Original Article

Interprofessional Post-Graduate Training Model for Nurse Practitioners and Physician Trainees

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Abstract

Context. People living with serious illness and their care partners rely on team-based specialty hospice and palliative care (HPC) in order to achieve high quality end of life outcomes. In HPC, physician and nurse practitioner (NP) scope of practice has significant overlap so training together may offer benefits to clinicians and patients.

Objectives. Assessment of clinical competencies in a post-graduate training program consisting of NPs and physicians training and learning side-by-side.

Methods. A crosswalk assured NP and physician HPC clinical competencies were captured in evaluation questions used by interprofessional program faculty to observe and assess trainees. Six clinical competencies were calculated based on aggregated evaluations for each physician and NP HPC post-graduate trainee at 3, 6, 9, and 12 months annually for 3 years. For NPs and physicians, the mean slopes of the best fit lines, the final numeric score, and the mean net change between 12 and three month competencies were compared. Learner experience was captured qualitatively.

Results. There was no statistical difference in the change of competency scores, the final competency scores, or the trajectory of improvement in the six competencies between physician to NP trainees. Adding NP trainees was considered by post-graduate trainees as a strength of the program, and did not detract from physician competence achievement.

Conclusion. Assessing an IPE post-graduate training program in HPC was possible using a shared clinical competency framework, and revealed similar clinical gains for NPs and physicians enrolled in the program. J Pain Symptom Manage 2024;67:554−560.

Key Words

ACGME competencies, Interprofessional training, Hospice and palliative medicine fellowship, Nurse practitioner, Physician

Key Message

This article describes an innovative interprofessional hospice and palliative care (HPC) post-graduate training model for physician and nurse practitioners (NP) training side-by-side, and found the program was viewed as a strength by trainees and led to similar growth, change, and final achievement of clinical competencies reflective of independent HPC physicians and NPs.

Introduction

People living with serious illness and their care partners rely on the availability of specialty palliative care in

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order to achieve high quality end of life outcomes such as improved quality of life, decreased symptom burden, and improved psychological distress.[1,2] High quality team-based care requires interprofessional education (IPE) which describes the process of learning with, from, and about two or more different professions.[3] Compared to training in professional silos, advantages of IPE include increased respect and trust, improved understanding of roles and responsibilities, effective communication, increased job satisfaction, decreased medical errors, and improved patient outcomes.[4,5,6] Incorporating IPE into the post-graduate training experience is becoming a more common approach to improve healthcare collaboration and communication employed in some way by 60% of national physician post-graduate training programs.[7] Specifically in hospice and palliative care (HPC), a pediatric program reported statistically significant improvement in self-reported interprofessional skills after a one-year post-graduate training that included physician, social work, and nurse practitioner (NP) trainees.[8]

On HPC teams, NPs and physicians have significant overlap in their roles and responsibilities on the team, particularly in over 50% of the United States where NPs are independent practicing clinicians.[9] In areas of overlap, it is essential for NPs and physicians to have access to equitable high quality post-graduate training programs to prepare them for independent team-based clinical practice. In support of this, a HPC national organization, the American Academy of Hospice and Palliative Medicine (AAHPM), has created a bill called the Palliative Care and Hospice Education and Training Act that would "expand opportunities for interdisciplinary education and training in palliative care".[10] In addition, an Institute of Medicine (IOM) Report titled "The Future of Nursing" supports innovative nursing education systems that emphasize the role of the nurse in meeting health care delivery needs.[11] While there are 185 HPC physician post-graduate training programs in the US as of 2023, there are only 10 reported HPC NP post-graduate training programs.[12]

A key step to standardizing educational outcomes and assessing post-graduate training program quality has been the universal development of learner competencies. These describe an expected level of performance or "a system of instruction, assessment, feedback, self-reflection, and academic reporting that is based on students demonstrating that they have learned the knowledge, attitudes, motivations, self-perceptions, and skills expected of them as they progress through their education."[13,14] Competencies use observable, behaviorally based descriptions, called reporting milestones, to aid supervisors in categorizing a learner in the novice to expert scale for a particular competency.[15]

