

# ▲ Evaluation of Physician Assistant Student Knowledge and Perception of Competence in Palliative Symptom Management

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**PURPOSE:** To assess the impact of the current curriculum for physician assistant (PA) students in palliative medicine and end-of-life care. **METHODS:** PA students were invited to participate in an anonymous online survey evaluating seven domains of knowledge in palliative medicine coupled with a self-assessment in competence. Participants were also asked to identify current and desired educational formats in palliative medicine education. There were 1,313 emailed surveys with 139 total responses. **RESULTS:** Our results demonstrate that a year of clinical training only resulted in minimal improvement in factual knowledge. This suggests that there is insufficient exposure to palliative medicine education during their clinical training. **CONCLUSION:** PA students recognize their knowledge gaps and lack of exposure in palliative medicine. A more focused curriculum is needed in training experiences for PA students. *J Allied Health* 2014; 43(4):e69–e74.

PALLIATIVE MEDICINE has been increasingly recognized within the Physician Assistant (PA) community over the past few years as a vital part of patient care for seriously ill patients with life-limiting illnesses. An article published in the *Journal of Physician Assistant Education* in 2010 noted that pain management and treatment of common end-of-life symptoms should be emphasized when incorporating palliative care and end-of-life instruction into existing curricula.<sup>1</sup> The Accreditation Review Commission on Education for the Physician Assistant

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Accreditation Standards for Physician Assistant Education, 4th edition 2010, requires that all programs must include instruction in the provision of clinical medical care across the lifespan.<sup>2</sup> There is increasing recognition that clinicians should be capable of providing basic palliative interventions and identify patients who would benefit from specialized palliative consultative services.

The number of PAs providing care in the inpatient hospital setting is expected to continue to grow. A recent cross-sectional survey of PAs working in the United States was conducted to assess their current state of knowledge in Core Competencies for Hospital Medicine. One of the top three content areas PA hospitalists believed would have helped to better prepare them to care for inpatients was palliative medicine (85%).<sup>3</sup> Although PA training “should include competency in palliative care,” no study published to date has assessed the impact of current didactic and clinical training on knowledge about palliative medicine.

Our study aims to assess knowledge and self-perceived skills for PAs after didactic training and clinical training exposure in current routine education. Our study was adapted, with permission, from a recent study published in the *Journal of Palliative Medicine* which evaluated resident physicians and fellows on seven domains of knowledge of palliative care and pain management with a self-assessment of competence in these areas.<sup>4</sup> Since PAs often function in a similar capacity within the hospital setting, results of this study can help identify areas of improvement within the curriculum to better meet the requirements for palliative medicine education. It is vital that training provides a strong educational foundation that will enable PAs to meet the needs of a very sick hospitalized patient population.

## Methods

### SUBJECTS

A sample of PA students currently enrolled in PA school were invited to participate in our survey. There were 1,313 e-mailed survey invitations with 139 total responses. All sites were represented in the responses.

Since PA schools have varied start and end dates, students were defined based on extent of education at time of participation: partial didactics, completed didactics, or completed didactics and clinical. Comparisons were made between the cohorts of students to assess whether palliative education was gained or lost during clerkship experiences. PA students who had completed their education more than three months prior to participating in the survey were excluded from the study because their clinical work experiences can bias the impact of their clinical rotation education. Institutional Review Board approval was obtained from New York Institute of Technology, Old Westbury, New York. Consent was implied by voluntary participation.

## QUESTIONNAIRE ADMINISTRATION

The survey was administered using SurveyMonkey.com, an online survey tool with encrypted responses. An invitation to participate in an anonymous survey, with information about the study, was sent to current PA students utilizing e-mail distribution lists from the New York State Society of Physician Assistants and PA programs in Oklahoma, Michigan, and Nebraska.

## QUESTIONNAIRE DESIGN (APPENDIX)

The survey consisted of three parts: (1) self-assessed skills, (2) factual knowledge, and (3) educational formats: experiences and preferences. Modifications were made as it pertained to PA education. The respondents rated their competence level from multiple choices ranging from novice to expert for palliative medicine skills (pain assessment, dosing oral and parenteral opioids, using adjuvant analgesics, managing delirium at end of life, assessing non-pain symptoms, and managing opioid side effects).

