Original Article

Palliative care in a rural surgery residency program: an educational needs assessment

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Background: There is a deficiency of palliative care education in surgical residency programs and a lack of research on palliative care education in rural surgery residency programs. Because rural palliative care presents unique challenges due to fewer specialists and resources, we investigated potential areas of improvement in palliative care education in a rural general surgery residency program.

Methods: An anonymous survey was sent to all residents of a rural general surgery residency program. The survey assessed prior hospice/palliative care education in medical school, prior volunteering experience in palliative care, comfort with having "goals of care" discussions and delivering serious news, and perceived indications for palliative care consultation. A follow-up survey assessed attitudes and interest related to palliative care education integration in a rural surgical residency program.

Results: Of 17 residents, 14 (82.4%) responded to the initial survey. Four respondents (28.6%) had over a half day of palliative care education in medical school. Eight of fourteen respondents (57.1%) feel comfortable having "goals of care" discussions: 0/4 interns (0%) compared to 8/10 junior and senior residents (80%). Half of respondents feel comfortable delivering serious news: 1/4 interns (25%) compared to 6/10 junior and senior residents (60%). All respondents agreed that palliative care education is necessary. Four themes were identified in content analysis of perceived indications for palliative care consultation: future planning, deferring to the expert, patient/family education, and surgeon/trainee discomfort. The follow-up survey revealed perceived limitations in palliative care resources available in a rural surgery setting.

Conclusions: These results highlight the need for formal palliative care education in a rural surgery residency program. Throughout training, residents appear to develop more comfort with "goals of care" discussions than delivering serious news. In response, we are instituting palliative care discussions during educational conference, including interactive simulations to improve communication skills, and a palliative care telemedicine elective.

Keywords: Palliative care; rural; general surgery; education; curriculum

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Introduction

Multiple studies have shown that palliative care improves patient quality of life, reduces unwanted interventions, and results in healthcare cost savings (1). There is also an increasingly recognized role for surgeons in palliative care delivery (2-7). Surgeons are uniquely suited to participate in palliative care given their expertise in the indications, risks, and benefits of palliative operations and procedures. Surgeon training in palliative care is especially crucial in situations where palliative care specialists are not readily available (2), such as in emergencies or in settings with limited access and resources.

Despite the growing recognition of the importance of primary surgical palliative care (7), surgical patients tend to receive palliative care less often than medical patients. A study of Veterans Health Administration patients who died between 2009 and 2012 and had an acute inpatient admission within the last year of life found that surgical patients were significantly less likely to have received hospice or palliative care than medical patients (8). Another study found that intensive care unit (ICU) patients cared for by surgical attending physicians had fewer documented indicators of palliative care and lower ratings of quality of dying than ICU patients cared for by medical attending physicians (9). Additionally, a nationwide retrospective database study found that patients admitted with gastrointestinal or thoracic malignancies who underwent surgery were 79% less likely to receive palliative care than those who did not undergo surgery (10).

Improving palliative care education for surgical residents may address some of these shortcomings in surgical palliative care delivery (11). Unfortunately, there is a demonstrated deficiency of palliative care education in surgical residency programs, most of which do not have formal palliative care training (12). As Ballou and Brasel remark, the Accreditation Council for Graduate Medical Education (ACGME) dictates a minimum number of a variety of procedures that general surgery residents must complete, yet there is no requirement for palliative procedures or palliative conversations (12). A recent review on palliative care education in surgery found that out of several studies assessing palliative care education in surgical trainees, most trainees lacked any formal training in palliative care (13). The few trainees who did have formal training found the quality of the training to be inferior to their training in clinical or technical skills (13).

Notably, none of the studies on palliative care education for surgical residents have been conducted in a rural setting, which is significant, as palliative care delivery in rural settings presents unique challenges (14,15). There is a relative scarcity of specialists available in rural settings, and there are also logistical difficulties of serving a geographically widely distributed patient population. Care coordination, which is crucial in seriously ill surgical patients, is particularly challenging in the context of fewer specialists and available resources. With a scarcity of palliative care specialists in rural settings, the responsibility of palliative care delivery falls more on primary providers, further increasing the importance of palliative care education in rural settings.