Given the siloed post-graduate training models for physicians and NPs as well as the unique nature of each profession, the competencies and reporting milestones for each of these professions use different formats and behavioral anchors. For example, the Accreditation Council of Graduate Medical Education (ACGME) created six HPC specific competencies for physician post-graduate trainees in 2019. In 2014, the Hospice and Palliative Nurses Association (HPNA) published nine competencies for the HPC advanced practice nurse (APN) and Reville and Foxwell developed a competency milestone tool for entry into practice and beyond based on those HPNA competencies.[16,17] However, there are no published competencies specifically for HPC NP post-graduate training. This makes assessment of an IPE post-graduate training model that educates NPs and physicians side-by-side, instead of in silos, challenging.

In 2019, NP trainees were added to a one-year physician post-graduate training program which had been accredited through the ACGME since 2010 to create a side-by-side training experience. The aim was to assess the educational impact of this IPE program in a comparable way between NP and physician post-graduate trainees.

Methods

Population

At a 496-bed rural academic medical center in New England, competency data from nine physicians and six NPs who trained in a single side-by-side program over three academic years (2019−2022) were analyzed.

IPE Post-graduate Training Program Description

The majority of clinical rotations over the 12 months of the program were identical for NP and physician trainees with regard to expectations, locations, evaluations, and interprofessional supervising faculty. Rotational experiences included consult service, intensive care unit (ICU), inpatient palliative care and hospice unit, home hospice care, long term care, spiritual care, social work, and 9 months of outpatient longitudinal half-day clinic. Differences in the training experience for NP and physician trainees included: NP post-graduate trainees did not rotate on pediatric complex care, had two weeks less time on the hospice rotation, and did rotate with congestive heart failure service. Interprofessional core faculty defined by the ACGME were the same core faculty for both physician and NP trainees. NP trainees may be supervised by NP, physician, chaplain, or social worker faculty and the same was true for physician trainees. All trainees attended didactic and skill-building communication sessions together.

Competencies and Evaluation Approach

The program aimed to use a single competency framework for both NP and physician post-graduate trainees to assess the impact of the side-by-side training model. Principles at the core of this selection process included: utility with both NP and physician trainees, ease of use for program faculty with minimal need for new education, and integration with the online residency management system which sends and collects evaluations.

Program leadership, consisting of a physician and a NP, reviewed the published HPC advanced practice palliative nursing (APPN) and physician competencies. APPN competencies included: clinical judgment, advocacy and ethics, cultural and spiritual competence, collaboration, professionalism, facilitator of learning, communication, systems thinking, and evidence-based practice and research.[16] After comparison, significant overlap was found with the ACGME competencies which included: medical knowledge (MK), patient care (PC), system-based practice (SBP), professionalism (PROF), problem-based learning and improvement (PBLI), and interpersonal communication skills (ICS), particularly given the training program was located in a state where NPs had an independent scope of practice.[18]

Evaluations were previously created for the physician post-graduate training program through a process which allowed mapping the ACGME competencies to learner experiences and their associated curriculum objectives. Program faculty had been trained on the use of this framework with post-graduate trainees. 100% of ACGME competencies were able to be assessed throughout each academic year through the online residency management system, MedHub. The program opted to map the existing evaluation system onto HPNA competencies to assess for gaps through a crosswalk process.

