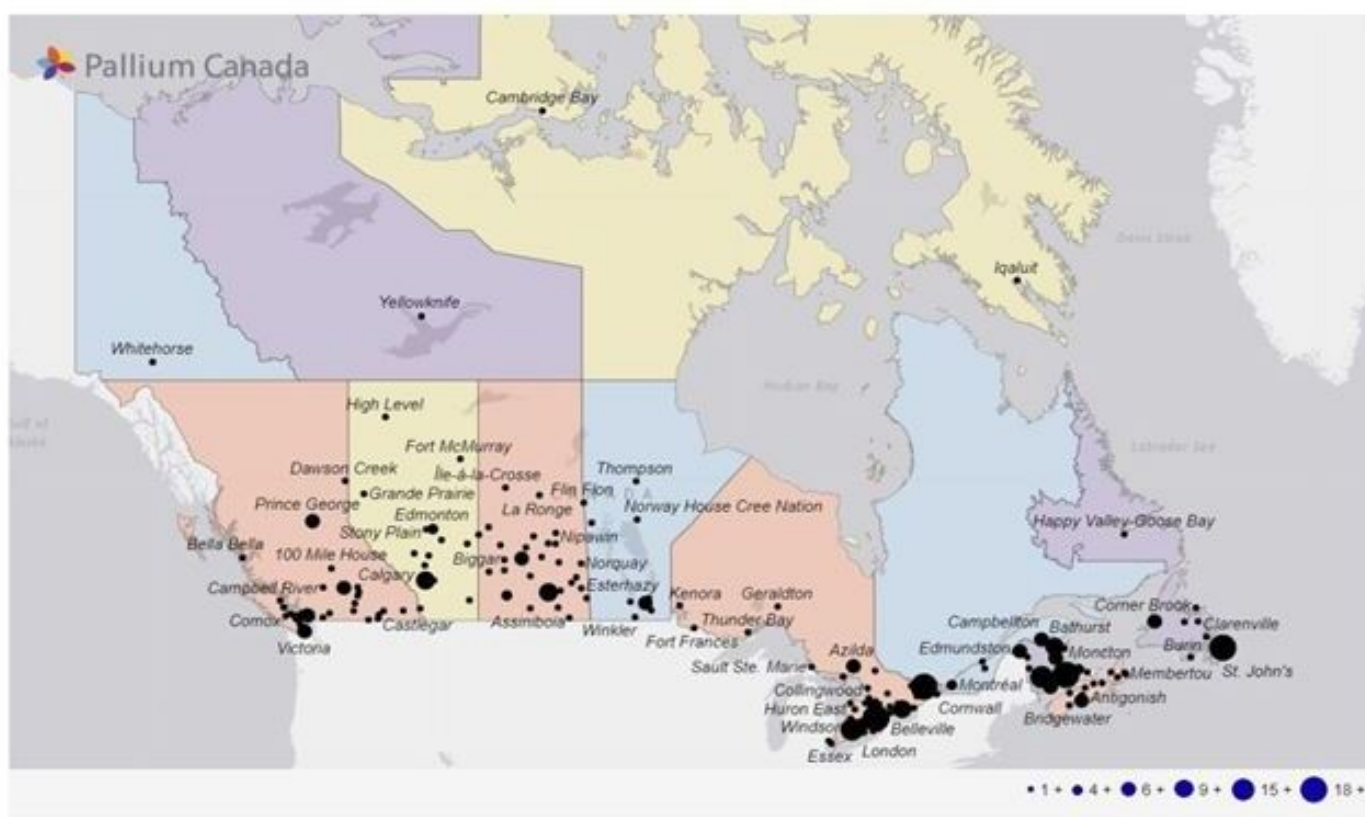
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Phase	Key activities and lessons learned
Phase 1 (2001-2003)	<ul style="list-style-type: none"> • Focused on rural regions of Canada’s three Prairie provinces (AB, MB, SK) with government funding. • A community of practice of palliative care educators was established, primary palliative care competencies mapped, and standardized interprofessional courseware piloted.
Phase 2 (2003-2007)	<ul style="list-style-type: none"> • Funded by government. Spread to urban areas and several other Canadian provinces and territories. Teams assembled to implement multiple sub-projects. Hubs established in eastern and central Canada. • Courseware evolved into the LEAP course (English and French versions). A blinded peer-review process was implemented and a TTT program initiated, resulting in an interprofessional pool of 40 facilitators. • “Road show” approach used to take LEAP courses to smaller communities. These were accompanied by community engagement activities to raise awareness, including town-hall dialogues and local newspaper features, representing early Compassionate Communities efforts. • A centralized distribution model was initially used (Pallium’s office organized all courses and deployed facilitators to course venues. In 2006 a decentralized distribution model was introduced. • Distributed learning methods were tested, including a hybrid course for rural-based family medicine residents and clinicians.[27] Monthly large-scale CPD audioconferences (“Conversations on Caring”) were held for rural and remote professionals.[20] These were recorded and published as podcasts. • Foundational work was undertaken to explore Indigenous Peoples’ perspectives on end-of-life (EOL). Elders were interviewed, resulting in a video series “In Our Own Words” produced as well as a course for caregivers in Indigenous communities. The model was further customized for training Indigenous social work students at a northern ON university. A caregiver’s guide was adapted into Inuktitut for Inuit Peoples. • Competencies for palliative care spiritual care providers were identified and courseware developed.[27] • Rural-based children’s grief program was piloted in Manitoba and three provinces collaborated to co-develop public telephone information call-in centres.
Phase 3 (2008-2012)	<ul style="list-style-type: none"> • Unfunded phase. LEAP continued being used across Canada, but spread was piecemeal. Spread to ON. • In 2012, a Foundation was formed with non-profit designation. A Board of Directors made up of community, business and health leaders was established.
Phase 4 (2013-2016)	<ul style="list-style-type: none"> • In late 2012, funding from a private benefactor and government was secured for 3 years. • National stakeholder symposium called for different LEAP course versions for different settings and disease groups. A curriculum development process to develop multiple course versions was started.[27] • The LEAP distribution model was modified to centralized course development and decentralized deployment. • The TTT program was strengthened and facilitator criteria updated. • Partnership with the emergency services in the provinces of NS and PEI resulted in the development of LEAP Paramedic. The majority of paramedics in those provinces were trained over a 9-month period. • In ON, the Ontario Renal Network (ORN) deployed LEAP Renal. • First Nations communities were engaged in ON for direction on how to integrate Indigenous perspectives. It became a requirement for all LEAP facilitators to complete cultural awareness modules. • Pallium hosted a national Compassionate Communities symposium in 2016. • Pallium’s online learning management system (LMS) was launched in late 2014.
Phase 5 (2017-2019)	<ul style="list-style-type: none"> • Operations were revamped. Online modules developed for hybrid (online and classroom) or fully online learning. Additional course versions were launched. • LEAP Paramedics spread across Canada. LEAP adapted to the Inuktitut language for Inuit care providers. • A Compassionate Communities start-up toolkit and a national online forum (theccexchange.ca) was started. • Further IT capacity added. • Large study undertaken to assess the impact of the course on learners’ knowledge, attitudes, comfort and commitment-to-change investment.[25,27] • Pallium Canada’s infrastructure increased to 16 full and part-time staff, and efforts to develop strategic regional, provincial and federal partnerships accelerated. • College of Family Physician’s Annual Award for the Best Continuing Professional Development Program (2017)
Phase 6 2020 to current	<ul style="list-style-type: none"> • In March 2020, in response to the COVID-19 pandemic, Pallium Canada rapidly transformed some LEAP courses for online-only delivery, including self-learning modules and case-based learning webinars. Over 20,000 health care professionals signed up for the online LEAP courses. In addition, 19 webinars were presented between April and August 2020 on various COVID-19 related topics.
<p>LEAP = Learning Essential Approaches to Palliative Care courseware; TTT = Train-the-Trainer; CC=Compassionate Communities AB=Alberta, BC=British Columbia, MB=Manitoba, NS=Nova Scotia, NFL=Newfoundland and Labrador, NB=New Brunswick, ON=Ontario, PEI=Prince Edward Island, SK=Saskatchewan, NV=Nunavut Territory, NWT=Northwest Territories, YK=Yukon Territory</p>	

Appendix B: Location of LEAP course sessions delivered across Canada in 2019.



<p>Course versions (target setting or services)* <i>LEAP Core</i> (community-based primary care professionals and teams), <i>LEAP Mini</i> (condensed one-day version of <i>LEAP Core</i>), <i>LEAP LTC</i> (long term care or nursing homes), <i>LEAP Renal</i> (nephrology services), <i>LEAP Hospital</i>, <i>LEAP Oncology</i>, <i>LEAP Peds</i> (pediatric and primary care), <i>LEAP Home Care</i> (home care nursing agencies), <i>LEAP PSW</i> (nursing aides providing home or nursing home care), <i>LEAP Heart</i> (cardiology services), <i>LEAP Lung</i>, <i>LEAP Liver</i>, <i>LEAP Leaders</i> (health care leaders, policymakers and managers), <i>LEAP Paramedics</i> (community emergency services), <i>LEAP ED</i> (emergency departments), <i>LEAP Self-Learning Online Modules</i> (theoretical base for flipped learning), <i>LEAP In-Depth</i> (professionals who have completed a <i>LEAP</i> course and wish additional skills), <i>LEAP Health Sciences</i> (undergraduate university and college programs), <i>LEAP Facilitator</i> (train-the-trainer course). Educators of undergraduate or postgraduate curricula select materials that apply to their courses from all the various <i>LEAP</i> courses, and their respective modules.</p> <p>Course goals</p> <ul style="list-style-type: none"> Improve and advance primary-level palliative care Impart core palliative care competencies (“palliative care approach”) (Learner-centred learning objectives are available for each course.) Promote interprofessional collaboration Promote common understanding of palliative care across care settings and professions Improve transitions of care across care settings <p>Delivery methods</p> <ul style="list-style-type: none"> Classroom (<i>All LEAP courses</i>) Hybrid (classroom and online) (<i>LEAP Peds</i>, <i>LEAP Facilitator</i>, <i>LEAP Paramedics</i>). <i>LEAP Core</i>, <i>LEAP Hospital</i>, <i>LEAP LTC</i> and <i>LEAP Home Care</i> under development Fully online (<i>LEAP Core</i>, <i>LEAP LTC</i>, <i>LEAP PSW</i>, <i>LEAP Paramedics</i>, <i>LEAP Self-Learning Modules</i>). <p>Design elements**</p> <ul style="list-style-type: none"> Course lengths: 1 to 3-days (but can be split into modules distributed separately and over longer periods). Modular with 7 to 15 modules per course. Each module focusses on a specific theme but there are concepts and objectives that traverse across modules (e.g. interprofessional collaboration, wholistic care) Competency-based curricula (content and learning approaches based on competencies to target learners) Interactive, with classroom sizes limited to 15-30 learners with 2 to 3 facilitators (interprofessional). Constructivist and case-based learning approach <p>Different learning methods, with case- and problem-based learning predominant.</p>	<p>Learning methods (combination of methods used)</p> <ul style="list-style-type: none"> Short theory overviews (“Theory bursts”) Case-based learning (small group and large group) Trigger videos (Doodles and Snippets) Communication videos Polls Personal and group reflections Interprofessional with some uni-professional “breakout rooms” Live virtual case-based learning webinars (for fully online courses) Self-learning online modules (for hybrid, flipped and fully online course versions) Pre- and post-course reflections (Knowledge Quiz, Attitudes Survey, Comfort Survey, Commitment-to-Change post-course and 4-months post-course) (The reflections are also used to assess impact of courses on knowledge, attitudes, comfort and implementation in the workplace) <p>Materials</p> <ul style="list-style-type: none"> Facilitator and Learner Manuals (electronic). Facilitator manuals contain course program, modules, slides, learning videos and facilitator notes. Pallium Palliative Pocketbook (e-book and paper versions) 				
	<p>Program (agenda) examples (please see www.pallium.ca)</p> <table border="1"> <thead> <tr> <th>LEAP Core (Classroom)</th> <th>LEAP Core Online</th> </tr> </thead> <tbody> <tr> <td> 2 days Modules 1. Self-Awareness 2. Taking Ownership (defining palliative care and identifying patients with palliative care needs) 3. Decision-Making 4. Advance Care Planning and Goals of Care 5. Essential Conversations 6. Pain 7. Dyspnea 8. Nausea and GI symptoms 9. Psychosocial and Spiritual Needs 10. Delirium 11. Last Days and Hours 12. Palliative Sedation 13. Quality Improvement </td> <td> Part 1: Self-learning online modules 15 modules, each 10- to 20 min long Part 2: Live Webinars 4 x 1.5hrs webinars with up to 30 learners and 2 or 3 facilitators. Interprofessional case-based learning that applies theory learned in self-learning modules </td> </tr> </tbody> </table>	LEAP Core (Classroom)	LEAP Core Online	2 days Modules 1. Self-Awareness 2. Taking Ownership (defining palliative care and identifying patients with palliative care needs) 3. Decision-Making 4. Advance Care Planning and Goals of Care 5. Essential Conversations 6. Pain 7. Dyspnea 8. Nausea and GI symptoms 9. Psychosocial and Spiritual Needs 10. Delirium 11. Last Days and Hours 12. Palliative Sedation 13. Quality Improvement	Part 1: Self-learning online modules 15 modules, each 10- to 20 min long Part 2: Live Webinars 4 x 1.5hrs webinars with up to 30 learners and 2 or 3 facilitators. Interprofessional case-based learning that applies theory learned in self-learning modules
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<p>* Pereira J, Chary S, Moat JB, Faulkner J, Gravelle-Ray N, Carreira O, et al. Pallium Canada’s curriculum development model: A framework to support large-scale courseware development and deployment. <i>J Palliat Med.</i> 2020 Jun;23(6):759–66</p>	<p>** Pereira J, Giddings G, Sauls R, Harle I, Antifeau E, Faulkner J. Navigating design options for large-scale interprofessional continuing palliative education: Pallium Canada’s experience. <i>Palliative Medicine Reports.</i> In Press</p>				

Annex 2: Pereira J, Chary S, Moat JB, et al. Pallium Canada's Curriculum Development Model: A Framework to Support Large-Scale Courseware Development and Deployment. *J Palliat Med.* 2020;23(6):759-766. (Paper published) (Open Access)

Pallium Canada's Curriculum Development Model: A Framework to Support Large-Scale Courseware Development and Deployment

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Abstract

The need to improve access to palliative care across multiple settings and disease groups has been identified. This requires equipping health care professionals from many different professions, including physicians and nurses, among others, with basic palliative care competencies to provide a palliative care approach. Pallium Canada's Curriculum Development Framework supports the development, deployment, and dissemination, on a large scale, of multiple courses targeting health care professionals across multiple settings of care and disease groups. The Framework is made up of eight phases: (1) Concept, (2) Decision, (3) Curriculum Planning, (4) Prototype Development, (5) Piloting, (6) Dissemination, (7) Language and Cultural Adaptation, and (8) Ongoing Maintenance and Updates. Several of these phases include iterative cyclical activities. The framework allows multiple courses to be developed simultaneously, staggered in a production line with each phase and their corresponding activities requiring different levels of resources and stakeholder engagement. The framework has allowed Pallium Canada to develop, launch, and maintain numerous versions of its Learning Essential Approaches to Palliative Care (LEAP) courses concurrently. It leverages existing LEAP courses and curriculum materials to produce new LEAP courses, allowing significant efficiencies and maximizing output. This article describes the framework and its various activities, which we believe could be very useful for other jurisdictions undertaking the work of developing education programs to spread the palliative care approach across multiple settings, specialties, and disease groups.