Despite a substantial proportion of the population living in rural areas, the importance of palliative care in rural settings has only recently gained recognition. A 2009 comprehensive review described a "small and eclectic" body of research on rural palliative care, identifying the need for coordinated research to develop an adequate body of knowledge (16). A 2015 systematic review also found a limited body of research through February 2014, identifying only 39 original research studies or systematic reviews on palliative care with a rural focus (17). Additionally, the authors remarked that the third edition of the *Clinical Practice Guidelines for Quality Palliative Care* published by the National Coalition for Hospice and Palliative Care in 2013 did not contain the term "rural" or address the application of their recommendations in rural settings (17). However,

Highlight box

Key findings

- Rural general surgery residents feel similarly underprepared and uncomfortable with delivering palliative care compared to counterparts at large academic institutions, despite the importance of palliative care competency in rural surgeons.

What is known and what is new?

- Surgical patients receive palliative care less often than medical patients, and there is a dearth of palliative care education in general surgery residency programs. Research on palliative care in rural settings is limited, despite unique challenges in rural palliative care delivery.
- We identified gaps in palliative care education in a rural general surgery residency program.

What is the implication, and what should change now?

- Targeted palliative care education is critical for rural general surgery residents. In addition to educational sessions focused on goals of care discussions and delivering serious news, telemedicine may address gaps in rural palliative care education.

the fourth edition published in 2018 now contains several specific examples of palliative care implementation in rural hospitals (18).

The scarcity of palliative care in rural settings has implications not only for the care of surgical patients, but also for the education of surgical residents. As such, the intersection of palliative care education for surgical residents in rural areas represents a novel and relevant area of investigation. Given the paucity of knowledge pertaining to this topic, the objective of this study was to investigate potential opportunities for improvement in palliative care education in a rural general surgery residency program. We present this article in accordance with the SURGE reporting checklist (available at https://apm.amegroups.com/article/view/10.21037/apm-22-1369/rc).

Methods

In this descriptive survey study, a ten-question anonymous survey was sent to all seventeen residents of a rural general surgery residency program via the online tool SurveyMonkey in September 2021. We are defining rural general surgery residency programs as any program on the American College of Surgeons list of Rural Surgery Programs in which all residents train in a rural environment (19). Questions included duration of hospice/palliative care education in medical school and prior volunteering in palliative care, defined as volunteering in either a hospice or palliative care setting (*Table 1*). Resident comfort with having "goals of care" discussions and comfort with delivering serious news ("bad news") to patients and their families were each assessed on a three-point Likert scale, and these results were then stratified by training level: interns, junior residents (PGY-2 and PGY-3), and senior residents (PGY-4 and PGY-5). We used a three-point Likert scale to optimize response rate and facilitate data analysis. We elected not to apply statistical testing owing to the small sample size. The survey also included a free-text response question asking residents why they order a palliative care consult and what their expectations are when ordering one (*Table 2*). Content analysis was conducted on the free-form responses by NAW and was independently verified by ESY. Common words and phrases (codes) were identified and grouped into themes. The frequency of responses in which each theme appeared was counted (*Table 3*).

A five-question anonymous follow-up survey was sent to all seventeen residents in October 2022 (*Table 1*). The follow-up survey asked residents if they intend to practice in a rural setting after graduating, whether they think living in a rural setting limits patients' access to palliative care resources (with an option to leave additional comments), and their interest in a palliative care telemedicine elective, each assessed on a three-point Likert scale. An optional free-response question asked for further suggestions for improving their palliative care education. As this project aimed to improve the surgical resident curriculum in a regular educational setting, it was exempt from review by the Mary Imogene Bassett Hospital Institutional Review Board.

Results

Out of 17 residents, 14 responded (82.4%) to the initial survey, with 4/5 responses from interns, 3/3 from PGY-2 residents, 2/3 from PGY-3 residents, 2/3 from PGY-4 residents, and 3/3 from PGY-5 residents (*Table 1*). Most respondents (71%) either could not recall the duration of their palliative care education in medical school or had a half day or less. Seven of fourteen respondents (50%) had participated in hospice or palliative care volunteer work prior to residency. Eight of fourteen respondents (57%) agreed that they feel comfortable having a "goals of care" discussion with patients and families, with the remainder feeling neutral or disagreeing. Seven of fourteen (50%) agreed that they feel comfortable delivering serious news. All respondents agreed that palliative care education is necessary for rural general surgery residents.