Nine multiple-choice questions assessed factual knowledge. These questions had been previously adapted and validated from authoritative materials in palliative medicine (UNIPAC).<sup>5</sup> The content of questions and self-assessment topics were selected in order to allow comparisons of student's actual and self-assessed knowledge. If a student chose more than one answer for a question, their response was considered incorrect. A Likert scale was used to assess respondents' palliative education experiences and their preferred modes of palliative training. Demographic data included month and year the student completed each component of their education, both didactic and clinical. This allowed for comparisons to be made between the two cohorts.

## DATA ANALYSIS

Respondents were classified based on the extent of their training into one of three groups: partial didactic, didactic, clinical and didactic completed. The total knowl-

edge score for each respondent was computed as the number of correct responses across the nine factual knowledge questions. Descriptive statistics (medians and frequencies) were generated and compared across different subgroups of respondents. To compare the distribution of scores across different training groups, non-parametric testing was used (Kruskall-Wallis or Wilcoxon test). Trends in the proportion of correct responses across self-assessment categories were assessed via the Cochran-Armitage trend test. Two-sided *p*-values were computed and *p*-values  $\leq 0.05$  were considered statistically significant. All analyses were performed using SAS v9.3 (SAS Inst., Cary, NC).

## Results

There was a significant difference in scores of factual knowledge noted between those students who only partially completed their didactic education (median score = 3.5) as compared to those who completed their didactic education (median score = 4.5; *p*-value for contrast = 0.01). However, there was no significant difference in factual knowledge scores between those who completed their didactic education compared to those who completed both didactic and clinical education (median score = 5.0; *p*-value for contrast = 0.94).

## RESPONSE RATES

Of the 139 respondents, 28 students (20%) had partial completion of didactic training and 65 students (46%) completed their didactic training. There were 32 students (23%) who completed both didactic and clinical training. Fifteen respondents were excluded from analysis because of incomplete questionnaires. All sites were represented.

## SELF-ASSESSMENT

We assessed seven palliative care skills (pain assessment, dosing oral and parenteral opioids, using adjuvant analgesics, managing delirium at end of life, assessing non-pain symptoms, and managing opioid side effects). Comparisons in answers were made between students who completed their didactic education versus those who completed didactic and clinical rotations and how they rated their perceived knowledge from novice to expert (see Appendix for supplement Table). The majority of didactic only students rated their self-perceived skills in pain assessment as competent but for the other skills, mostly as novice or beginner (Fig. 1 left). Those who completed both didactic and clinical rotations mostly rated themselves as competent to proficient in performing general pain assessment, assessing non-pain symptoms, and use of adjuvant non-opioid analgesics. They generally perceived their assessment of all other skills as beginner (Fig. 1 right).