Keywords: continuing professional development; curriculum development; education; palliative care; palliative care approach

Introduction

A LARGE BODY OF EVIDENCE points to a lack of access to palliative care for patients with progressive life-limiting illnesses.¹⁻³ This need exists across many disease groups, including cancer care and advanced heart,^{4,5} lung,^{6,7} kidney,⁸ and neurological disease⁹ among others. The need has also been described across many different settings of care where patients with palliative care needs find themselves. These are

community and home care,¹⁰ hospitals,^{11,12} intensive care units,^{13,14} emergency departments (EDs),¹⁵ surgical services,¹⁶ pediatric services,¹⁷ and long-term care nursing homes.^{18,19}

Given the large scope of needs, the provision of palliative care cannot be the sole responsibility of specialist palliative care clinicians and teams.²⁰ Equipping health care professionals who work in these various settings and disease groups with essential skills to initiate and provide a palliative care

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approach is therefore paramount.^{21,22} This primary- or generalist-level palliative care, delivered by health care professionals who are not palliative care specialists, is referred to as the “palliative care approach.”²³ It includes identifying patients with palliative care needs early in the illness trajectory, engaging in timely advance care planning and goals of care discussions, screening for physical, psychological, social, and spiritual needs, and beginning to address these. They consult or refer to palliative care specialist-level services when complex situations arise or when additional assistance is needed.

Pallium Canada (www.pallium.ca) is a nonprofit organization founded in 2000 to build primary-level palliative care capacity across Canada by spreading the palliative care approach.²⁴ A need had been expressed by palliative care programs in several Canadian jurisdictions to collaborate on developing palliative care courses for health care professionals so as to reduce duplication of efforts, harness expertise across the country, and provide materials to educators who would otherwise not have the means to develop and distribute the courseware themselves. The collaborative effort has resulted in the Learning Essential Approaches to Palliative Care (LEAP) courseware. Various versions of the course target different care settings and disease groups.

The LEAP courses are intentionally designed to be inter-professional—specifically targeting physicians, nurses, pharmacists, and social workers—and range from one to two days in length. They are developed by content experts from across the country and are extensively peer-reviewed. The modules cover topics such as identifying patients with palliative care needs early in the illness trajectory, decision making, pain and symptom management, communication skills such as initiating a palliative care approach early and undertaking goals of care and advance care planning discussions, and addressing psychosocial and spiritual needs of patients and families.

Although most courses are designed for classroom delivery, some include online components (flipped or hybrid courses) and one version is entirely online. The classroom versions are one- or two-day courses, and class sizes are limited to about 30 participants to ensure a high degree of interactivity. Small-group, case-based learning methods are used. The courseware is available for use by undergraduate and postgraduate education programs. Some programs choose to use one entire course, whereas others select specific modules from the various LEAP courses to address their curriculum requirements.

The number of courses developed, and the number of sessions delivered has increased over the years; there are currently 20 different course versions developed or underdevelopment, each targeting different disease groups or settings of care (Table 1). In 2019 alone, 430 LEAP courses were delivered across Canada to more than 7000 health care professionals, mainly doctors, nurses, pharmacists, and social workers. This number has been increasing by 20% annually since 2014.

The goal of this article is to describe Pallium Canada’s Curriculum Development Framework. The framework supports large-scale development and deployment, at a national level, of palliative care-related continuous professional development (CPD) education. The framework and the LEAP courses could be useful for other countries facing the challenge of building primary-level palliative care capacity. Further details on Pallium Canada (referred as Pallium^{CAN} in

this article), the instructional designs of the LEAP courses, and their impact are presented elsewhere.

Pallium Canada’s Curriculum Development Framework

In 2001, Pallium^{CAN} adopted Kern et al.’s Johns Hopkins University curriculum development approach to develop its initial LEAP course, which targeted community-based primary care providers.²⁵ The editions of the model were used thereafter. The approach includes six steps that start with identifying the need, followed by a needs assessment of learners, establishing the goals and learning objectives of the curriculum, and selecting the educational strategies and learning methods. Once those steps are completed, the curriculum is implemented. The final step involves evaluating the curriculum program and getting feedback from, among others, the learners. Informed by the evaluation, the cycle starts again. The important feature of the approach is its flexibility. Although the steps are sequential, one may jump between different steps if needed.

In 2012, Pallium^{CAN}, in response to growing national demand, decided to start developing new LEAP course versions to target other settings and noncancer disease groups. No approach was found that could guide the concurrent development of deployment of multiple course versions with limited resources. As the new courses started rolling out (LEAP LTC [long-term care] in 2014, LEAP Mini in early 2015, LEAP Paramedics in late 2015, and LEAP Renal in early 2016), our efforts to maximize limited resources started evolving into the framework described in this article. It has therefore evolved organically, driven by needs, opportunities, and trial and error.

Pallium^{CAN}’s framework is made up of eight phases and incorporates the activities described in the Johns Hopkins model (Fig. 1).²⁵ Different LEAP courses are found at different phases of production and deployment. The Kern et al.’s approach is incorporated largely into Phase 3 of the model, but activities such “Implementation” and “Evaluation and feedback” are also used in Phase 4 (Prototype Development). The framework is influenced by assembly-line methods that maximize efficiencies and allow products to be developed in stages, and air-traffic control approaches that ensure adequate time gaps (“spacing”) between products so that resources are not overwhelmed and a relatively small team is able to undertake all the work.

Phase 1: Concept

Ideas for new LEAP courseware continually present themselves. These are registered and triaged; ideas that most align with Pallium^{CAN}’s mission and vision are prioritized and actioned.

Phase 2: Decision

The decision to move an idea into the planning phase is influenced by several factors. These include the potential impact of the course on access to palliative care, resource requirements, funding availability, production-line capacity, and urgency of the need. Agility is needed to respond to high-impact opportunities that arise, without overwhelming Pallium^{CAN}’s resources. The LEAP Paramedics course, which targets ambulance first responders, illustrates this.²⁶ A decision was made in 2015 to prioritize the development of that

TABLE 1. LIST OF LEARNING ESSENTIAL APPROACHES TO PALLIATIVE CARE COURSEWARE
(DEVELOPED AND UNDERDEVELOPMENT AS OF SEPTEMBER 2019)

<i>LEAP course</i>	<i>Targeted professions^a and settings</i>	<i>Description</i>
LEAP Core	Family physicians, nurses, pharmacists, and social workers. Community settings (e.g., family medicine clinics, home care agencies).	Total of 13.5 hours (two days) Classroom. E and F
LEAP Mini	Same as LEAP Core (see line above).	Condensed version of LEAP Core. Total of 8.5 hours (one day). Classroom. E and F
LEAP Long Term Care (LTC)	Family physicians, nurses, pharmacists, social workers, and PSWs/nursing aides. Long-term care facilities and nursing homes.	Total of 13.5 hours (two days) Classroom. E
LEAP Renal	Physicians (e.g., nephrologists, internists), nurses, social workers, and pharmacists who care for patients with advanced kidney diseases (e.g., dialysis units).	Total of 8.5 hours (one day) Classroom. E and F
LEAP Oncology	Physicians (oncologists, hospitalists, family physicians, others), nurses, social workers, and pharmacists who care for patients with cancer in outpatient and inpatient cancer care settings.	Total of 8.5 hours (one day) Classroom. E
LEAP Paramedics	Paramedics and other emergency service (including primary, advanced care, and specialized paramedics).	Total 9 hours. E and F Flipped learning with online modules followed by classroom group learning.
LEAP Health Sciences	Students enrolled in undergraduate health science degree programs (excluding medical or nursing students). These students undertake further degrees in health-related professions, research, and administration.	Total of 8.5 hours (one day) Classroom. E
LEAP Undergraduate and Postgraduate	Medical students (undergraduate) and residents/registrars (postgraduate specialization). Students in nursing, pharmacy, social work, and other health professions.	Educators select from the many modules across the different LEAP courses and learning materials (e.g., videos) E and F
LEAP Facilitator Training	Palliative care physicians, nurses, social workers, and pharmacists with clinical and teaching roles who wish to facilitate LEAP courses.	Hybrid course with independent online self-learning (about 4 hours) and 7 hours hands-on classroom learning E and F
LEAP Taking Ownership	All health care professionals, administrators, students. Introduces palliative care approach. Also open to the public.	40-minute online module. E and F
LEAP Hospital	Physicians, nurses, pharmacists, and social workers working in hospital settings (inpatient and outpatient).	Total of 8.5 hours (one day) Classroom. E
LEAP Emergency Department (ED)	Physicians, nurses, pharmacists, and social workers. Emergency departments.	Total of 8.5 hours (one day) Classroom. E
LEAP Online	Health care professionals from different professions and PSWs. A total of 11 online modules.	Designed to support independent, flipped, or hybrid online-classroom. E
Under development		
LEAP Liver	Physicians (internists, gastroenterologists, generalists), nurses, pharmacists, and social workers caring for patients with advanced liver diseases. One-day classroom-based course. E	
LEAP Pediatrics	Health care professionals caring for pediatric populations with palliative care needs. Hybrid delivery: online self-learning (about 5 hours) and classroom learning (about 8 hours). E	
LEAP Heart	Physicians (internists, cardiologists, generalists), nurses, pharmacists, and social workers caring for patients with advanced heart diseases. One-day classroom-based course. E	
LEAP Surgery	Surgeons (from different surgical fields), nurses, and social workers working in surgery programs.	
LEAP Lung	Physicians (internists, pulmonologists, generalists), nurses, pharmacists, and social workers caring for patients with advanced lung diseases.	
LEAP Leaders	Health care leaders and administrators.	
LEAP Paramedics online	Paramedics and other emergency service (including primary, advanced care, and specialized paramedics).	

(continued)

TABLE 1. (CONTINUED)

LEAP course	Targeted professions ^a and settings	Description
LEAP In-Depth	Designed for health care professionals who are not palliative care specialists but serve as local palliative care resource persons in the services they work in and can help palliative care specialists to facilitate LEAP courses in regions where there is a shortage of palliative care specialist physicians and nurses. Completing a LEAP Core or LEAP LTC is a prerequisite.	

Under consideration: LEAP Carers, LEAP Forward, LEAP Intensive Care Units (ICU), LEAP Equity (inner city, vulnerable populations)

E=English, F=French (The goal is to have all courses in both English and French versions).
^a“Nurses” includes registered nurses, nurse practitioners, licensed practical nurses, and registered practical nurses.
 LEAP, Learning Essential Approaches to Palliative Care; PSWs, personal support workers.

course because the provincial governments of two provinces, Nova Scotia and Princess Edward Island, identified paramedic palliative care training as a priority and allocated additional resources to support it. A similar situation arose when the Ontario Renal Network (ORN), which oversees kidney care across the province of Ontario, including dialysis services, identified palliative care as a provincial priority, resulting in the development and deployment of LEAP Renal.

Pallium^{CAN} uses a Priority, Action, Consider, Eliminate (PACE) matrix to decide which courses to include and activate. This matrix is based on ease of implementation and anticipated impact and benefits. Courses that are relatively easy to implement and accompanied by the potential for high impact on a health care sector or disease group are slotted into the “Priority” quadrant. The entry of new courses into the planning phase is staggered so as to not overwhelm resources.

Phase 3: Curriculum Planning

Several key activities are undertaken during this phase, including a general and learner-targeted needs assessment, environmental and literature scans for relevant materials,

establishing a course curriculum team and identifying the competencies and learning objectives to be addressed. The environmental scan provides an additional opportunity to decide on continuing or discontinuing course development.