Further analysis of resident comfort with "goals of care" discussions and delivering serious news was performed after stratifying by training level. Zero out of four interns (0%) reported feeling comfortable having "goals of care" discussions, whereas 8/10 junior and senior residents (80%) reported feeling comfortable (*Figure 1*). One out of four interns (25%) reported feeling comfortable with delivering serious news, compared to 6/10 junior and senior residents (60%) (*Figure 2*).

Eleven of fourteen residents responded to the free text response question asking why residents order palliative care consults. The responses are detailed in *Table 2*. From the free text answers, eighteen codes were identified for content analysis (*Table 3*). They were grouped into four themes of "future planning", "patient/family education", "deferring to the expert", and "surgeon/trainee discomfort". Themes around "future planning' were identified in 10/11 responses, "patient/family education" in 7/11 responses, "deferring to the expert" in 6/11 responses, and "surgeon/trainee discomfort" in 3/11 responses.

Table 1 Results of initial survey and follow-up survey regarding attitudes toward rural surgical palliative care education

Question	Initial survey [N=14, n (%)]	Follow-up survey [N=13, n (%)]
Training level		
PGY-1 (intern)	4 (28.6)	3 (23.1)
PGY-2 (junior)	3 (21.4)	2 (15.4)
PGY-3 (junior)	2 (14.2)	2 (15.4)
PGY-4 (senior)	2 (14.2)	3 (23.1)
PGY-5 (senior)	3 (21.4)	3 (23.1)
Self-reported gender identity		–
Women	6 (42.9)	
Men	8 (57.1)	
Non-binary/other	0 (0.0)	
Did you receive hospice/palliative care education or training in medical school?		–
Yes	10 (71.4)	
No	3 (21.4)	
Do not recall	1 (7.1)	
If "Yes", how many hours/days of education or training did you receive?		
1 hour	0 (0.0)	
2–3 hours	4 (28.6)	
Half day	2 (14.3)	
1 day	0 (0.0)	
2–4 days	1 (7.1)	
1 week	1 (7.1)	
>1 week	2 (14.3)	
Have you done any volunteer work in hospice/palliative care prior to residency?		–
Yes	7 (50.0)	
No	7 (50.0)	
Overall, I feel comfortable delivering "bad news" to patients and their families		–
Agree	7 (50.0)	
Neutral	6 (42.9)	
Disagree	1 (7.1)	
Overall, I feel comfortable having a Goals of Care discussion with patients and their families		–
Agree	8 (57.1)	
Neutral	4 (28.6)	
Disagree	2 (14.3)	

Table 1 (*continued*)

Table 1 (*continued*)