The crosswalk process was performed by a NP faculty member and program leader familiar with the HPNA APPN competencies as well as with significant experience in HPC and educating post-graduate NP and physician learners. The cross-walk consisted of 3 major steps. First, each HPNA APPN competency was read verbatim and linked to an existing ACGME competency to assure using the ACGME competencies were completely inclusive. Second, APPN competency milestone behaviors were mapped to each ACGME subcompetency (Fig. 1). Third, the evaluation questions used by the program to calculate ACGME competencies were read verbatim and linked to existing (APPN) competency milestones to assure no assessment gaps existed with the current evaluation system.[17] Discipline specific competency gaps for NPs and physicians were addressed through regular discipline specific program director meetings, mentorship meetings and monthly professional development seminars. In the program leadership team's review of the language used in the evaluation tools, the only substantial change required was the use of 'clinician' instead of 'physician' for inclusivity. Evaluations were electronically assigned through the institutions' residency management system at the end of each rotation or at other predetermined times during the year prior to summative evaluations.

At three, six, nine, and 12 months during each academic year, the program held a clinical competency committee (CCC) meeting where faculty discussed how each of the five trainees were progressing and reviewed the mean scores for each competency calculated from the prior 3 months. Each competency was an average of all the relevant evaluation questions completed by faculty over the previous 3-month timeframe, with each competency for each trainee generally calculated from a range of 4−30 evaluation questions. There was no competency cut off used to determine if a HPC trainee was ready for independent practice; that was a decision which the program director and the CCC determined from data including and beyond competency assessments.

At the end of the training years 2020−2021 and 2021−2022, all post-graduate trainees were asked to submit free text responses about the programs' strengths, challenges, opportunities, and threats. Trainees volunteered their responses in open ended comment boxes in an anonymous fashion. In addition, all trainees responded to how much they agreed with the following statement (strongly disagree to strongly agree, five-point Likert scale), "Our fellows will be taught and mentored by interprofessional faculty, experience interprofessional education (nurse practitioners and physicians trained side-by-side), and gain competency to leverage an interprofessional team for patient and family care." Data collection from 2019−2020 was in a large group discussion as a team, so no unique trainee data was available for review. Lastly, ACGME collects national data about the impact of other learners on physician post-graduate trainee education, and aggregated data from January 2020 through February 2023 reported by 12 physician trainees was available to the program.

Analysis Plan

To measure the growth in competencies over the course of each year, the delta for each trainee was calculated by subtracting their final score in each competency from their baseline score in that competency. Since most of the learning during the first 3 months of the program was active observation as opposed to skills

HPNA APN Competencies	PC				MK			SBP				PBLI		PROF			ICS			
	1	2	3	4	1	2	3	1	2	3	4	1	2	1	2	3	1	2	3	4
Clinical Judgement	X	X		X	X	X	X													
Advocacy and Ethics			X											X						
Professionalism								X		X			X	X	X					
Collaboration																	X	X	X	X
Systems Thinking								X	X		X									
Cultural and Spiritual Competence	X																			
Facilitator of Learning												X	X				X			
Communication																X	X	X		X
Evidenced-Based Practice and Research												X								

Fig. 1. A crosswalk mapping Advanced Practice Palliatue Nurse (APPN) competency milestones to the Accreditation Council of Graduate Medical Education (ACGME) competencies.[17,18] APPN competencies are on the vertical axis. ACGME competencies for physicians specializing in HPC are on the horizontal axis and include: PC = patient care, MK = medical knowledge, SBP = system based practice, PBLI = problem based learning and improvement, PROF = professionalism, ICS = interpersonal communication skills. The numbers under each ACGME competency represents more detailed sub-competencies. This crosswalk was completed by a NP faculty and program leader, and at least one 'X' for each row and for each ACGME competency shows significant overlap in each discipline's competency behaviors.