Curriculum teams. Subject matter experts (SMEs) from across Canada and from different targeted professions who are considered thought leaders in the setting or disease group being targeted by the LEAP course are recruited. Representatives of the different targeted professions are included. Physician members with certification in the College of Family Physicians of Canada (CFPC) or the Royal College of Physicians and Surgeons of Canada (Royal College) are also included to ensure CPD accreditation requirements are met. An interprofessional curriculum team of four to five members is formed. This curriculum team collaborates with Pallium^{CAN}’s scientific and courseware management team to develop the course. The small team size maximizes efficiency; broader input will follow during the peer review process. The curriculum team undergoes an orientation, including the goals of the course and learning approaches to

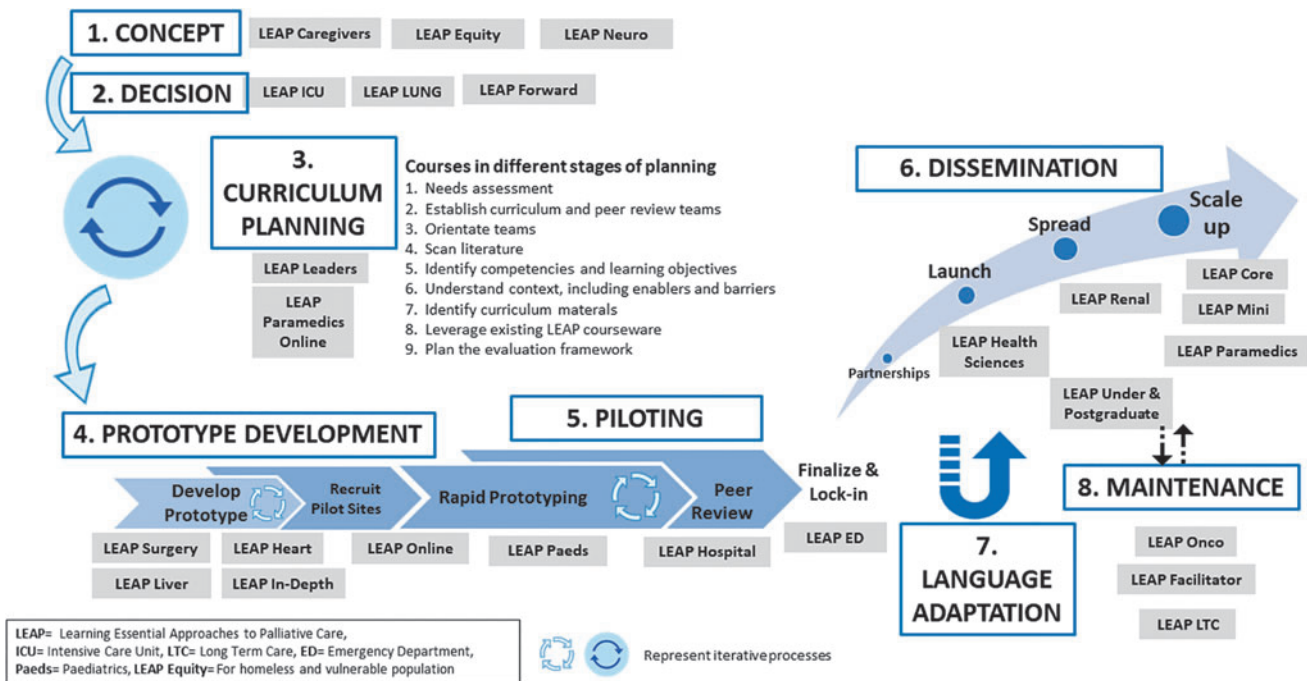


FIG. 1. Pallium^{CAN}’s Curriculum Development Framework (the different LEAP courses are indicated in small gray boxes, as of December 2019). Color image is available online.

consider. The team is also given access to existing LEAP courses to facilitate the process and to increase efficiencies, as well as to ensure common messaging and design across the courses.

Environmental scan, needs assessment, and understanding the context. The team, supported by Pallium^{CAN}'s office, undertakes an environmental scan and competency development process. This includes identifying seminal publications germane to the setting or disease group, and insights from experts, stakeholders, and targeted learners. The scan also includes identifying resources and material that can be adopted, adapted, or that need to be developed *de novo*. In most cases, interprofessional focus groups of targeted learners are held to explore and understand the setting or disease group being targeted. These focus groups also help identify factors that can support or challenge the integration of the palliative care approach in the respective sectors and they contribute to elaborating the competencies for that setting.

Competency mapping and establishing learning objectives. Pallium^{CAN} has used different approaches to identify the competencies for different professions in the LEAP courses, including the Developing a Curriculum (DACUM) method.²⁷ This method uses a focus group approach that includes experienced professionals who know the role well. The competencies are reviewed periodically such as when a course undergoes a major revision. Previous sets of competencies serve as a starting point to identify the competencies and learning objectives for targeted professions in the new course. Literature scans further inform this work.

Evaluation framework. Work on the course evaluation plan and framework begins during this phase. Previous LEAP courses' instruments and methods can be leveraged, thereby streamlining the process.

Phase 4: Prototype Development

With the competencies and learning objectives delineated, the targeted sector or disease group better understood, the curriculum team sets out to develop a course prototype. This includes designing the course, selecting the appropriate learning methods, and incorporating the relevant content. Consistent with Pallium^{CAN}'s role as a Knowledge-to-Action (KTA) agent, the process includes identifying, analyzing, and synthesizing pertinent research and best practices to incorporate into the course content.²⁸

Existing LEAP courses are used as templates for new ones. For example, LEAP Core served as a template for two-day classroom-based courses such as LEAP LTC. LEAP Mini has been a useful template for intensive one-day courses such as LEAP Hospital and LEAP ED, whereas LEAP LTC provides a template for courses that need to include breakout sessions that specifically meet the learning needs and scopes of practices of professions (e.g., personal support workers) that are generally not targeted by LEAP courses. LEAP Renal, in turn, is a useful starting point for LEAP Heart and other disease-specific course types. LEAP Facilitator training, which uses a flipped classroom approach with independent online learning followed by a one-day classroom experience, served as a template for LEAP Paramedics.

Adaptations to existing LEAP courses and materials include using learning methods that better address new competencies or setting realities, inserting evidence and studies as well as cases that are more relevant to the domain, modifying facilitator notes accordingly and, in some cases, replacing or inserting new modules. Where possible, existing material such as videos is adopted, adapted, or repackaged for the new course. In some cases, new material needs to be created *de novo* during this phase.

Prototype Development also includes developing the pre- and post-course quizzes and surveys, most of which are adapted from existing LEAP courses, and creating complementary materials such as facilitator and learner manuals.

While Prototype Development is underway, Pallium^{CAN} begins to identify and recruit pilot sites and participants for the piloting phase that will follow. A purposive sampling approach is undertaken. Local palliative care teams are approached to help recruit the site and course participants. Recruitment to the pilot sessions can be challenging as prototypes generally do not yet have CPD credits; the nominal course registration fee is therefore waived.

Phase 5: Piloting

The Piloting phase consists of two critical processes: rapid prototyping and peer review. Pilot sessions are usually facilitated by curriculum team members with the assistance of other LEAP facilitators.

Rapid prototyping. The *rapid prototyping* approach is borrowed from industry. Desrosier has argued that it can be leveraged to meet marketplace needs while also ensuring quality standards.²⁹ It involves iterative plan-do-study-act cycles that are used in quality improvement. Modifications are made after each pilot session, based on the input from learners and course facilitators. In our experience, between three and six pilot sessions and peer review are required to bring a prototype to a point where it is ready for launch.

Peer review. Peer review strengthens the quality, accuracy, and relevancy of the courseware and minimizes bias. It is undertaken using two methods: the first occurs concurrently with the rapid prototyping process and the second after prototyping. Course facilitators who present a prototype and who were not part of the curriculum team provide one layer of peer review. During and after piloting, the courseware is also sent to an interprofessional team of 6 to 10 reviewers who are recognized as SMEs in the field. This component of peer reviewing is blinded; neither Pallium^{CAN}'s Scientific Officer nor the curriculum team can link a comment with a specific peer reviewer.

Once final adjustments are made based on the peer review feedback, the course is "locked-in" and readied for launch. This process includes proofreading, copy-editing, and formatting of all the courseware, including the slides and course manuals. The courseware is then submitted to the CFPC and/or the Royal College for CPD accreditation. With the current resources and development processes and logistics in place, it now takes a course about 10 to 12 months to reach this stage. The length of time can vary, however, and is largely influenced by the availability of content experts (SMEs, the

scientific officer, and scientific consultants), who generally have other work commitments.

Phase 6: Dissemination

Pallium^{CAN} uses a multipronged approach to facilitate spread of the courses to the targeted learner groups and settings, and across Canadian jurisdictions. This consists of a decentralized course organization and delivery model, development of strategic partnerships, a train-the-trainer model, and an online learning management system (LMS).

With few exceptions, Pallium^{CAN} does not organize and deliver courses itself. Rather, it relies largely on local, regional, or provincial partners to do this. Local and regional partners include regional palliative care programs, primary care clinic networks, hospital groups, home care nursing agencies, and medical and nursing schools who use the material in their CPD offerings or undergraduate and post-graduate education. Provincial partners include provincial hospice and palliative care associations, provincial and territorial health ministries or ministry programs (such as provincial cancer or renal care programs), and provincial professional bodies such as physician or nursing associations. In Ontario, Cancer Care Ontario, which oversees cancer care across the province, has promoted the LEAP Core and LEAP Oncology courses in its palliative care integration initiative. ORN, which oversees dialysis services across the province, includes LEAP Renal training as part of its initiative to integrate palliative care in the management of advanced kidney disease. The Network helps organize LEAP Renal courses across the province and subsidizes course registration. In Nova Scotia and Prince Edward Island, the provincial government emergency services programs supported the development and spread of LEAP Paramedics training to all its paramedic ambulance emergency providers. Federal organizations such as the Canadian Partnership Against Cancer and Canadian Foundation for Healthcare Improvement have helped disseminate it across other provinces.

The regional, provincial, and federal partners, which vary from province to province, promote the courses to their staff and members and usually organize several course offerings a year. Some partners organize “open” courses, which are open to registration by any health care professional in the jurisdiction. Others offer “closed” courses where registration is limited to only their staff or members as part of their CPD education. Some regional nursing home care agencies, for example, have made palliative care training of their staff obligatory. In all cases, organizers draw upon the local pool of certified LEAP facilitators to teach the various course offerings.

The large train-the-trainer program consists of more than 900 certified LEAP facilitators across the country. They are mainly palliative physicians and nurses and also include some social workers and pharmacists who work in palliative care services. The criteria for being a facilitator and the training program they undertake are described elsewhere. They download the teaching materials from the online LMS, as do registered learners. The LMS is also used to register all courses and learners, manage course registration fees, and facilitate the completion of pre- and post-course questionnaires and surveys.

The accreditation by professional organizations such as the two physician colleges of Canada serves as an additional incentive for health care professionals to register. In Canada, for example, physicians must meet annual quotas of CPD accredited activities to maintain their professional certification.

Phase 7: Language and Cultural Adaptation

Once a course is developed in English, it undergoes adaptation to French. Adaptation includes incorporating cultural sensitivities and language nuances. The process begins with the course being translated and adapted by an independent professional translation team. Once translated and adapted, it undergoes further revisions by a lead team of two or three Francophone SMEs. The course is then further reviewed by Francophone facilitators who are involved in the piloting of the French courses. Two to three pilots usually suffice. The LEAP Mini course has also been adapted to the Inuktitut language and culture to educate Inuit support workers in Canada’s far north.

The experience we have gained from undertaking these adaptations in Canada and from some limited testing of course content and design in Spain (University of Navarra), Portugal, and Barbados suggests that the framework can be used in other international jurisdictions to develop new courseware *de novo* or to adapt the LEAP courseware to local realities and context. Some new materials such as communication videos would need to be developed. Activities in Phase 3 can be used to understand the local context, a curriculum team could be established to make the modifications in Phase 4, and the prototype can be piloted in Phase 5. These would replace the need for Phase 7 (Language and Cultural Adaptation).

Phase 8: Update and Maintenance

Each course undergoes an annual update, and a major revision every three years. These are informed by the evaluations received from learners and feedback from facilitators. Curriculum teams are re-established for the major revisions. They consist of some original curriculum team members and additional new ones to encourage further innovation and increase objectivity. If the modifications are considerable, the courses may be re-piloted and re-submitted to peer-review. Course changes also require resubmission for CPD credits to the CFPC and Royal College.

A triage process is in place to manage corrections or modifications that need to be made to the courseware. Suggestions for changes are usually brought to Pallium^{CAN}’s attention by its scientific team and scientific advisors, LEAP facilitators, or learners. Suggestions for changes are triaged into one of three categories, “Emergent,” “Urgent,” or “Minor.” Changes that are deemed “Emergent” are errors or new information that may place patients at risk. These changes are made immediately, and notices are sent to all LEAP facilitators to bring these to their attention. Examples include medication warnings or withdrawals issued by Health Canada, or new legislation. “Urgent” changes are made during the annual updates. These include information that does not place patients at risk, such as changes in medication coverage by Canadian provincial insurers. “Minor” changes, such as spelling errors, are scheduled for course revisions every three years.

Preconditions and Factors for Success

The multiple activities described in the framework, including the infrastructure, resources, and logistics that support them, require funding. The main source of funding has been federal government grants and provincial ministry initiatives have supported some of the work. However, government funding is not guaranteed and sometimes insufficient. From 2008 to 2012, for example, Pallium^{CAN} received no government grants, prompting it in 2014 to adopt a social enterprise model in which revenues received from course registration fees help support the work and ensure program sustainability. This model has been refined in the last two years and now supports a large part of the framework's infrastructure and some of Pallium^{CAN}'s other activities, including its Compassionate Communities work. The funding that Pallium^{CAN} receives and its revenues from course fees is able to support activities only within Canada. Pallium^{CAN} continues to seek funding to support international collaborations.