Question	Initial survey [N=14, n (%)]	Follow-up survey [N=13, n (%)]
How often do you consult palliative care to initiate Goals of Care discussions with patients and their families?[†]		–
1–2 times a year	1 (7.1)	
3–6 times a year	7 (50.0)	
7–12 times a year	3 (21.4)	
2–4 times per month	2 (14.3)	
More than 4 times per month	0 (0.0)	
In your words, why do you order a palliative care consult and what are your expectations? See *Table 2*		–
I believe palliative care education is necessary for rural general surgery residents		
Agree	14 (100.0)	
Neutral	0 (0.0)	
Disagree	0 (0.0)	
I intend to practice in a rural setting after I graduate residency	–	
Agree		7 (53.9)
Neither agree nor disagree		5 (38.5)
Disagree		1 (7.7)
I feel that living in a rural setting limits the resources my patients have available to them for palliative care	–	
Agree		9 (69.2)
Neither agree nor disagree		3 (23.1)
Disagree		1 (7.7)
Comments: (*I*) *Palliative services are not on the initial plan for patients in a rural setting. Additionally, the ability to provide services within the patients' home are limited by geographic circumstances in a rural setting.* (*II*) *Pain management referrals have been nearly impossible.* (*III*) *Fewer practicing physicians meaning they would have to take less call.* (*IV*) *I have seen families that depending on their county have very limited community resources.* (*V*) *I think living in a rural setting should not limit the resources for patients in need of palliative services. It would be sad to see a patient being transferred to another facility just to obtain the resources needed during their end-of-life care. Whether be it medication or the adequate personnel to care for them during that time*	–	5 (38.5)
Would you be interested in a telemedicine elective in which you work with a palliative care specialist at a different institution for a week via telemedicine?	–	
Yes		5 (38.5)
Maybe		3 (23.1)
No		5 (38.5)
From your perspective, what can we do as a residency program to improve your education in palliative care? (*I*) *I think ongoing even short lectures from the palliative care team are really helpful. If anything, it reminds us of this valuable resource we have access to.* (*II*) *I would be interested in a palliative care elective either here at our rural general surgery program or as a telemedicine elective in a different place.* (*III*) *Conference teaching, increased availability on palliative care professionals.* (*IV*) *Intentional discussions. I also think perhaps one of the greatest things that has improved my understanding of palliative care is medical humanities. Perhaps seeing a "day in the life" of a palliative care specialist and what goes on behind the scenes in the work that they do.* (*V*) *It would be helpful to gain an educational session on palliative care during protected learning time*	–	5 (38.5)

[†], one respondent skipped this question.

Table 2 Free response answers to the initial survey

In your words, why do you order a palliative care consult and what are your expectations?
So that the patient has a knowledgeable person to help them navigate goals of care and understand hospice more fully
I order palliative care consults when I believe the patient's clinical condition is at a point where expectations need to be set regarding prognosis. I expect the patient to receive a clear picture of his options outside of fully pursuing surgical/medical intervention
Consult is ordered when initial discussion with patient and/or family has not led to an appropriate goals of care discussion or if the discussion requires deeper aspect from religious and emotional standpoint where expertise is warranted
To help identify and facilitate achieving a patients care and quality of life goals
Because I am directed to by my senior residents and/or attendings. Sometimes it's due to patients not understanding the seriousness of their disease, other times it's to initiate goals of care discussions. I expect that patients and their families come to an understanding of the course of their disease
To help guide decision-making and to better elucidate patient's and patient's families desires & expectations
For the facilitation of discussion regarding goals of care, by primarily for assistance and best practices for medication and treatment optimization for most pain control and comfort
To provide the patient with the appropriate expertise and personnel to help guide further discussion on their goals of care. And then to help implement those goals. Also, they can discuss with the patient various treatment options, which may or may not include hospice
To have another person discuss and explore options and life planning
My attending asks me to consult palliative as he/she is not comfortable talking with the family about goals of care
To discuss goals of care particularly when patient is struggling with concept

Table 3 Content analysis of free response answers

Themes	Codes	Frequency
Future planning	Goals of care, options, quality of life, treatment optimization	10
Patient/family education	Families, understanding, struggling with the concept, expectations	7
Deferring to the expert	Facilitation, guide, initiate, appropriate expertise, deeper, clear picture	6
Surgeon/trainee discomfort	Not comfortable talking, directed to, attending, another person	3

Thirteen of seventeen residents (76.5%) responded to the follow-up survey, with 3/5 responses from interns, 2/3 responses from PGY-2 residents, 2/3 from PGY-3 residents, 3/3 from PGY-4 residents, and 3/3 from PGY-5 residents (*Table 1*). Seven of thirteen respondents (53.9%) agreed that they intend to practice in a rural setting after graduating, and 5/13 (38.5%) neither agreed nor disagreed. Nine of thirteen respondents (69.2%) agreed that living in a rural setting limits the resources that patients have available for palliative care. Five of thirteen respondents (38.5%) said they would be interested in a telemedicine elective, and 3/13 (23.1%) said maybe.

Out of five residents who commented on access to palliative care for patients in rural settings, one mentioned geographic challenges in care delivery, another mentioned difficulty in obtaining pain management referrals, and another mentioned "very limited community resources" in certain counties. Out of five residents who responded to the free text response question asking for suggestions for improvement, four responses indicated a desire for more lectures, discussions, or educational sessions. One response expressed interest in a palliative care elective and one response stated that increased availability of palliative care professionals would be helpful.