practice at the bedside, the 3-month competency scores were assigned as a baseline assessment for each trainee. The 12-month competency scores were used as the final competency score since the program is one year in duration. Mean delta scores for each competency were compared for NP and physician trainees using non-paired t-test analysis. Each trainee's trajectory towards competency achievement was determined through plotting each trainee's competency scores over the course of the year and a best fit line with a slope was created to represent the trajectory of learning over the training year. Mean slope values for physician and NP trainees were compared using non-paired t-test analysis.[19] To assess for any potential negative impact of adding NP trainees to a program consisting of physician trainees, the delta in competency scores was compared for physician trainees graduating from the program 3 years before NPs joined the program (2014−2018) to those physician trainees graduating during the years of the current study (2019−2022). The ACGME modified some of the descriptions for the HPC specific competencies in 2018 making direct comparison of all reporting milestones complicated. Competencies and reporting milestones evaluating components of IPE were not comparable between the 2014−2018 timeframe and the 2019−2022 timeframe so benefits of adding NP trainees to physician trainees was not able to be assessed through these competencies. The study team, consisting of clinician educators and accreditation experts, identified four sub-competencies that were almost entirely preserved in the ACGME HPC transition process (PROF 1 and 2, ICS 1 and 2). These were not IPE focused, but given their consistency across time could allow a subset analysis of any detriment to adding NP trainees to the program. Delta scores were calculated for these sub-competencies as described above but used a non-paired t-test to compare 2014−2018 to 2019−2022 physician graduates. Significant differences may indicate an impact from adding NP trainees to the program. For all t-test analyses, a *P*-value of equal to or less than 0.05 was considered significant. Lastly, qualitative themes related to IPE were captured from end of the year program evaluations. Mentions of IPE in strength or opportunity

comments were categorized as benefits of the interprofessional model and mentions in the threat or challenge comments were categorized as downsides. Descriptive statistics were used to report post-graduate trainees' level of agreement with the IPE focus of the program being met on the end of the year program evaluations. Lastly, the ACGME reports out the percentage of physician post-graduate trainee responses which indicate that other learners 'never' or 'rarely' impacted their education in a negative fashion. This is considered 'compliant'.

This study was deemed exempt by the institutional review board.

Results

The program matriculated 15, one-year trainees between July 2019 and July 2022, including 9 physicians and 6 NPs. Each matriculating class included three physician trainees and two NP trainees (Table 1).

There were no statistical differences in the six baseline competency scores between physician and NP trainees. Mean change in each competency was not significantly different when comparing NP to physician trainees, respectively: delta PC (mean 1.0 vs 1.0, *P*-value 1.0), delta MK (mean 1.3 vs 1.0, *P*-value 0.6), delta SBP (mean 0.8 vs 1.5, *P*-value 0.2), delta PBLI (mean 1.2 vs 1.3, *P*-value 0.4), delta PROF (mean 0.9 vs 1.3, *P*-value 0.1), and delta ICS (mean delta 1.2 vs 1.1, *P*-value 0.8). The final level competency scores did not differ between NP and physician trainees, respectively: final PC (mean 3.6 vs 3.8; *P*-value 0.5), final MK (mean 3.5 vs 3.7; *P*-value 0.4), final SBP (mean 3.7 vs 3.6; *P*-value 0.8), final PBLI (mean 3.8 vs 3.8; *P*-value 0.9), final PROF (mean 3.9 vs 3.9; *P*-value 0.9), and final ICS (mean 4.0 vs 3.9; *P*-value 0.7). Finally, the trajectory of gain for each competency between NP and physician trainees was not significant, respectively: slope PC (mean 0.1 vs 0.1; *P*-value 0.9), slope MK (mean 0.1 vs 0.1; *P*-value 0.7), slope SBP (mean 0.1 vs 0.2; *P*-value 0.1), slope PBLI (mean 0.1 vs 0.1; *P*-value 0.7), slope PROF (mean 0.1 vs 0.2; *P*-value 0.3), and slope ICS (mean 0.1 vs 0.1; *P*-value 1.0) (see Table 2). Of note, all of the graduated physician and NP trainees who took

Table 1

Demographics of the Trainees in the Hospice and Palliative Care Fellowship Between 2019–2022