Pallium^{CAN} currently has a staff of 18 full- or part-time persons, of which approximately eight have roles that exclusively or mostly relate to courseware development, deployment, and spread. Honoraria are offered to the core curriculum team members of the various LEAP courses, peer reviewers, and scientific consultants.

Earlier LEAP courses serve as templates for new courses, creating considerable efficiencies and economies-of-scale that facilitate the development of multiple LEAP courses. Many of the modules can be adopted or adapted for new LEAP course versions.

The large community of committed SMEs who participate in the various LEAP curriculum and peer review teams represents a major asset and factor for success, as does the large pool of LEAP facilitators. The latter are remunerated by the local organizers, usually through course registration fees or other subsidies.

Strategic partnerships with regional, provincial, territorial, and federal entities play a critical role in the spread and scale up of courses within and across Canadian jurisdictions. This continues to be a major driver of success, and significant efforts are invested into nurturing and supporting established partnerships and securing new ones. Pallium^{CAN} has, for example, employed business development staff to support this work.

Challenges and Limitations

A major challenge, which occasionally results in curriculum delays, relates to the heavy workloads and multiple responsibilities that many SMEs and scientific consultants already carry in their regular work roles. The support offered by the Pallium^{CAN} courseware team mitigates some of this. This support includes assistance with setting up the teams and coordinating team meetings, literature searches, recruiting and organizing pilot sites, coordinating peer review processes, collating feedback, and copy-editing slides and facilitator notes.

Curriculum development work was previously limited by funding limitations. The adoption of a social enterprise funding model has reduced this limitation, providing more flexibility on which courses to develop and update.

Finally, it is important to note that the framework depicts the curriculum development phases and their associated activities as a sequenced process. The work is, however, often nonlinear and iterative. Circular symbols in Figure 1 highlight the phases that are iterative and sometimes nonlinear activities. Situations also arise that require backtracking or revisiting a previously completed phase.

Conclusions

Pallium^{CAN}'s Curriculum Development Framework provides an approach that helps address the pressing need of developing palliative care education programs for multiple settings and disease groups. It supports the concurrent development and deployment of several courses by leveraging existing courses, materials and experiences, and maximizing efficiencies. Content and message alignment across courses are made possible by using some of the existing courses as "templates" for the development of new ones. Each course reflects the context and realities of the targeted setting or disease group.

The framework can be used to develop multiple courses *de novo* in other international jurisdictions. In our experience, the work of developing, deploying, spreading, and maintaining education programs across multiple settings and on a large scale requires sustained funding and resources. The use of pre-existing courseware such as the LEAP courses as a starting point would create significant efficiencies.

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Navigating Design Options for Large-Scale Interprofessional Continuing Palliative Care Education: Pallium Canada's Experience

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Abstract

To be effective, palliative care education interventions need to be informed, among others, by evidence and best practices related to curriculum development and design. Designing palliative care continuing professional development (CPD) courses for large-scale, national deployment requires decisions about various design elements, including competencies and learning objectives to be addressed, overall learning approaches, content, and courseware material. Designing for interprofessional education (IPE) adds additional design complexity. Several design elements present themselves in the form of polarities, resulting in educators having to make choices or compromises between the various options. This article describes the learning design decisions that underpin Pallium Canada's interprofessional Learning Essential Approaches to Palliative Care (LEAP) courses. Social constructivism provides a foundational starting point for LEAP course design, as it lends itself well to both CPD and IPE. We then explore design polarities that apply to the LEAP courseware development. These include, among others, which professions to target and how to best support interprofessional learning, class sizes, course length and content volume, courseware flexibility, regional adaptations, facilitator criteria, and learning methods. In some cases, compromises have had to be made between optimal perfect design and pragmatism.

Keywords: continuing professional development; education; instructional design; interprofessional; palliative care

Introduction

The need for palliative care education for health professionals is recognized.¹⁻⁴ This applies across professions, care settings, and the learning continuum, from undergraduate and postgraduate training to continuing professional development (CPD). To be effective, these

education interventions need to be informed, among others, by evidence and best practices related to curriculum development and design.⁵⁻⁹

Although there are many definitions for *curriculum*, *curriculum development*, and *curriculum design*, they broadly include the competencies to be acquired,

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Various aspects of this paper have been presented, in part, at several meetings, notably: Curriculum Design in Palliative Care Education. Workshop. International Conference of the Spanish Society of Palliative Care, Vitoria, Spain, June 7, 2018; Pereira J, Downer K, Gravelle-Ray, N. Pallium Canada. Innovations in Palliative Care Education Workshop, Dublin, Ireland, May 6, 2015.



learning objectives, teaching and learning strategies, delivery methods, course content and materials, learner assessment, and program evaluation approaches.¹⁰ They also encompass planning, which involves identifying the needs, resources required, and drivers and barriers to implementation. The term *instructional design* is often used interchangeably with *curriculum development*, but some reserve it specifically to that element of curriculum development that relates to the learning experience, including the delivery and learning strategies.¹¹ This is also referred to as *learning design*.

Numerous curriculum development frameworks exist, many of which are derived from the Analysis, Design, Development, Implementation, Evaluation model.^{12,13} Pallium Canada, a non-profit organization established in 2000 to advance primary-level palliative care nationally, has adapted a similar curriculum development approach for its Learning Essential Approaches to Palliative Care (LEAP) program and courses.^{14,15} The framework is used to develop and deploy standardized courses that target different settings and diseases. More than 530 LEAP courses, involving more than 9000 health care professionals from different professions, were delivered across Canada in 2019 alone.

Courses that are intended for large-scale, national deployment necessitate unique learning design considerations. It requires, among others, balancing pedagogical and pragmatic needs. The courses must be resource efficient and able to reach large numbers of learners without diluting the learning experience. This requires intentional design. Given the importance of interprofessional and multidisciplinary collaboration in palliative care, Pallium Canada's LEAP courses are also designed to support interprofessional education (IPE).¹⁶ This adds additional layers of complexity to learning design.^{17,18}

This article describes the LEAP courseware design and the considerations that have informed and underpinned their learning design.¹⁹ These include options or polarities that present themselves, requiring design decisions that are sometimes informed by evidence, and often by experience, best practices, and the goals and context at hand.

The LEAP courses

The main goal of the LEAP courses is to provide health care providers across different professions, services, and settings with the core competencies to provide a palliative care approach, also referred to as primary- or generalist-level palliative care.^{20,21} Other goals include to promote interprofessional teamwork; enhance

collaboration between services and specialist palliative care teams; and stimulate palliative care-related quality improvements in the health care system.

There are currently 17 different versions of the course, targeting different care settings (community and home care, hospital, long-term care [LTC]), services (such as paramedic services, pediatrics), or disease (such as palliative care in advanced heart, lung, kidney, and liver disease).¹⁵ The courseware is also being used in some undergraduate and postgraduate medical and nursing curricula. More than 530 course sessions were delivered in 2019 alone to more than 9000 health care professionals of different professions across Canada.

Although there is an overlap across the course versions in terms of design, learning methods, and messaging, each is designed to address the context, competencies, and needs related to that specific setting or disease group. This is achieved by showcasing studies and cases that are germane to those settings and diseases.

The LEAP courses have, until the COVID-19 pandemic, been mainly face-to-face classroom events that are delivered over one or two days. Courses are modular, with each course made up of 7 to 15 modules. The modules cover topics such as the early identification of patients with palliative care needs, self-awareness, decision making, pain and symptom management, essential conversations such as advance care planning and goals-of-care discussions, and addressing psychosocial and spiritual needs. Online learning versions are also available.

The LEAP courseware includes slide-decks with facilitator notes and learning exercises, participant and facilitator manuals, and educational videos. All courses and participants are registered through Pallium Canada's online learning management system (LMS). Facilitators and participants download their respective course materials from the LMS, and learners complete pre- and post-course knowledge, attitudes, comfort, and evaluation surveys online.

Design Considerations

Learning theories and overall approaches

The LEAP courses use various design approaches and learning methods to create an interactive, interprofessional, and collaborative learning experience. The designs are influenced by several adult learning approaches and learning theories, including social constructivism, the cognitive flexibility theory, and collaborative learning.²² These are applied to the classroom,



as well as to hybrid, flipped, and fully online renditions of the courses. While applying them though, their limitations also need to be recognized.⁸

The central premise of social constructivism is that knowledge is a human construction in which learners and facilitators are active participants and not just a passive receptacle.²³ They bring, in the case of the LEAP courses, pre-existing experiences and insights. The course is designed to encourage learners and facilitators to share some of these experiences and insights. Discussions that provide learning are then centered around these experiences and the cases provided in the courses. Knowledge is constructed as learners make sense of their experiences and learn from each other and the facilitators. Situations that challenge their previous thinking (cognitive dissonance) serve as strong stimuli for new learning. Social constructivism lends itself well to IPE.²⁴ The Cognitive Flexibility Theory, which has constructivist links, relates to learning in complex and ill-structured domains, which is very relevant to palliative and end of life care.²⁵ The theory pertains to the transfer of knowledge and skills beyond their initial learning situation. In palliative care, for example, it is not unusual that two different patients with very similar diagnoses and burden of disease may require different approaches and treatments because of many different factors. One solution does not necessarily

serve as a solution for all patients. The course, therefore, uses many case studies and multiple variations on some cases to illustrate this.

In the LEAP courses, the term “facilitator” is preferred over “teacher” or “presenter,” and “participants” over “learners” to emphasize the interactivity, collaboration, and reflective intent of the courses.

Design polarities

Additional factors have influenced learning design. These have included factors such as practicality and scalability, cost, resource requirements, and some political considerations. Often, the design has required choices between two opposing options, or polarities, each with their own merits and limitations (Table 1). In this section, we focus on the factors that relate to the classroom course versions.

Target learners, career stage, level, and competencies. Two of the first design decisions relate to the targeted career stage and level of palliative care. Studies demonstrate learning gaps related to palliative care across the career continuum, from undergraduate and postgraduate training to early or late career practice.^{3,26,27} However, learning needs, motivations, and approaches often evolve and change across one’s career.²⁸ Courses that rely on learners drawing from

Table 1. Curriculum Considerations and Options in the Design of Pallium Canada’s Learning Essential Approaches to Palliative Care (LEAP) Courses

Consideration	Design options	
Target profession	Include all professions	Target specific professions
Profession-specific breakout streams	Incorporate several streams to cater for different professions	Rely on a single stream that has professions learning together
Course length	Courses of three to five days	Short courses of one or two days
Content volume	Include all relevant content	Limit content to only key concepts
Class size	Large numbers of learners per class	Small class sizes
Integration of topics	Topics are integrated across all modules	Topics are addressed separately in different modules
Learning methods	Use high-resource, high-impact methods	Rely on low-resource, lower-impact options
Classroom or online learning	Only in-person classroom learning	All virtual, online learning
Courseware flexibility	All slides unlocked to allow modifications by facilitators	Lock courseware to preclude changes
Regional adaptations	Allow provincial and regional adaptations	Provide a single generic version
Facilitator criteria	Fully inclusive approach with limited restrictions on who may facilitate courses	Tight criteria on who may facilitate courses
Pre- and post-course reflection instruments	Pre- and post-course reflection quiz and surveys with multiple items	Reflection instruments with reduced items and simplified formats

Each consideration is accompanied by a spectrum of options, with the polarities of these options shown as anchors.



their clinical experiences and encounters, such as occurs when constructivism is applied extensively, may be less effective in the case of undergraduate learners who have had more limited clinical exposure compared with seasoned clinicians. Problem-based learning (PBL) or case-based learning (CBL) is applicable across all stages, but the cases that are used, how they are presented and the accompanying questions and depth to which they are explored may vary.

A decision was made to design LEAP courses primarily for postgraduate learners and professionals in practice. However, over the years we have observed that several of the learning methods, including theory bursts, interactive overviews and videos (Table 2), and even the cases, can also be used effectively in undergraduate learning. They require, however, that facilitators or teachers adjust the focus and approach. In undergraduate settings, for example, there is less emphasis on asking learners to share their clinical experiences and insights, and more on using the cases as illustrative examples. Several undergraduate medical, nursing, and health science programs currently use the LEAP courseware in their curricula.

A parallel design decision relates to the competencies to be addressed. Given Pallium Canada's mission to advance the palliative care approach, this has required distinguishing between generalist-level competencies and specialist-level palliative care competencies, which at times can be challenging.²⁹ In the early years (2000–2012), Pallium Canada relied on a combination of methods to establish the targeted competencies. It did this through a combination of literature reviews and input from targeted learners and palliative care experts. We found the Developing a Curriculum approach particularly useful in that it brings together, through focus groups, professionals who are well acquainted with the roles and maps out what their work realities are and the knowledge, skills, and attitudes that they need to perform effectively.³⁰ More recently, Pallium Canada has used competencies elucidated by various palliative care societies and associations.³¹

Lastly, although the LEAP course designs are not modified based on whether learners have enrolled voluntarily or because of obligatory course or work requirements, we have observed that facilitators sometimes need to alter the focus of the discussions, particularly in the introductory modules of the courses. More time and focus may be spent on covering the course materials that highlight the need for

palliative care, including studies, when learners' appear more skeptical. This, however, is purely an observation and whether or not differences truly exist between these groups warrants further study.

Target professions and IPE. Targeting a single profession, such as physicians or nurses, simplifies the design process as one needs to address the competencies and scope of practice of only one profession. Targeting all professions is most inclusive but also presents major challenges. Some "palliative care approach" competencies overlap across professions, whereas others diverge in scope and depth. We have found that the most feasible and practical has been to target physicians and nurses as the primary audience, while providing pharmacists, social workers, and allied health professionals an opportunity to participate as well. Strategies such as prompts to solicit input from other professions are incorporated to support learning for other professions. Although the courses are designed as interprofessional workshops, they may also be delivered as "uniprofessional" events when opportunities arise where only one profession is assembled, such as profession-specific conferences or services.