Discussion

The survey results highlight the need for palliative care education in a rural general surgery residency program. Only 57% of respondents feel comfortable having "goals

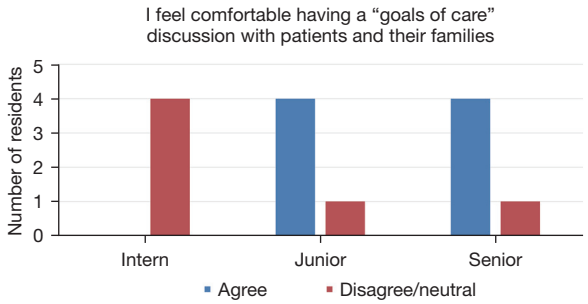

Figure 1 Resident comfort with "goals of care" discussions stratified by training level: intern (PGY-1), junior (PGY-2 and PGY-3), and senior (PGY-4 and PGY-5).

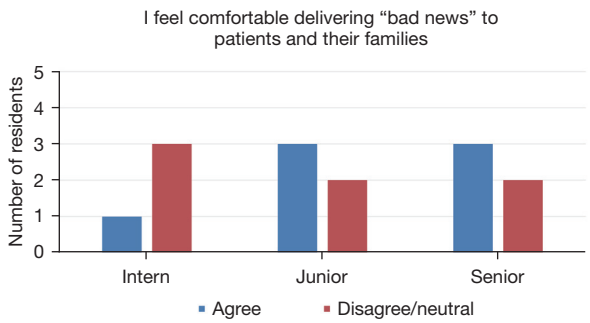

Figure 2 Resident comfort with delivering serious news stratified by training level: intern (PGY-1), junior (PGY-2 and PGY-3), and senior (PGY-4 and PGY-5).

of care" discussions with patients and families, and only 50% feel comfortable delivering serious news. Importantly, 100% of respondents agreed that palliative care education is necessary for rural general surgery residents.

Despite the importance of palliative care competency in rural surgeons, rural general surgery residents feel similarly underprepared and uncomfortable managing "goals of care" conversations and delivering serious news compared to residents surveyed at large academic institutions. A 2007 survey of general surgery residents at Brown University before and after an educational intervention similarly found that only 59% of residents felt comfortable managing end-of-life discussions pre-intervention (20). In an educational needs assessment of general surgery residents at Oregon Health & Science University (OHSU), 58% of respondents felt comfortable leading goals of care conversations and 57% felt comfortable leading sessions delivering bad news (21). Additionally, all respondents at OHSU felt they needed additional training and 85% wanted a formal curriculum. Notably these data, including the results of our survey, have been remarkably stable over time and similar across different institutional settings despite changes in medical school training. The stability in the data suggests that further improvement to medical school and residency training in palliative care is still required.

When stratifying by training level, it appears that junior and senior residents feel more comfortable with having "goals of care" discussions than interns (8/10 compared to 0/4). This is not unexpected, as residents ideally build these skills throughout their training. However, the difference between interns and junior/senior residents is not quite as pronounced with delivering serious news (6/10 compared to 1/4), suggesting that throughout training, rural surgical residents tend to improve more with "goals of care" discussions than they do with delivering serious news. While both "goals of care" discussions and delivering serious news are crucial skills for surgical residents to develop, and the overall difference between these two skills across all residents was minimal, these results suggest that educational interventions in rural settings should perhaps emphasize delivering serious news to patients and address how to do so in the context of limited access to resources. The majority of residents felt that living in a rural setting limits the resources that patients have available for palliative care, which further complicates the question of "what comes next" when serious news is given.

Interestingly, for both "goals of care" discussions and delivering serious news, an equivalent number of junior and senior residents reported feeling comfortable, suggesting that perhaps most of the improvement in these skills occurs early on in training as residents gain initial exposure. We may speculate that this is to some extent a result of the dedicated ICU rotations that our residents complete in the first two years of training, which naturally involve more palliative care conversations with patients and their families. Most residents at OHSU stated that the most common setting for palliative care conversations was in the ICU (21). Formal education would help contextualize these early palliative care experiences and may result in even further improvement in communication skills later in training, where it appears that improvement stagnates.