Fellow Characteristics	N	%
Profession	15	100
Physicians	9	60
Nurse Practitioners (NP)	6	40
Gender	15	100
Male	2	13
Female	13	87
Highest Level of Nursing Education	6	100
Master's Degree in Nursing	5	83
Doctorate Degree in Nursing	1	17
Medical Education	9	100
Medical Doctor	8	89
Doctor of Osteopathic Medicine	1	11
Years of Registered Nursing Experience	6	100
None	2	33
1-4 Years	1	17
5-9 Years	2	33
10+ Years	1	17
Years of Independent Practice Experience	15	100
None	5	33
1-4 Years	5	33
5-9 Years	2	14
10+ Years	3	20
NP Certification	6	100
Adult Acute Care	1	17
Adult Gerontology Acute Care	2	33
Adult Gerontology Primary Care	2	33
Family	1	17
Physician Residency	9	100
Anesthesiology	2	22
Emergency Medicine	1	12
Internal Medicine	4	44
Family Medicine	2	22

Table 2

Nurse Practitioners (NPs) and Physicians Training Side-by-side in a Hospice and Palliative Care Post-Graduate Training Program had Aggregate Evaluations From Teaching Faculty Calculated Prospectively Every 3 Months of a 12 Month Program Using the Accreditation Counsel for Graduate Medical Education Competencies. NP and Physician Trainee Quantitative Competence was Compared at the End of the Training, as an Overall Change (delta), and Trajectory of Change (slope).

Competency	Physician Mean (n = 9)		NP Mean (n = 6)		*P*-Value
Patient Care	Baseline	2.7	Baseline	2.6	0.76
	Final	3.8	Final	3.6	0.51
	Delta	1.1	Delta	1.0	0.98
	Slope	0.1	Slope	0.1	0.92
Medical Knowledge	Baseline	2.7	Baseline	2.2	0.25
	Final	3.7	Final	3.5	0.36
	Delta	1.0	Delta	1.3	0.55
	Slope	0.1	Slope	0.1	0.66
System Based Practice	Baseline	2.1	Baseline	2.3	0.44
	Final	3.6	Final	3.7	0.82
	Delta	1.5	Delta	0.8	0.21
	Slope	0.2	Slope	0.1	0.12
Problem Based Learning and Improvement	Baseline	2.5	Baseline	2.6	0.59
	Final	3.8	Final	3.8	0.93
	Delta	1.3	Delta	1.2	0.40
	Slope	0.1	Slope	0.1	0.73
Professionalism	Baseline	2.6	Baseline	3.0	0.13
	Final	3.9	Final	3.9	0.88
	Delta	1.3	Delta	0.9	0.11
	Slope	0.2	Slope	0.1	0.30
Interpersonal Communication Skills	Baseline	2.8	Baseline	2.8	0.96
	Final	3.9	Final	4.0	0.67
	Delta	1.1	Delta	1.2	0.78
	Slope	0.1	Slope	0.1	0.95

Baseline = aggregate competency score from the first 3 months of training; Final = aggregate competency score for the last 3 months of training; Delta = difference of final and baseline aggregate competency scores; Slope = mean of coefficients from linear regression of competency over time; *P*-value < 0.05 considered significant.

their discipline specific HPC certification exam passed supporting the program's decision that trainees were ready for independent practice.

Nine out of ten graduating NP and physician post-graduate trainees (90%) over two years (2020−2022) agreed or strongly agreed that the program provided interprofessional faculty mentoring, interprofessional educational experiences, and interprofessional competencies. The one remaining response was neutral related to staff shortages for some interprofessional categories. Of the qualitative responses during this timeframe, six (60%) specifically named the interprofessional/interdisciplinary focus as a strength. Four (40%) graduating trainees listed the interprofessional nature of the program as a challenge or threat. Comments included topics of distinguishing unique roles/responsibilities between NP and physician trainees (particularly in the home hospice setting), inequity of institutional investment in NP trainees versus physician trainees, and more clarity of the skills a NP or physician trainee should learn from social work and chaplain faculty.