The integration of interprofessional learning has been guided by evidence and best practices in IPE.^{17,18,32} The design teams for each of the LEAP course versions, for example, are interprofessional to ensure the inclusion of the various perspectives. The courses promote appreciation of each profession's contributions and realities, and the creation of shared understandings.³³ The CBL can support IPE, especially when cases are constructed to elicit different perspectives and multi-professional input.³² Moreover, interprofessional collaboration is role modeled when course facilitation teams are interprofessional. Course facilitators are required to draw out different professions' perspectives during the learning experience.

Group balance is recommended in IPE.¹⁷ However, this is often not possible because the learners who attend an LEAP course are usually proportionately representative of the workforce in that setting. The LEAP Hospital courses, for example, usually have large numbers of nurses compared with physicians or pharmacists.

Facilitators play a key role in creating a learning environment that is conducive to IPE.^{17,34} Among others, facilitators must be sensitive to the dynamics of IPE. This includes being alert to interprofessional learning moments, in addition to the formal prompts embedded



Table 2. Learning Methods Used in the Learning Essential Approaches to Palliative Care (LEAP) Courses

Method	Description
Pre- and post-course assessment instruments (surveys and quizzes)	Participants complete a knowledge quiz and attitudes and self-perceived comfort surveys pre- and post-course. Although these are primarily learning tools that prompt reflection, they are also used to evaluate the impact of the courses. Facilitators are provided with the results of the pre-course surveys to allow them to highlight certain areas. Post-course, learners also complete a CTC statement in which they commit to changing three to four things in their practice. ⁴⁸ Four months after the course, the Pallium Portal sends them personalized reminders, with their specific commitments, and asks them to reflect on the extent to which they implemented their commitments and provide examples
Case-based learning (long and short cases)	Long and short cases are used. Cases are based on real-life situations and are done by using small or large group learning. Long cases contain several scenes that mimic a real case that unfolds over time. Each scene is accompanied by questions to guide discussions. Short cases (vignettes) consist of only one or two scenes
Lectures ("Theory Bursts" and "Interactive Overviews")	Serve to introduce key concepts, develop common ground across professions, and challenge preconceived ideas. ⁴⁹ Range from 20 to 45 minutes in length. Referred to as "theory bursts" when short and more didactic, and as "interactive overviews" when they include learner engagement methods such as short reflective videos, rapid discussion questions, and polls. They are often bookended by one or more cases
Reflective exercises	Reflective exercises are embedded across the course to prompt reflection on attitudes toward a palliative care approach. Short trigger videos, quotes, reflective questions, and quizzes are used to trigger reflection. These draw on the transformative learning theory, which postulates that transformative experiences, often emotional, can be powerful triggers for learning
Trigger videos (snippets and communication videos)	Short videos (one- to four-minute long) are used to trigger discussions and reflections and for learning communication approaches. ^{50,51} Snippets are animated videos that highlight concepts or challenge preconceived ideas. Communication videos show clinicians engaging in various palliative care and end-of-life care discussions with patients and families. They are deliberately scripted to show a mixture of good, borderline, and bad approaches in the same scenario, hence their title "NQR" approach
Small group learning	Learners are divided into groups of not more than 10 learners. A trained facilitator facilitates the discussions. Discussions are centered largely around cases, videos, or reflective questions. Various strategies are used to promote learning engagement. ⁵²
Large group learning	Some issues, videos, and cases are discussed as a large group, mainly for time efficiency or if the discussion benefits from many perspectives. However, because LEAP courses limit the number of learners to no more than 30 learners, interactivity is still retained.
Role play	Role play is used in the communication modules to allow learners to learn and practice communication skills. In some cases, group role play is used in which two volunteers play the parts of health care professionals and patients or families, but facilitators get the larger group to provide prompts to the "professional"
White board	Facilitators are encouraged to use the whiteboard to illustrate some points (e.g., show an opioid switch calculation)
Clinical parking lot	Use a white board or flip chart on which to list questions or issues that arise that cannot be addressed immediately but are listed to come back to at a later stage
QI parking lot and module	Education alone may not change behavior, requiring additional strategies. QI may enhance the impact of education interventions. ³⁹ Participants invariably identify, during the course, things that could be improved in their respective services. At the end of the course, in the "Effecting Change" module, facilitators return to these ideas and encourage participants to activate QI activities around some of these

CTC, commitment to change; LEAP, Learning Essential Approaches to Palliative Care; NQR, Not Quite Right; QI, quality improvement.

in the cases. This occurs, for example, when a learner raises a question or shares an experience that a facilitator could then use to highlight the contributions and roles of different professions. Learners need to be made to feel like equals and free to share their profession's perspectives. Facilitators must be ready to encounter and manage interprofessional friction and address issues of power and hierarchy that may arise. "Turf" or domain protectionism needs to be addressed when one profession may claim exclusive ownership to a particular domain, such as goals-of-care discussions, psychosocial care, or pharmacological management. A social worker may, for example, suggest that only they are able to address the social needs of a patient or a physician state or implies that goals-of-care discussions are exclusively their responsibility. Clearly, all

team members should be able to identify social needs, leaving complex social needs to be addressed by the team's social workers. Similarly, goals-of-care discussions can also, to varying levels, be undertaken or prompted by other professions while respecting their scopes of practice.

Profession-specific breakout streams. To address profession-specific competencies and learning needs, breakout parallel sessions in each course for different professions (or clusters of professions) can be used. However, this may require extra facilitators and venues with additional break-out space, making it cost- and resource-prohibitive in some cases. However, facilitators are granted latitude to cluster professions during the small group break-out learning sessions when



there is a sufficiently large group of learners from a particular profession or profession cluster such as allied health professionals to make it feasible. In the course version that target LTC settings (LEAP LTC), there are mandatory break-out sessions for personal support workers (PSWs), as they constitute a large care-provider group with unique skills sets in this setting.

Class sizes. Class size presents a tension between ideal adult learning environments and pragmatism. From a learning perspective, the number of learners affects interactivity; the smaller the number, the more opportunities for interactions between learners and faculty.^{35,36} However, too small a number hinders large-scale deployment because only a small number of professionals can be trained in any given session. We have found that, for the LEAP classroom course versions, a maximum of 30 participants and a ratio of 1 facilitator per 10 learners offers the best balance between these polarities.

Course length and content volume. The scope and depth to which content is covered in LEAP courses and included in facilitator manuals is an ongoing challenge. Excessive volume results in information overload and a pressured learning experience for participants and facilitators alike. Too little, on the other hand, results in suboptimal coverage of topics and inadequate support for some facilitators, especially those who do not have ready access to journals and other literature. The courseware helps them stay in touch with evolving evidence and best practices.

Lengthening the courses by a day or two has been trialed. The downside is that it creates a time barrier that deters larger numbers of health care professionals from attending courses or participating in all the modules. Services must find replacement staff (backfill) and pay the salaries of both course attendees and backfill staff. One- or two-day offerings and hybrid programs (with online and classroom learning) appear to provide a good balance that achieves optimal workforce outreach.

Horizontal or clustered integration of topics and learning objectives. In real life, patients often present with several needs at any given time, and with varying physical, psychological, social, or spiritual needs across their illness journeys. Courses can reflect this by using scaffolded cases that unfold across the entire course, with multiple scenes within and across modules. Each new scene is accompanied by questions, reflections, or exercises.

Trial and error have shown us that it is more practical to scaffold cases within modules instead of across modules. Clustering topics helps organize the courses and allows for modules to be used alone if needed. The cases do, however, introduce some domains outside of the module's specific focus. In the pain management module, for example, the patient in the case study also experiences social and psychological needs. Some competencies, such as decision making and ethics, are addressed horizontally across all the modules.

Courseware flexibility. The LEAP courseware is locked to prevent changes being made without Pallium Canada's permission. Although unlocking would allow facilitators to "personalize" the courseware, experience has shown that this ultimately compromises quality and credibility as materials are modified without peer review or quality control. To circumvent this and provide some flexibility, LEAP facilitators may showcase local resources such as clinical guidelines to some by toggling in and out of an LEAP slide deck.

The preferred mode of delivery is to have the courses delivered in single sessions, with all modules delivered back-to-back. This appears to enhance group cohesion and course continuity. However, the design allows the courses to be split into several sessions if necessary, to accommodate service needs and requirements. The two-day courses, for example, can be split into 2 one-day sessions, or 4 half-day sessions. Modules may also be delivered separately as self-standing learning events, such as occurs in academic detailing. This is particularly useful to undergraduate and postgraduate educators who can insert select modules into existing curricula.

Regional adaptations and language versions. The LEAP courses are delivered across Canada's 13 provinces and territories. There are variations across jurisdictions in terms of advance care planning laws and terminology, drug coverage, and the availability of palliative care services. Developing different course versions to accommodate these regional differences is challenging. The courses are therefore generic, but facilitators are prompted to highlight regional variations for their jurisdictions. Most courses are also adapted into French.

The LEAP courseware has undergone limited piloting outside of Canada. These included translations and adaptations for use in a medical undergraduate course in Spain, and a course for community- and



hospital-based physicians and nurses in Portugal. Adaptations were also tested, in English in the Caribbean and in a medical school in New Zealand. The courses needed little redesign and the content modification related to local contexts and realities, mainly around availability of medications locally, local regulations in areas such as advance care planning, and local cultural realities such as prognostic disclosures and scopes of practice across professions.

Facilitator criteria, professions, and certification.

Effective facilitation is critical to ensure an optimal constructivist learning experience. Polar options present themselves in terms of facilitator criteria. A “closed” approach would rely on a relatively small select group of highly skilled facilitators to deliver all the courses. This would, however, not be practical and would impede large-scale deployment. It would also not promote rapport-building between participants and local palliative care providers if the program relies on “flying” in certified facilitators from other regions. A completely open model, on the other hand, in which anyone can present the curricula regardless of clinical or teaching and facilitation expertise, could compromise the quality of the learning experience.

Facilitators are, therefore, required to be experienced palliative care professionals; most are physicians, nurses, and social workers with advanced training and certification in palliative care or with advanced clinical experience providing specialist-level palliative care. Current or recent clinical experience provides authenticity and centers learning on practical approaches. Facilitators can only facilitate a course once they have completed a one-day course called LEAP Facilitator, and have successfully co-facilitated one to two courses with an experienced facilitator. The LEAP Facilitator orientates educators to the design content of LEAP courses, their goals; provides hands-on skill training on how to ensure a highly interactive, learner-centered, learning experience; and also supports IPE. More recently, additional competencies have been delineated for online facilitation and a new facilitator course has been added to train online facilitators. There are currently more than 900 certified facilitators across the country to deliver classroom-based courses, and more than 100 trained to deliver webinars for the online course versions. The large pool of facilitators, with their presence across all Canadian jurisdictions, enhances access to a facilitator even if an organization or service hosting a course does not have in-house palliative care clinicians.

Learning methods

The LEAP courses incorporate various learning methods (Table 2). Although these are largely selected based on the pertinent learning objectives, other factors must also be considered. These include feasibility and resource availability for large-scale deployment. Balancing these factors sometimes also calls for design compromises. For example, although simulated patients are effective methods to learn communication skills, they are very resource-intensive and not practical for a short course that has to cover other competencies.³⁷ The LEAP courses, therefore, largely use education videos and role play instead.

The CBL is used instead of PBL. This leverages CBL’s efficiency as a more structured guided inquiry method for short courses.³⁸ Cases are discussed in small or large groups. For small group learning, some suggest group sizes of 10 or less.³⁹ Others posit that the number of learners should not conform to any set rule but depends on the goals and objectives of the program, and the experience of the facilitators.³⁹ Short lectures, in the form of overviews, are also used for their efficiency to introduce key concepts and develop common understandings across professions. They are often book-ended by cases to provide clinical contexts and application.

LEAP adaptations for virtual learning

More recently, in response to the COVID-19 pandemic, the LEAP courses have transitioned to being fully online. Previously, some course versions had used blended delivery approaches with classroom and online components.⁴⁰ In LEAP Facilitator, for example, a hybrid approach was used in which self-learning online modules replaced portions of the classroom course, whereas the classroom component focused on experiential learning. Pallium had also developed a suite of 15 interactive self-learning online modules, each 10- to 30-minutes long, to complement classroom learning in a flipped learning model. In a flipped learning model, learners usually undertake self-study, followed by classroom learning. The current fully online LEAP versions use a similar approach, but the classroom in-person component is replaced with four interprofessional live webinars, each 90 minutes long. The webinars use CBL to provide clinical context and application to what was learned in the self-learning modules.

Webinar class sizes have also been limited to a maximum of 30 participants to ensure interactivity. Break-out sessions are also incorporated. However, because



the pool of trained online facilitators was relatively limited at the start of the pandemic, breakout sessions were used more sparingly than in classroom in-person events. Once a larger pool of facilitators was trained to teach online, more breakout sessions were incorporated. This switch to virtual learning has been successful in that more than 150 fully online LEAP courses were delivered from April 2020 to March 2021, with almost 3000 learners and very positive ratings by learners on the learning experience.

Course Evaluations and Impact

Ultimately, the proof of whether the design is successful lies in the program and course evaluations and studies of impact across various levels and domains. A large study was undertaken of all learners who participated in LEAP courses from April 2015 to March 2017. Table 3 summarizes the responses to two of the seven course evaluation questions by 3045 out of 4636 learners who participated in LEAP Core sessions (response rate 65.7%). The two questions are used by Pallium Canada as global indicators of course success. Relevance has recently been highlighted as an important indicator.⁴¹ The large majority of participants, across professions, rated the course as relevant to their work and expressed that they would recommend it to colleagues. Qualitative analyses revealed interactivity, IPE, the use of narratives and cases, and the quality of facilitation as course strengths. Areas for improvement included reducing course content. Analyses of the four-month post-course commitment-to-change reflections noted that on average 65% to 75% of commitments post-course were being implemented with

examples of benefits to patient care and the health care system provided.⁴² Significant pre- versus post-course improvements in knowledge, attitudes, and comfort levels related to providing a palliative care approach were noted across professions.⁴³ These results are reassuring from a design perspective. A full description of all the results will be published elsewhere. Similar results were found with the LEAP LTC courses.