The most prominent themes in the content analysis of the free-text responses were future planning, patient/family education, and deferring to the expert. Trainee discomfort with handling these situations was not as prominent; however, many residents deferred initial discussions regarding goals of care to a palliative care specialist rather

than initiating discussion themselves. Only one of the free-text responses specifically mentioned appropriately ordering a palliative care consult after an initial discussion with the patient. One response mentioned being directed by the attending to consult palliative care due to discomfort with discussing goals of care. This is concerning, given the importance of earlier goals of care discussions. A longitudinal cohort study of patients with advanced cancer found that longer hospice stays were associated with better patient quality of life and that patients who were in hospice for one week or less had the same quality of life as those patients who did not receive hospice at all (22). Formal education would ideally empower residents to initiate discussions before appropriately consulting palliative care in more complex situations.

Delaying initial goals of care discussions out of a desire to defer to the expert can be especially detrimental in settings where the availability of palliative care specialists is limited, such as rural settings. For example, at our institution, there is only one full-time palliative care physician, which can understandably result in delays in consults. The scarcity of specialists also limits the training that our residents receive directly from palliative care specialists; a response to the follow-up survey stated that increased availability of palliative care specialists would improve resident education in palliative care. Additionally, there is only one major provider of hospice and palliative care in the 5,600-square-mile catchment area of our healthcare network, and there are challenges with recruiting and retaining interdisciplinary staff in rural settings, including social workers. Therefore, care coordination and access to follow-up care is especially limited for patients in need of rural palliative care. The follow-up survey demonstrated multiple perceived deficits in palliative care resources for patients in rural settings, including geographic challenges, limited community resources, and difficulty obtaining pain management referrals. Surgical palliative care education during residency would be helpful for providing residents with the tools necessary to initiate serious conversations with patients in a more timely fashion, and particularly in a rural setting would help overcome systemic limitations resulting in gaps in access to and delivery of care.

One of the challenges with incorporating palliative care education in residency mentioned by Ballou and Brasel is the struggle of programs to meet the numerous demands posed by various accrediting agencies (12). It is also difficult to find time within the curriculum to hold additional training for skills not specifically required. While all surgical residents are required by the ACGME to reach a certain level of competency by performing a required number of various procedures (e.g., mastectomies, thoracotomies, central line placements, etc.), there are no such requirements for palliative procedures performed or number of "goals of care" discussions held (12). Despite this, senior surgery residents at University of California San Francisco felt that communication skills are similar to procedural skills (23). In addition, all surgical trainees do not come to residency with the same starting level of competency and familiarity with palliative care principles. This can create challenges in developing educational interventions appropriate for all residents. The paucity and inconsistency of training that respondents received in medical school suggest that residency program directors should not assume that residents have had any formal palliative care education prior to residency, which highlights an area for improvement in undergraduate medical education.

Because we are a rural program, many of our residents graduate to practice in rural settings. And while it is certainly necessary for surgeons everywhere to be comfortable with primary palliative care, it is particularly important for the rural general surgeon, as the already limited availability of palliative care physicians is even scarcer in rural areas. Over the past ten years, 73% of our graduating residents have practiced in rural settings, and 53.9% of respondents to the follow-up survey agreed that they intend to practice in a rural setting, with only one respondent (7.7%) disagreeing. As such, we are becoming more intentional in the palliative care education that we provide our residents. The most common suggestion for improving palliative care education in the follow-up survey was through increased educational sessions, discussions, or lectures. Similarly, residents at OHSU reported that they received minimal palliative care training in didactics and the vast majority desired formal training (21). In response to these data, we are instituting quarterly multidisciplinary palliative care discussions during educational conference for our surgical residents. These sessions include palliative care specialists, pharmacists, and both attending and resident surgeons. They consist of brief didactics followed by interactive case study simulations to improve communication skills, particularly regarding "goals of care" discussions and delivering serious news. There has been growing recognition of the important role that communication training plays in palliative care education (24-27). Residency programs can also make use of *Surgical Palliative Care: A Resident's Guide* as a reference to enhance

resident education in palliative care (28).