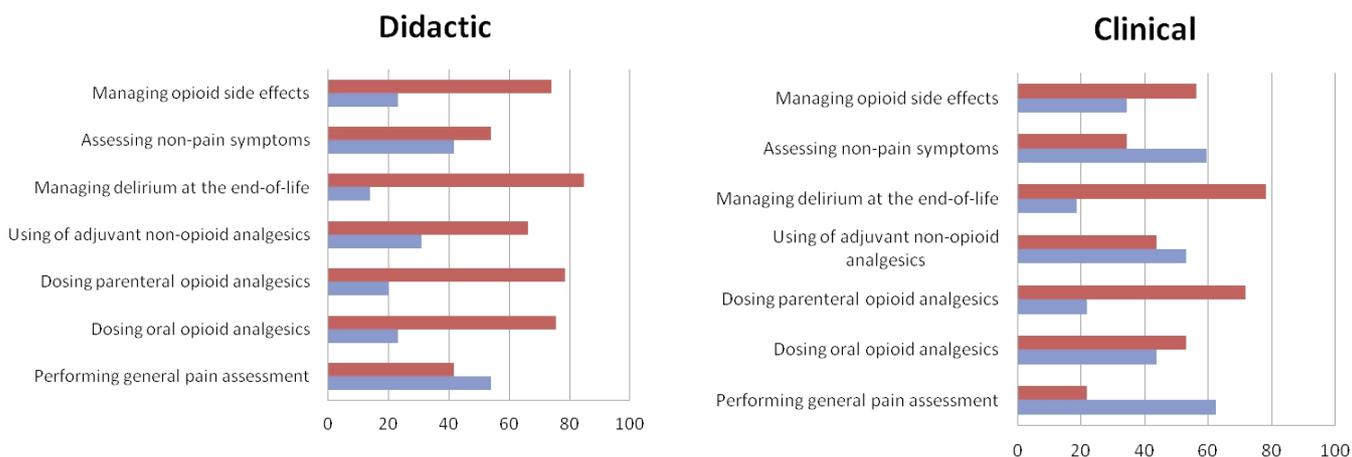


FIGURE 1. Self-assessment of palliative care skills—didactic and clinical. Red bars show novice/beginner ratings; blue bars show competent/proficient ratings.

## KNOWLEDGE

We compared correctness of response in factual knowledge to their response in self-perceived skills to see if trainees know their limitations (see Appendix for factual knowledge questions). Managing opioid side effects (e.g., constipation) was the question most students answered correctly (81.29%). Additionally, there was a significant trend in the proportion of respondents answering this question correctly with higher self-assessment ranking, with 68% of self-perceived novices responding correctly compared to 86% and 100% of self-perceived proficient and experts, respectively ( $p$ -value for trend=0.01). For performing a general pain assessment, there was no statistically significant trend in the proportion answering correctly with respect to self-assessed proficiency levels ( $p$ -value=0.56). In assessing non-pain symptoms (e.g., dyspnea), most students answered incorrectly (Q2=53.24%, Q8=80.58%), and in both questions there was no trend in the proportion who answered correctly and self-perception.

The vast majority of students (Q5=89.93%) did not know proper dosing for parenteral opioid analgesics (as the preferred route for home hospice patient who cannot swallow) which is appropriately reflected by 78.46% of didactic students and 71.88% of clinical students describing themselves as novice or beginner in that domain, respectively. Knowledge was also poor for dosing parenteral opioids (ratio of injectable to oral morphine). Only 23.74% answered correctly, which corresponds to the broad self-perception as novice or beginner in this area. Use of adjuvant non-opioid analgesics (e.g., tricyclic anti-depressants for neuropathic pain) had an overall high rate of correct responses (Q9=70.50%), with a statistically significant trend in the proportion answering correctly across self-perception level ( $p$ -value for trend <0.001). Those who considered themselves competent to expert were indeed more likely to be cor-

rect (95% and 100% correct, respectively) compared to novice or beginners (63% and 67%, respectively). Regarding management of terminal delirium (Q10), 52.52% answered correctly, which corresponds to the self-perception as novice or beginner in this area (84.62% of didactic students and 78.13% of clinical students).

Students accurately perceived their limitations in knowledge in assessing non-pain symptoms, opioid side-effects, and performing general pain assessment in that their scores on self-perceived knowledge corresponded to the factual knowledge trend. In review of response to assessing non-pain symptoms, such as dyspnea, students felt their knowledge base was actually higher than what the factual knowledge assessment revealed.

## EDUCATIONAL PREFERENCES

Students were asked to rate their experience of any structured palliative medicine education they received during their physician assistant training (Fig. 2). Results showed 75.76% of students reported “none or too little lectures” in palliative medicine. Over 95% reported “none or too little” dedicated clinical rotations in palliative medicine or hospice care. The top three educational forums that students felt would be “useful” or “very useful” were hospice/palliative home visits (71.67%), lectures (70.49%), and workshops (70.49%) (Fig. 3). Of note, no students reported getting “too much” palliative education.