Evidence of impact has been found in other studies. Evaluations of the INTEGRATE Project, a multi-pronged intervention that included training of staff at cancer center programs and family health clinics with LEAP courses, found improved earlier identification of patients with palliative care needs, increased use of palliative care services, and improved professionals' skills.⁴⁴⁻⁴⁶ In an evaluation of the "Paramedics Palliative Care" project in two provinces, in which LEAP Paramedic training was applied alongside policy and procedure changes, patients and families reported high degrees of satisfaction, particularly being able to be cared for at home.⁴⁷ Paramedics reported increased comfort, confidence, and joy providing palliative care, whereas patients and families reported better symptom control, quality of life, and gratitude for being cared for in their homes.

Future Design Directions

Online learning, including flipped and hybrid options, provides a potential solution to addressing the design challenge related to addressing profession-specific learning needs in IPE. We have started to develop profession-specific self-learning modules to complement the other course components. Moreover, content

Table 3. "Proportion of Learning Essential Approaches to Palliative Care (LEAP) Core Course Participants, Overall and by Profession, Who Responded "Strongly Agree" or "Agree" to Two Evaluation Questions Related to the Learning Experience." (For all LEAP Core version courses delivered from 1 April 2015 to 30 March 2017)

	Profession	Total number of learners (%) ^a	Number (%) of responses	Participants (%) who responded "Strongly Agree" or "Agree" ^b
"The course was relevant to my practice"	Physicians	878 (18.9)	662 (75.4)	640 (96.7)
	Nurses	2990 (64.5)	1973 (66)	1919 (97.3)
	Pharmacists	100 (2.2)	74 (74)	65 (87.8)
	Social workers	127 (2.7)	80 (63)	63 (78.8)
	Others	541 (11.7)	256 (47.3)	231 (90.2)
	Total	4636 (100)	3045 (65.7)	2918 (95.8)
"I would recommend the course to colleagues"	Physicians	See above	See above	631 (95.3)
	Nurses	See above	See above	1934 (98)
	Pharmacists	See above	See above	70 (94.6)
	Social workers	See above	See above	71 (88.8)
	Others	See above	See above	243 (94.9)
	Total	See above	See above	2949 (96.8)

^aPercentage refers to the proportion that profession was represented relative to all learners.

^bThe denominator is the total number of responses to the survey received from that profession.



that introduces learners to contributions by other professions can also be introduced and then highlighted in the live webinars. Increasingly, nursing aides are also being included in LEAP training, particularly as these providers play key roles in providing care in the home and LTC (nursing homes) settings in Canada. A new LEAP PSW course has just been launched. In the interim, it is a series of online self-learning modules. The plan is to add live webinars in the future, and to have them later also participate in interprofessional classroom or live webinar sessions alongside other professions. The premise is that they will feel more confident to participate alongside other professions once they are empowered with some basic knowledge and understanding of the field.

Work is also underway to develop some self-standing modules that provide updates on the current management of various non-cancer illnesses. The LEAP facilitators, although experienced palliative care clinicians, often report feeling a need to update their own knowledge in these areas, especially when they are asked to facilitate a disease-specific course such as LEAP Renal, LEAP Heart, and LEAP Lung, to nephrologists, cardiologists, and respirologists.

Finally, future work will include repackaging the videos to allow them to be used as interactive self-learning online modules. Additional videos that reflect a variety of care settings also need to be developed to better reflect realities in non-cancer clinics such as dialysis units (for LEAP Renal) or emergency departments (for LEAP ED).

Funding, Distribution, and Spread Strategies

Although a detailed description of the program's spread and scale-up strategies is outside the scope of this article, two key approaches merit attention. First, although courses are developed and maintained centrally by Pallium Canada, local partners such as palliative care services, universities, home care agencies, hospitals, and nursing homes organize and deliver the courses. They draw on local certified facilitators to present the courses.

Second, a social enterprise model has evolved to ensure program sustainability. Government funding has been critical to support early curriculum development and testing, implementing an LMS, and creating a large community of practice of curriculum developers and facilitators across the country. However, this funding source has been precarious and, for some years, absent. Pallium Canada, therefore, relies now on other funding sources, primarily revenues from course regis-

trations and philanthropic contributions. The costing model is based on the principles that the registration fee should be fair and acceptable to learners and organizations that may subsidize them, support Pallium's ongoing operations and continuous development and research activities, and allow local organizers to cover the costs of organizing and delivering a course. The latter include honoraria for facilitators and the costs of providing a venue and meals. In Canada, the fee for a two-day medical education event is generally about \$600 to \$800, on average. Local organizers may charge similar rates (which vary from province to province, profession, and course type) for an LEAP course and Pallium retains a quarter to a third of that. Similar fees are charged for facilitator training.

A fine balance is needed between offering courses for free and excessive registration fees. The former would render the program unsustainable, and we have also observed high levels of no-shows (up to 30% of registrations in some cases). High fees, on the other hand, would pose significant barriers to adopting the curricula and participating in the courses.

Conclusion

Designing palliative care interprofessional CPD courses for large-scale, national deployment requires making a number of decisions that impact the learning experience. Several design options present themselves, requiring curriculum developers to make choices or compromises between various options. Incorporating IPE adds further complexity to designing the learning experience.

Although there is a considerable palliative care literature that describes curricula, learner reactions to them, and their impact on aspects of competency such as knowledge, attitudes, and self-perceived efficacy, a few publications specifically explore the design considerations and polarities that underlie them, especially with respect to postgraduate IPE. Educators are often left to learn by trial-and-error. Some are therefore calling for greater clarity and exploration of the design of continuing IPE interventions, in addition to evaluating their impact.¹⁸

Making design decisions should ideally be informed by evidence, but often educators need to rely on best practices, experience, and ongoing program evaluations. In this article, we have explicitly explored the design considerations and decisions that underlie interprofessional palliative care courseware intended for national deployment. There is a need for ongoing



research into the impact of different design choices, including learning methods, alone or in combination. This also extends to different delivery methods such as classroom, flipped, blended, and fully virtual learning, allowing us to harness their respective strengths and avoid their pitfalls.

Authors' Contributions

J.P.: Co-founder of Pallium Canada, conception and design, lead for curriculum development and curriculum evaluation, and drafted manuscripts. G.G.: LEAP course design and curriculum lead, manuscript input. R.S.: LEAP course design (online) and curriculum lead, LEAP facilitator, and manuscript preparation. I.H.: LEAP course design and curriculum lead, manuscript input. E.A.: LEAP course design, curriculum lead, LEAP facilitator, and manuscript preparation. J.F.: Operations supporting the courseware development, manuscript preparation.

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Ethical Approval and Patient Consent

This article describes the learning design decisions that underpin Pallium Canada's interprofessional LEAP courses. It is not a research study and therefore, neither ethical approval nor patient or participant consent was required.

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Author Disclosure Statement

Both J.P. (Scientific Officer) and J.F. (Vice President of Operations) are paid staff members of Pallium Canada. The other authors have, over the years, received stipends by Pallium Canada for their curriculum development and delivery contributions.

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Abbreviations Used

- CBL = case-based learning
- CPD = continuing professional development
- CTC = commitment to change
- ED = emergency department
- IPE = interprofessional education
- LEAP = Learning Essential Approaches to Palliative Care
- LMS = learning management system
- LTC = long-term care
- NQR = Not Quite Right
- PBL = problem-based learning
- PSW = personal support worker
- QI = quality improvement

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Editor's key points

► Many Canadians only receive palliative care in the last month of life. Integrating palliative care into primary care enables early identification and access. However, many primary care practitioners lack training in palliative care and report few resources and supports.

► After the INTEGRATE Project was implemented, significant increases were identified in primary care practitioner confidence to deliver a palliative approach to care, use of palliative care tools, initiation of advance care planning (ACP) or goals of care (GoC) conversations, home visits for palliative care, and referrals to community palliative care services. There was considerable variation across sites with regard to the number of patients identified using the "surprise question," the percentage of patients for whom an ACP or GoC conversation was initiated, and the time between identification and the ACP or GoC conversation.

► Overall, the results suggest that the care processes introduced by the INTEGRATE Project can be successfully incorporated into practice with appropriate and regular education, and a flexible approach that enables local tailoring.

Building capacity for palliative care delivery in primary care settings

Mixed-methods evaluation of the INTEGRATE Project

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Abstract

Objective To evaluate an intervention aimed at building capacity to deliver palliative care in primary care settings.

Design The INTEGRATE Project was a 3-year pilot project involving interprofessional palliative care education and an integrated care model to promote early identification and support of patients with palliative care needs. A concurrent mixed-methods evaluation was conducted using descriptive data, provider surveys before and after implementation, and interviews with providers and managers.

Setting Four primary care practices in Ontario.

Participants All providers in each practice were invited to participate. Providers used the "surprise question" as a prompt to determine patient eligibility for inclusion.

Main outcome measures Provider attitudes toward and confidence in providing palliative care, use of palliative care tools, delivery of palliative care, and perceived barriers to delivering palliative care.

Results A total of 294 patients were identified for early initiation of palliative care, most of whom had multiple comorbid conditions. Results demonstrated improvement in provider confidence to deliver palliative care (30% mean increase, $P < .05$) and self-reported use of palliative care tools and services (25% mean increase, $P < .05$). There was substantial variation across practices regarding the percentage of patients identified using the surprise question (0.2% to 1.5%), the number of advance care planning conversations initiated (50% to 90%), and mean time to conversation (13 to 76 days). This variation is attributable, in part, to contextual differences across practices.

Conclusion A standardized model for the early introduction of palliative care to patients can be integrated into the routine practice of primary care practitioners with appropriate training and support. Additional research is needed to understand the practice factors that contribute to the success of palliative care interventions in primary care and to examine patient outcomes.

Édifier les capacités de prestation des soins palliatifs en milieux de soins primaires

Évaluation à méthodes mixtes du projet INTEGRATE

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Résumé

Objectif Évaluer une intervention ayant pour but l'édification des capacités à dispenser des soins palliatifs dans les milieux de soins primaires.

Type d'étude Le projet INTEGRATE était un projet expérimental qui comportait une éducation interprofessionnelle en soins palliatifs, de même qu'un modèle de soins intégré pour favoriser l'identification précoce des patients ayant besoin de soins palliatifs et leur soutien. Une évaluation concomitante à méthodes mixtes a été effectuée à l'aide de données descriptives, de sondages auprès des professionnels avant et après la mise en œuvre et d'entrevues avec les professionnels et les gestionnaires.

Contexte Quatre cliniques de soins primaires en Ontario.

Participants Tous les professionnels dans chaque clinique ont été invités à participer. Les professionnels utilisaient une « question surprise » comme incitatif pour déterminer l'admissibilité des patients à être inclus.

Principaux paramètres à l'étude Les attitudes et la confiance des professionnels face à l'offre de soins palliatifs, à l'utilisation des outils de soins palliatifs, à la prestation de soins palliatifs, de même que les obstacles perçus nuisant à la prestation des soins palliatifs.

Résultats Un total de 294 patients ont été identifiés comme sujets propices à une amorce précoce des soins palliatifs, dont la plupart avaient des problèmes de multimorbidité. Les résultats ont révélé une amélioration dans la confiance des professionnels de dispenser des soins palliatifs (augmentation moyenne de 30 %, $p < ,05$) et dans l'utilisation des outils et des services de soins palliatifs signalée par les intéressés (augmentation moyenne de 25 %, $p < ,05$). Il y avait des variations considérables d'une clinique à l'autre concernant le pourcentage de patients identifiés à l'aide de la question surprise (0,2 à 1,5 %), le nombre de conversations amorcées sur les directives préalables (50 à 90 %) et le temps moyen écoulé entre l'identification et la conversation (13 à 78 jours). Cette variation est en partie attribuable aux différences contextuelles entre les cliniques.

Conclusion Un modèle normalisé pour l'amorce précoce des soins palliatifs aux patients peut être intégré dans la pratique habituelle des professionnels en soins primaires au moyen d'une formation et d'un soutien appropriés. D'autres recherches sont nécessaires pour comprendre les facteurs d'une pratique qui contribuent à la réussite des interventions liées aux soins palliatifs en soins primaires et pour examiner les résultats chez les patients.

Points de repère du rédacteur

► De nombreux Canadiens ne reçoivent des soins palliatifs que durant le dernier mois de leur vie. L'intégration des soins palliatifs dans les soins primaires permet une identification et un accès précoces. Par ailleurs, de nombreux professionnels des soins primaires n'ont pas assez de formation en soins palliatifs et signalent un manque de ressources et de soutien.

► Après la mise en œuvre du projet INTEGRATE, on a constaté des hausses significatives dans la confiance des professionnels en soins primaires d'offrir une approche palliative dans leurs soins, d'utiliser des outils de soins palliatifs, d'amorcer des conversations sur les directives préalables (DP) ou les objectifs des soins (OdS), de faire des visites à domicile pour donner des soins palliatifs et d'orienter les patients vers les services communautaires de soins palliatifs. Il y avait des variations considérables d'une clinique à l'autre en ce qui a trait au nombre de patients identifiés à l'aide de la « question surprise », au pourcentage de patients pour qui une conversation sur les DP ou les OdS avait été amorcée et au temps écoulé entre l'identification et la conversation sur les DP ou les OdS.