Prior to including NP fellows into the physician fellowship program, 8 physician trainees graduated the program between 2014 and 2018. One of those physicians trained only 50% time over 2 years so was excluded, and another had data unavailable. There was no statistically significant difference in the mean delta for PROF 1, PROF 2, ICS 1, or ICS 2 between 2014 and 2018 physician graduates compared to 2019−2022. In addition, the ACGME national data reported 100% compliance for the program regarding the potential negative impact of other learners on the physician educational experience.

Discussion

In an IPE HPC specialty-specific post-graduate one-year training program including physician and NP trainees who receive nearly identical educational experiences and supervision, graduates had similar levels of quantitative competence and their trajectory of learning was similar over the course of the training year. In addition, 90% of trainees agreed the training felt interprofessionally focused, and 60% volunteered this as a strength of the program.

Transitioning a physician-centric post-graduate training program into an IPE focus did not detract from physician achievement of reporting milestones. Adding trainees to an existing post-graduate training program comes with concerns that the experience of the current trainees will be diminished. Institutional physician graduate medical education (GME) offices may even argue that adding nonphysician learners to an existing physician program will dilute the effectiveness of the physician training outcomes. These findings may be useful to physician post-graduate programs that want to invest in an IPE focus by dispelling concerns from their institutional GME office.

The program in this report used an evaluation system which was created based on a physician-focused competency and milestone approach. Although a crosswalk assured that NP focused competencies would be covered through this evaluation approach, this is not the ideal process for creating IPE-focused evaluations. Side-by-side training does not necessarily mean that IPE competencies were met. There has been a call to create HPC specialty IPE-specific competencies and reporting milestones so that programs can innovate and create experiences, curricula and reflective practice which meets these IPE competencies.[12] The Interprofessional Education Collaborative (IPEC) has created generic competencies and sub-competencies which could be intentionally integrated into HPC specific competencies.[20] If the benefit and effectiveness of HPC is in team-based care and interprofessional collaborative practice, the field needs to consider defining these competencies so that training in HPC, regardless of profession, can work to meet them.

This model of interprofessional post-graduate training in HPC would require rethinking the accreditation process. This type of IPE framework with broad professional collaboration has already begun for clinicians independent in practice who are required to achieve continuing education credits to stay credentialed in their profession through an organization called the Joint Accreditation for Interprofessional Continuing Education (JA). This organization can give continuing education credits from 10 accrediting bodies including national organizations for medicine, nursing, pharmacy, and others. By accrediting in this IPE fashion, JA can decrease barriers and improve the efficiency for institutions to run truly IPE activities which lead to improved team-based, patient, and community outcomes.[21] A similar process may be needed in order to accredit and run IPE post-graduate training programs. Despite significant institutional and philanthropic efforts to level inequities between NPs and physician trainees in this study, trainees still reported feeling these inequalities were threats or challenges to the IPE approach described. Formalizing IPE post-graduate training programs would ideally help decrease these inequalities by normalizing the resources and finances that go into these programs, such as the Medicare funding that helps support physician GME programs. Although raising the bar for IPE HPC post-graduate training may improve patient outcomes, it may exacerbate the workforce shortage issues that currently loom in HPC by restricting the number of pathways a clinician can use to become independent in the field so careful thought at a policy level must be considered.[22]

This study has limitations. The sample size was limited due to the low number of trainees in the program year to year, although the serial correlated measures for each fellow and the use of summary outcomes add to the power and validity of the results. The results indicate only that the program had an equivalent impact on each trainee's quantitative growth through existing competencies, but did not measure IPE competencies. Building on these limited qualitative findings, further studies are necessary to understand the learner experience. The results may not be generalizable to other specialties, non-NP advanced practice nurse trainees or in states where the NP scope of practice is reduced or restricted. This study did not include other sites given the unique approach taken in structuring the IPE program. The results do not include patient outcomes, although all graduates attempting their HPC profession specific certification exams have passed indicating readiness for independent practice. Lastly, the program was well established as a physician training program prior to including NPs so the faculty were very experienced in competency-based assessment. A newer program starting with an IPE model may have different results.

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