## Discussion

This study is unique in that we surveyed PA students comparing self-perceived skills to factual knowledge base and comparing impact of didactic and clinical exposures. Our results demonstrate that a year of clinical training only resulted in minimal improvement in

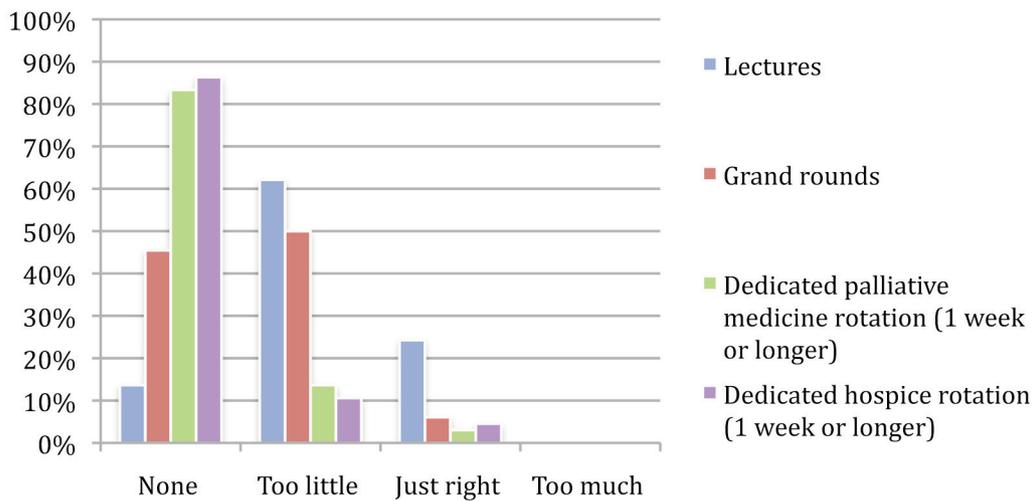


FIGURE 2. Ratings of components of any structured palliative medicine rotation taken during their PA education.

factual knowledge total score. This suggests that there is insufficient exposure to palliative medicine education during their clinical training. Of note, there was greater recognition in knowledge gaps within the cohort of students who completed their didactic education only. This raises concerns that those in clinical training may not actually realize their own knowledge deficits and therefore not know when to ask for help to provide appropriate palliative care.

Our study has several limitations. One limitation is that our survey included only 139 participants. A response bias associated with a greater participation rate of PAs who had more experience or comfort with palliative care is possible. However, such a bias should slant results toward better palliative knowledge. If

respondents participated because they thought they were performing well with palliative care, and our results show poor skills, it is implied that the non-respondents likely have even worse palliative skills. A reward was not offered for completion of the study which may have also contributed to less than optimal participation. Some students did not complete the questionnaire; however such responses are common in surveys. We selected a broad cross-section of program locations including multiple states in order to get a more widespread assessment. However, because of the diversity in PA programs curriculum schedule (e.g., 2-year vs 3-year program, start and end date) it was hard to group individuals into a precise completion date for didactic education and clinical training. We compensated for

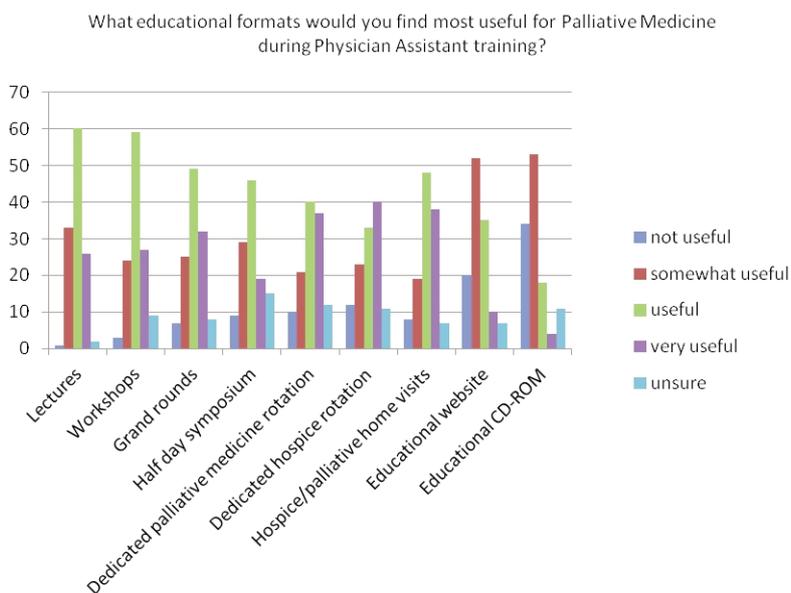


FIGURE 3. Distribution of preferred educational formats dedicated to palliative medicine by number of students.

this by dividing into subgroups based on partial or complete didactic or completed clinical experiences. Additionally, similar to other studies, we focused on cognitive domains within palliative medicine and did not address aspects of palliative care such as communication skills.