► Dans l'ensemble, les résultats font valoir que les processus de soins implantés par le projet INTEGRATE peuvent être intégrés avec succès dans la pratique au moyen d'une éducation appropriée et régulière, de même qu'avec une approche flexible qui permet une adaptation locale.

Palliative care aims to relieve suffering and improve quality of life for patients and their families who are facing serious, life-limiting illness.¹ It focuses on open and sensitive communication with patients about their prognosis and illness trajectory, including advance care planning (ACP), setting goals of care (GoC), and discussing available treatments.¹ Palliative care also involves the provision of pain and symptom management and psychosocial and spiritual support to help patients and families cope with the illness.¹ In the past, palliative care was relegated to the last stages of care when patients were at or near the end of life. However, empirical evidence suggests that initiating palliative care earlier in the illness trajectory can improve symptom control, quality of life, and survival, and result in less aggressive care and less distress among family caregivers compared with patients receiving standard care.²⁻⁸

Despite increasing evidence regarding the benefits of initiating palliative care early, many Canadians only receive palliative care in the last month of life, and most continue to die in hospital.^{9,10} Integrating palliative care into primary care enables early identification and access to palliative care, while reserving scarce specialist palliative care resources for the most complex cases.¹¹⁻¹³ Primary care practitioners (PCPs) are uniquely positioned to deliver effective “generalist” palliative care: they treat the whole person (not just individual illnesses), can readily identify patients who might benefit from a palliative approach to care, tend to have continuous relationships with patients and their families over time, and often wish to remain active in the care of their dying patients.^{11,14-17} In addition to supporting most patients’ preference to die at home in the care of a physician they know and trust,^{18,19} home- and community-based palliative care can also generate statistically significant cost savings for the health care system.^{3,20} However, many PCPs have not been trained to provide palliative care and report few resources and supports.^{11,21-29}

In this study, we report the results of an intervention aimed at building the capacity of PCPs to deliver palliative care to patients in the community. The INTEGRATE Project was a 3-year (2014 to 2016) pilot project that delivered interprofessional palliative care education to providers and implemented an integrated care model to promote early identification of and support for patients with palliative care needs.³⁰ The overall goals of the INTEGRATE Project were to enhance provider knowledge and confidence in palliative care delivery, identify patients who might benefit from palliative care earlier in their disease trajectory, and increase the provision of palliative care and the use of palliative care tools. The INTEGRATE Project was implemented in 4 primary care practices (results reported herein) and select disease sites within 4 cancer centres (results to be reported elsewhere) in Ontario.

— Methods —

To evaluate the effect of the INTEGRATE Project on primary care capacity to deliver palliative care, we analyzed descriptive data and conducted preintervention and postintervention surveys and semistructured interviews. Ethics approval for this study was granted by the University of Toronto Research Ethics Board.

Intervention settings and patient eligibility criteria

Four primary care practices in Ontario were invited to participate in the INTEGRATE Project. These practices were purposefully selected using maximum variation sampling to ensure diversity in geography and practice characteristics (eg, academic status, extent of interprofessional resources) (Table 1). All 4 practices accepted the invitation to participate and identified a local clinical champion to support the INTEGRATE Project implementation in their practice. Individual PCPs at each practice chose whether to participate in the INTEGRATE Project. To support early identification, participating PCPs used the surprise question: “Would you be surprised if this patient were to die within 6 to 12 months?”³¹ The surprise question was used as a prompt for all patients expected to need symptom management in the next year based on age (ie, older than 75 years) and diagnoses (ie, diagnosis of life-limiting disease or presence of multiple comorbidities). If the answer to the surprise question was no, the patient was included in the intervention and a palliative approach to care was initiated, including symptom assessment and management, ACP and GoC conversations with patients and family members, and referrals to community supportive care.

Interventions

The INTEGRATE model consisted of 2 interventions: interprofessional palliative care education; and an integrated care model to facilitate early identification of patients with palliative care needs, early linkages to community-based resources, and improved communication between providers involved in patient care. The model was co-developed by the research team and provincial working groups comprising clinicians, allied health practitioners, administrators, and patient and family advisors, and was adapted from the Gold Standards Framework, which is endorsed by the National Health Service in the United Kingdom (Figure 1).³¹

Providers at participating practices completed Pallium Canada’s Learning Essential Approaches to Palliative Care (LEAP) 2-day workshop (“LEAP Core”). The LEAP course provides a standardized, interactive, competency- and team-based approach to learning about current best practice in caring for patients with life-threatening illness.³² Sites were strongly encouraged to include all members of the care team. For this reason, most

INTEGRATE Project providers were trained together, regardless of professional role. In addition, a trifold decision aid was developed, in both English and French, to support providers in the identification of patients likely to benefit from a palliative approach (available from the authors upon request).

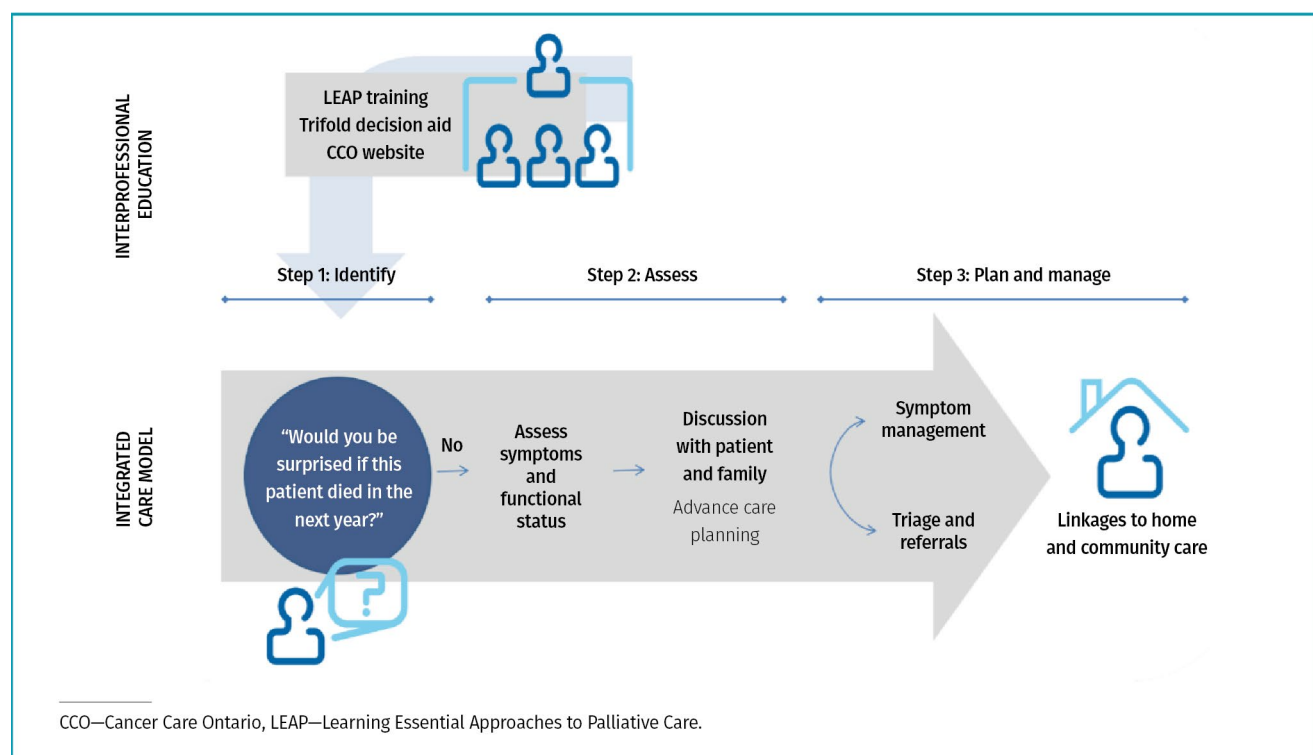
Once physicians identified a patient using the surprise question, a palliative approach to care was initiated. Patient assessment of symptoms and functional status was conducted using the Edmonton Symptom Assessment Scale and the Palliative Performance Scale.^{33,34} Advance care planning conversations with

Table 1. Primary care practices that participated in the INTEGRATE Project

PRACTICE NAME AND MODEL*	REGION OF ONTARIO	PRACTICE CHARACTERISTICS
Petawawa Centennial Family Health Team	Champlain	<ul style="list-style-type: none"> • Rural • 8 family physicians and various other professionals, including nurse practitioners, nurses, a pharmacist, a social worker, and a dietitian • Roster of about 6300 patients
Sunnybrook Academic Family Health Team	Toronto Central North	<ul style="list-style-type: none"> • Urban • Academic • 13 family physicians and various other professionals, including nurses, social workers, dietitians, diabetes nurse educators, an occupational therapist, a pharmacist, and a nurse navigator • Roster of about 9300 patients
Forest Hill Family Health Group	Toronto Central South	<ul style="list-style-type: none"> • Urban • 10 family physicians and various other professionals, including nurses, a social worker, a child psychologist, a speech pathologist, a nephrologist, an endocrinologist, physiotherapists, and chiropractors • Roster of about 10 000 patients
Barrie and Community Family Health Team	North Simcoe Muskoka	<ul style="list-style-type: none"> • Rural • 84 family physicians in teams of 2 to 4 across 35 sites • Roster of about 131 000 patients

*A *family health team* is an interprofessional team of health care providers—family physicians, nutritionists, social workers, and other professionals—who provide comprehensive care to patients enrolled within the family health team. Physicians are paid through blended capitation or blended salary. A *family health group* is a group of 3 or more family physicians who work together but not necessarily in the same office. Patients are typically enrolled under the care of 1 doctor. Physicians are paid through fee for service.

Figure 1. INTEGRATE model of care for primary care practices



patients and family members were also initiated by physicians and, at some sites, followed up by other members of the team, such as a nurse or social worker. Providers agreed to common referral criteria: a Palliative Performance Scale score of less than 60 (indicating substantial disease and reduced mobility) triggered a referral to a Community Care Access Centre (CCAC). (Community Care Access Centres were regional bodies that coordinated and provided access to home and community care services.) Each site was assigned a coordinator through its local CCAC. The coordinators, who were on site for 1 half day or 1 full day per week, supported implementation of the INTEGRATE Project, facilitated patient navigation, and participated in interprofessional discussions where possible. Symptom management, triage, and referrals to home and community care (including palliative care specialists) were performed continuously by the care team based on patient need.

Data collection and analysis

Project managers were responsible for documenting patients identified using the surprise question, the date of identification, and other clinical data elements for evaluation purposes. These data were collected on an ongoing basis from the point of implementation (Table 2) until August 31, 2016.

To provide a baseline against which to assess the effect of the INTEGRATE Project, a Web-based self-administered survey was co-developed by the research team and provincial working groups, drawing from existing surveys where possible, such as from the Canadian Hospice and Palliative Care Association. The survey consisted of 20 questions with primarily Likert-type agreement scales, and was administered before and after implementation to measure provider attitudes toward and confidence to provide palliative care; use of palliative care tools; delivery of palliative care; and perceived barriers to delivering palliative care. All PCPs who participated in the project were invited via e-mail to participate. In accordance with the Dillman method, partial respondents and nonrespondents were sent 3 reminders to complete each survey.³⁵ To compare preimplementation and postimplementation survey participant characteristics and responses, 2 members of the research team used the χ^2 test.

Two members of the research team also conducted semistructured interviews with care providers and clinical and administrative leaders. The aim was to understand their views and experiences, identify implementation enablers and barriers, and assess the sustainability of the model. Interviewees provided verbal consent to participate in the interviews. Interviews were recorded and a summary of each interview was generated using a combination of interviewer notes and verbatim transcripts. The interview summaries were sent back to participants for review as a form of “member checking.”³⁶ Two members of the research team inductively coded the interview transcripts, reconciled their differences through discussion, and thematically analyzed the coded data using NVivo software.

— Results —

A total of 294 patients were identified using the surprise question across 4 primary care practices (Tables 2 and 3). Only 1 practice reached the hypothesized 1% of patients in primary care who are expected to die within a year and would benefit from palliative care.³⁷ The primary disease that contributed to the decision to initiate a palliative approach to treatment varied. Cancer was reported as the most common diagnosis (41%), with heart disease (17%) and dementia (10%) being the next most common diagnoses. Frailty (8%), chronic lung disease (6%), and chronic kidney disease (5%) were less common. Other diagnoses (10%) reported included liver disease, motor neuron disease, Parkinson disease, amyotrophic lateral sclerosis, diabetes, stroke, multiple sclerosis, seizure disorder, and hypertension. More than 3 comorbid conditions were reported by 65% of patients, likely contributing to their need for a palliative approach to care.

Preimplementation and postimplementation provider survey

The preimplementation and postimplementation surveys yielded 55% (n=71) and 34% (n=49) response rates, respectively. A description of the survey respondents is provided in Table 4. A summary of the results before and after implementation across the 4 primary care practices is provided in Table 5. The results demonstrate improvement in provider confidence to deliver

Table 2. Patients identified with the surprise question by primary care practice: N = 294.

PRIMARY CARE PRACTICE	START DATE	NO. OF PARTICIPATING PHYSICIANS	NO. OF PATIENTS ACROSS PARTICIPATING PHYSICIANS	PATIENTS IDENTIFIED, n (%)	REPORTED DEATHS, n (%)
PCFHT	Nov 2014	8	6293	96 (1.5)	24 (25)
SAFHT	Apr 2015	10	7932	55 (0.7)	25 (45)
FHFHG	May 2015	3	4666	9 (0.2)	6 (67)
BCFHT	Jun 2015	15	24 553	134 (0.5)	47 (35)

BCFHT—Barrie and Community Family Health Team, FHFHG—Forest Hill Family Health Group, PCFHT—Petawawa Centennial Family Health Team, SAFHT—Sunnybrook Academic Family Health Team.