We are distributing the Serious Illness Conversation Guide developed by Ariadne Labs to residents and faculty (29), which contains guidance and suggested language for delivering serious news to patients. We are also reframing "bad news" as "serious news" going forward. Additionally, we have added a discussion of palliative care principles to the morbidity and mortality (M&M) conference. For each case discussed in M&M conference, residents are asked to discuss palliative care principles pertinent to the case, including the following: communication, emotional care, social issues, spiritual/existential issues, grief/bereavement, team caring, ethical issues, and care coordination. Care coordination, an important aspect of both surgical and palliative care, is especially pertinent to rural practice, as this is something that rural residents often assist with due to the lack of specialists. Residents who graduate to practice in rural areas should be adept with the intricacies of care coordination, in their role as surgeons and primary palliative care providers.

Another avenue for palliative care delivery that shows promise in rural areas is telemedicine (17,30). Telemedicine decreases costs and increases equity and access to care for patients who have a difficult time traveling a long distance to appointments. Palliative telemedicine may also reduce readmissions in rural areas without access to palliative care (31). We are considering implementing a week-long elective rotation in palliative care telemedicine during which our residents would work remotely with a palliative care specialist at another institution. In addition to improving residents' comfort with telehealth visits, this elective would also provide rural surgery residents with more specific palliative-oriented training directly from palliative care specialists, who are otherwise less available in a rural setting. Most respondents to the follow-up survey (61.5%) responded either "yes" or "maybe" regarding their interest in such an elective, which could be a unique method to improve and increase palliative care education for rural trainees.

There are several limitations to this study. Despite a relatively high response rate of 82.4% to the initial survey and a roughly even distribution of responses across resident post-graduate year, the overall sample size is small, with only fourteen respondents, exemplifying the research challenge that many rural training programs face. As such, we elected not to perform statistical testing. The three-point Likert scale that we used to optimize response rate and data analysis given the small sample of residents is also a limitation, along with the grouping of disagree and neutral together in our analysis. The survey was also conducted at one rural surgery residency program and may not be generalizable to other residency programs, rural or otherwise. Due to the study design, we are only able to assess residents' self-perception of palliative care delivery and not their actual performance or ability. Additionally, other unmeasurable factors in addition to experience level may be contributing to the observed difference in comfort level between the interns and junior/senior residents in this study.

Conclusions

There is a deficiency of palliative care education in surgical residency programs. Moreover, palliative care in rural settings presents unique challenges due to a widely geographically dispersed patient population and a relative lack of healthcare specialists, further highlighting the importance of palliative care training in rural general surgery residency programs. Despite this, our survey results show that general surgery residents in a rural setting feel similarly underprepared and uncomfortable with delivering palliative care to general surgery residents surveyed at large academic institutions. Throughout training, rural surgical residents appear to develop more comfort with having "goals of care" discussions than they do with delivering serious news. All residents surveyed believe that palliative care education is necessary for rural general surgery residents. Residents also expressed perceived limitations in palliative care resources in a rural setting and a desire for more educational sessions. We are instituting curriculum changes focused on resident preparedness for "goals of care" discussions and delivering serious news in the context of a rural setting where there is limited access to palliative care specialists and other resources, such as hospice availability. Telemedicine is another promising avenue to increase exposure to palliative care training for rural surgery residents.

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Footnote

Reporting Checklist: The authors have completed the SURGE reporting checklist. Available at https://apm.amegroups.com/article/view/10.21037/apm-22-1369/rc

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Peer Review File: Available at https://apm.amegroups.com/article/view/10.21037/apm-22-1369/prf

Conflicts of Interest: All authors have completed the ICMJE uniform disclosure form (available at https://apm.amegroups.com/article/view/10.21037/apm-22-1369/coif). AB serves as an unpaid Associate Editor-in-Chief of *Annals of Palliative Medicine* from March 2022 to February 2024. The other authors have no conflicts of interest to declare.

Ethical Statement: The authors are accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved. As this project aimed to improve the surgical resident curriculum in a regular educational setting, it was exempt from review by the Mary Imogene Bassett Hospital Institutional Review Board.

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