Despite the recognition that palliative care education is needed to improve the preparedness of PAs to care for ill hospitalized patients, current training in PA education is inadequate based on our findings. Students recognized their lack of skills and expressed interest in increased palliative medicine education. Future research can assess the impact of a structured palliative medicine curriculum within physician assistant education. This may indicate which types of training and formats are most effective.

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## APPENDIX 1. Self-Assessment and Factual Knowledge Questions

### SELF-ASSESSMENT QUESTIONS:

1. Rate your preparedness to perform each of the following end-of-life skills. (Table 1 is the summary of responses to Question 1.)

TABLE 1. Perceived competence in clinical activities (%)

	Novice		Beginner		Competent		Proficient		Expert	
	Didactic	Clinical	Didactic	Clinical	Didactic	Clinical	Didactic	Clinical	Didactic	Clinical
Performing general pain assessment	15.38	0.00	26.15	21.88	35.38	28.13	18.46	34.38	4.62	15.63
Dosing oral opioid analgesics	36.92	12.50	38.46	40.68	13.85	37.50	9.23	6.25	1.54	3.13
Dosing parenteral opioid analgesics	46.15	25.00	32.31	46.88	12.31	15.63	7.69	6.25	1.54	3.13
Using of adjuvant non-opioid analgesics	33.85	6.25	31.31	37.50	12.31	34.38	18.46	18.75	3.08	3.13
Managing delirium at the end-of-life	53.85	40.63	30.77	37.50	12.31	18.75	1.54	0.00	1.54	3.13
Assessing non-pain symptoms	13.85	6.25	40.00	28.13	23.08	28.13	18.46	31.25	4.62	6.25
Managing opioid side effects	33.85	9.38	40.00	46.88	13.85	21.88	9.23	12.50	3.08	6.25
	Didactic Complete n = 65				Clinical Complete n = 32					

### FACTUAL KNOWLEDGE QUESTIONS:

2. Which of the following is most often associated with dyspnea?
  - a) Anxiety
  - b) Airway obstruction
  - c) Bronchospasm
  - d) Low hemoglobin
3. When dosing morphine, the most appropriate booster or breakthrough dose for a patient receiving a baseline dose of 30mg every 4 hours is:
  - a) 2 to 5 mg
  - b) 10 to 15 mg
  - c) 20 to 25 mg
  - d) 30 mg
4. Patients treated with opioids should receive routine prophylaxis for which side effect:
  - a) Myoclonus
  - b) Pruritis
  - c) Sedation
  - d) Constipation
5. When a home hospice patient can no longer swallow, which of the following is a preferred alternative route of administration of morphine sulfate:
  - a) Intramuscular
  - b) Sublingual
  - c) Epidural
  - d) Intravenous
6. In relation to oral morphine, injectable morphine is:
  - a) Equally potent
  - b) Five times as potent
  - c) Ten times as potent
  - d) Three times as potent
7. Which of the following statements about pain is FALSE?
  - a) Total pain refers to the physical, psychological, spiritual and social suffering of people with life limiting illness.
  - b) Physical pain is always the most important contributor to suffering.
  - c) The distress associated with spiritual pain exacerbates physical symptoms.
  - d) Uncontrolled physical symptoms interfere with the patient's ability to interact with loved ones.
8. The best way to assess dyspnea is:
  - a) Oxygen saturation by pulse oximeter
  - b) Patient's report
  - c) Use of accessory muscles
  - d) Respiratory rate
9. When pain related to dysesthesia or nerve damage occurs, which of the following is most likely to be effective?
  - a) Scopolamine
  - b) Nortriptyline
  - c) Naproxen
  - d) Ranitidine
10. Which of the following statements about treatment for terminal delirium is TRUE:
  - a) The drug treatment of choice is an anticholinergic medication.
  - b) Placing the patient in a dark room will help decrease sensory input and decrease the agitation.
  - c) Family members should leave the room to help decrease agitation.
  - d) Paradoxical worsening may occur after administration of a moderate tranquilizer (i.e., ativan or valium).
  - e) The drug treatment of choice is an opioid medication.