Table 3. INTEGRATE Project patient characteristics and milestones by practice: N = 265 patients; owing to missing data for 29 patients, this table reports on 265 of 294 identified patients (90%).

PRIMARY CARE PRACTICE	NO. OF PATIENTS IDENTIFIED	MEAN (SD) PATIENT AGE	ACP OR GOAL CONVERSATION INITIATED, n (%)	MEAN (SD) TIME TO CONVERSATION, d
PCFHT	91	77 (13)	72 (79)	39 (100)
SAFHT	40	87 (8)	36 (90)	24 (53)
FHFHG	9	75 (11)	8 (89)	76 (114)
BCFHT	125	77 (13)	63 (50)	13 (36)

ACP—advance care planning, BCFHT—Barrie and Community Family Health Team, FHFHG—Forest Hill Family Health Group, GoC—goals of care, PCFHT—Petawawa Centennial Family Health Team, SAFHT—Sunnybrook Academic Family Health Team.

Table 4. Profile of preimplementation and postimplementation survey respondents

DEMOGRAPHIC VARIABLE	PRE-IMPLEMENTATION SURVEY, % (N = 71)	POST-IMPLEMENTATION SURVEY, % (N = 49)
Primary care practice		
• PCFHT	31	0*
• SAFHT	35	51
• FHFHG	6	8
• BCFHT	28	41
Profession or specialty		
• Family physician	55	67
• Nurse (NP, RN, RPN)	29	23
• Pharmacist or pharmacy technician	7	4
• Dietitian	6	6
• Social worker	1	0
• CCAC coordinator	1	0
• Clinical practice manager	1	0

BCFHT—Barrie and Community Family Health Team, CCAC—Community Care Access Centre, FHFHG—Forest Hill Family Health Group, NP—nurse practitioner, PCFHT—Petawawa Centennial Family Health Team, RN—registered nurse, RPN—registered practical nurse, SAFHT—Sunnybrook Academic Family Health Team.
*Significant difference at $P < .05$.

palliative care and self-reported use of palliative care tools and services; 14 of 17 (82%) of these improvements are statistically significant ($P < .05$). The most prominent shifts occurred in providers' belief that they have sufficient education to provide palliative care (21% to 64%), use of the surprise question (54% to 91%), and confidence to initiate the ACP conversation (25% to 62%).

Provider interviews

A total of 14 interviews were conducted with 12 physicians and 2 nurses across the 4 primary care practices (3 to 4 providers per practice). The providers agreed that the INTEGRATE Project enhanced awareness of and

helped prioritize palliative care. Even providers who were using the surprise question or delivering palliative care before the INTEGRATE Project noted that the model supported a more proactive and explicit approach, particularly for initiating ACP conversations. There was also consensus that provider confidence and skill in delivering palliative care increased, and that ACP conversations were initiated earlier and for a broader group of patients than in previous practice. These results align with the quantitative results of the preimplementation and postimplementation surveys.

Providers also highlighted several enablers of and barriers to the implementation of the INTEGRATE Project. Common enablers across sites included the team-based LEAP training, which created a common language and approach; the dedicated CCAC care coordinator; physician champions; and the use of electronic medical records to alert providers about eligible patients (eg, based on age), to support documentation of the surprise question and ACP conversation, and to embed educational resources and referral forms. Notable barriers to the implementation and sustainability of the INTEGRATE Project included time per patient visit and physician workload (although it was noted that this became less of a barrier over time as the new model was normalized), technical challenges with documentation in electronic medical records in select practices, staff turnover, persistent discomfort initiating ACP conversations, varying levels of patient and family readiness for ACP conversations, and sharing a person's identified goals and values across care settings. Providers also flagged practice type as a factor influencing the success of the INTEGRATE Project; practices with more internal interprofessional resources (ie, Barrie and Community Family Health Team, Petawawa Centennial Family Health Team, Sunnybrook Academic Family Health Team) generally experienced fewer barriers integrating the model into their routine work flow compared with those that did not (ie, Forest Hill Family Health Group).

— Discussion —

The importance of integrating palliative care into primary care is well established and there is evidence

Table 5. Comparison of provider survey responses before and after implementation of the INTEGRATE Project

RESPONSE	BEFORE IMPLEMENTATION, % (N = 71)	AFTER IMPLEMENTATION, % (N = 49)
Attitudes and education*		
• Belief that “palliative care should be considered for patients who have a progressive, life-limiting illness (even if they still have many months to live)”	92	96 [†]
• Belief that I have sufficient education or training to provide palliative care	21	64 [‡]
Confidence[§]		
• Confidence to discuss patients’ progressive noncurable illness	27	60 [‡]
• Confidence to initiate ACP discussion	25	62 [‡]
• Confidence to discuss different options for care settings	24	53 [‡]
• Confidence to inform patients and families of support services available	17	36 [‡]
Use of palliative care tools		
• Surprise question	54	91 [‡]
• Palliative Performance Scale	44	67 [‡]
• CCO Psychosocial Oncology Program and palliative care tools	3	16 [‡]
• Edmonton Symptom Assessment Scale	28	62 [‡]
• CCO symptom management guides	37	56 [‡]
Delivery of palliative care[¶]		
• Held ACP or GoC discussions with patients	21	64 [‡]
• Provided home visits for palliative care	48	71 [‡]
• Linked patients to community palliative care services	59	84 [‡]
Barriers to palliative care delivery^{¶¶}		
• Lack of time to have ACP or GoC conversation	82	76 [‡]
• Lack of comfort initiating ACP or GoC conversation	59	33 [‡]
• Lack of knowledge, training, or skills to provide palliative care	85	49 [‡]
<small> ACP—advance care planning, CCO—Cancer Care Ontario, GoC—goals of care. *Respondents were asked to select 1 of 3 statements that best described their understanding of palliative care; other options were “Palliative care is for patients at the end of life (last days or weeks)” and “Palliative care is for patients with a life expectancy of several months or less.” †Not significant. ‡Significant difference at $P < .05$. §Percentage who responded “yes”; other options were “no” and “not sure.” Percentage who responded “confident to perform independently,” “confident to perform with minimal consultation,” or “confident to perform with support or coaching”; other option was “need more information or further basic instruction.” ¶Percentage who responded “always use” or “sometimes use”; other options were “rarely use,” “never use,” and “I do not know what this is.” ¶¶Percentage who responded “often provide” or “sometimes provide”; other options were “rarely provide” and “never provide.” </small>		

to show that it has benefits; however, scholars highlight the need for more research to better understand how to best equip and empower PCPs to deliver a palliative approach to care.^{11,13,15-17,27,29,38,39} We evaluated a 3-year intervention to build capacity for early palliative care delivery in primary care, and identified significant increases in PCP confidence to deliver a palliative approach to care, use of palliative care tools, initiation of ACP or GoC conversations, home visits for palliative care, and referrals to community palliative care services.

The results demonstrate that the surprise question can be feasible and useful as a standard method for

identifying patients who might benefit from a palliative approach in primary care settings, but key enablers are required, such as a physician champion. Although recent evidence suggests that the surprise question performs poorly to modestly as a prognostic tool,⁴⁰ it was not used for this purpose in the INTEGRATE Project; rather, the surprise question was used as a prompt to identify patients who could benefit from a palliative care approach earlier in their disease trajectory.⁴¹⁻⁴³

The results also suggest that, with appropriate training and support, a palliative approach to care can be integrated into the routine practice of PCPs. However,

there was considerable variation across sites with regard to the number of patients identified using the surprise question, the percentage of patients for whom an ACP or GoC conversation was initiated, and the time between identification and the ACP or GoC conversation. This variation might be attributable, in part, to contextual differences across the sites, including co-location of interprofessional resources, leadership commitment, capacity to conduct research, rurality, practice culture, clinician buy-in over time, and clinician and patient readiness to have these conversations. Overall, the results suggest that the care processes introduced by the INTEGRATE Project can be successfully incorporated into practice with appropriate and regular education, and a flexible approach to implementation that enables local tailoring.

Limitations

Limitations of our study include that the evaluation relied on self-reported data. However, a number of strategies were used to ensure data quality, including triangulation between data sources such as the surveys and interviews, standardized Microsoft Excel spreadsheets with data rules, opportunities for sites to review and correct submitted data, and the investigation of anomalies. Physicians at each practice could choose whether to participate the INTEGRATE Project, which might have introduced selection bias. We do not have comparative data on the physicians at each practice who chose to participate in the INTEGRATE Project versus those who did not. The postimplementation provider survey generated a poor response rate (34%) compared with baseline (55%), and thus might not be representative of all providers who participated in the INTEGRATE Project. The lower response rate might have been owing to competing priorities and initiatives taking place at 1 or more practices at the time of administration. Furthermore, we were unable to create “matched pairs” of preintervention and postimplementation responses for each individual. However, no significant differences were identified in the demographic profiles for the preintervention and postimplementation survey respondents, with the exception that no providers from the Petawawa Centennial Family Health Team participated in the postimplementation survey. Finally, the evaluation measures were focused on assessing intervention implementation and feasibility from the perspective of participating PCPs. As such, no measures of effect were included, such as patient-reported quality of life or health outcomes.

Conclusion

The results of this real-world pilot study have relevance to primary health care reform efforts. Primary care professionals can support early identification and initiation of palliative care for patients, thereby improving the reach and sustainability of palliative care. However,

education and a thoughtful approach to implementation are required. Additional research is needed to better understand the practice factors that contribute to the success or failure of palliative care interventions in primary care, and to examine associated patient outcomes. 🌿

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Contributors

Dr Evans performed formal data analysis and wrote the original draft of the manuscript. **Ms Mackinnon** participated in conceptualization, funding acquisition, methodology, project administration, and supervision of the project, and reviewed and edited the manuscript. **Dr Pereira** participated in conceptualization, funding acquisition, methodology, investigation, and formal data analysis, and reviewed and edited the manuscript. **Dr Earle** participated in methodology and formal data analysis, and reviewed and edited the manuscript. **Dr Gagnon** participated in conceptualization, funding acquisition, methodology, and formal data analysis, and reviewed and edited the manuscript. **Ms Arthurs** participated in project administration and formal data analysis, and reviewed and edited the manuscript. **Ms Gradin** participated in project administration and data curation, and reviewed and edited the manuscript. **Ms Walton** participated in tool development and project administration, and reviewed and edited the manuscript. **Drs Wright** and **Buchman** participated in conceptualization, funding acquisition, data curation, and formal data analysis, and reviewed and edited the manuscript.

Competing interests

Dr Pereira is Scientific Officer of Pallium Canada. The remaining authors have no conflicts of interest.

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This article has been peer reviewed.

Cet article a fait l'objet d'une révision par des pairs.

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ANNEXES: OTHER

Annex 5: Research Ethics Approval



Conjoint Health Research Ethics Board
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CERTIFICATION OF INSTITUTIONAL ETHICS APPROVAL

The Conjoint Health Research Ethics Board (CHREB), University of Calgary has reviewed and approved the following research protocol:

Ethics ID: REB17-0429
 Principal Investigator: Lynn Maureen Meadows
 Co-Investigator(s): Maria Palacios Mackay
 Student Co-Investigator(s): There are no items to display
 Study Title: Learning Essential Approaches to Palliative and End-of-Life Care (LEAP) Quality Improvement Commitment to Change Evaluation
 Sponsor (if applicable): null / LEAP QI Evaluation / Pallium Canada

Effective: 30 June 2017

Expires: 30 June 2018

The following documents have been approved for use:

- surveyimpliedconsent_march-2017
- LEAP Education QI Quizzes and Portal Information
- Meadows CHREB Privacy Informed Consent Document
- Commitment to Change Contract (4-6 Months Post-Course)
- Attitudes to Palliative and End-of-Life Care Survey (Post-Course)
- Attitudes to Palliative and End-of-Life Care Survey (Pre-Course)
- Commitment to Change
- Post-Course Evaluation
- Core_Post_Knowledge
- LEAP Data analysis and Appendix A, jp lm, April 10, 2017
- LEAP QI Evaluation Protocol, April 11, 2017
- Appendix B Detailed Quantitative Analysis, jp lm, April 10, 2017
- Confidentiality Pledge April

The CHREB is constituted and operates in accordance with the current version of the *Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans* (TCPS); International Conference on Harmonization E6: Good Clinical Practice Guidelines (ICH-GCP); Part C, Division 5 of the Food and Drug Regulations, Part 4 of the Natural Health Product Regulations and the Medical Device Regulations of Health Canada; Alberta's Health Information Act, RSA 2000 cH-5; and US Federal Regulations 45 CFR part 46, 21 CFR part 50 and 56.

You and your co-investigators are not members of the CHREB and did not participate in review or voting on this study.

Restrictions:

This Certification is subject to the following conditions:

1. Approval is granted only for the research and purposes described in the application.
2. Any modification to the approved research must be submitted to the CHREB for approval.
3. An annual application for renewal of ethics certification must be submitted and approved by the above expiry date.
4. A closure request must be sent to the CHREB when the research is complete or terminated.

Approval by the REB does not necessarily constitute authorization to initiate the conduct of this research. The Principal Investigator is responsible for ensuring required approvals from other involved organizations (e.g., Alberta Health Services, community organizations, school boards) are obtained.

Approved By:

Stacey A. Page, PhD, Chair , CHREB

Date:

30 June 2017

Note: This correspondence includes an electronic signature (validation and approval via an online system).

Annex 6: Co-Author Permissions and Signatures, and Stay Signature

The co-authors of the manuscripts published as part of this doctoral work, as well as the co-authors of the manuscripts submitted or being submitted for publication resulting from this doctoral work, have all provided consent to use these manuscripts as part of the doctoral work. The University of Navarra is currently the custodian of those signatures, which are available for viewing if needed.

