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# CASE-BASED CURRICULUM WITH PEER-ASSISTED LEARNING CAN IMPROVE KNOWLEDGE RETENTION IN MULTIDISCIPLINARY PAIN MEDICINE TRAINING.

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## Introduction

It is common for advanced medical subspecialties (critical care, pain medicine, addiction medicine, etc.) to incorporate trainees from more than one primary discipline to meet the needs of complex patient care. Multidisciplinary medical education presents a unique challenge in that as educators aim to highlight the relevant strengths of various primary disciplines, learners arrive with varying baseline funds of knowledge grounded in their respective backgrounds. Guidance on best practices for effectively training multidisciplinary trainees with diverse knowledge bases is lacking. Existing research shows that trainees' prior knowledge can help or hinder learning, and that educators' understanding of learners' prior knowledge is vital to successfully imparting new knowledge [1]. Accordingly, curriculum within multidisciplinary subspecialties benefits from highlighting trainees' different expertise in order to facilitate collaborative learning. Furthermore, faculty less familiar with learners' prior knowledge may make false assumptions based on each learner's primary discipline and face challenges in tailoring appropriate competency-based teaching.

## Materials and Methods

We developed a Kern-guided curriculum within the pain medicine fellowship utilizing case-based modules that included a novel note-taking and knowledge sharing platform [2]. Nine case-based modules of increasing complexity were developed based on a review of content from individual board certification outlines from three major primary specialties (Anesthesia, Physical Medicine and Rehabilitation, Neurology), and from that of pain medicine (table 1). Cases were moderated by faculty utilizing elaborative interrogation technique, in order to assess and reinforce accurate prior knowledge and begin to impart new subspecialty knowledge. In each case, learners were instructed to note knowledge gained into four categories: 1. prior knowledge that is accurate and relevant, 2. prior knowledge that is inaccurate, 3. knowledge gained from peers, and 4. knowledge new to the entire group. After cases, trainees were instructed to teach back their learning points from "Category 3". Trainees were then directed to summarize knowledge gained or reinforced and distribute this information to educators in order to facilitate personalized competency-based teaching. Our first aim was to identify differences in prior knowledge between trainees and to reinforce and promote active utilization of accurate and relevant prior knowledge. Secondly, we also aimed foster respect and encourage continued peer-assisted learning (PAL) in a multidisciplinary subspecialty.

Upon completion of the course, trainees were invited to provide anonymous feedback through a survey designed to understand their experience of the novel case-based curriculum and its efficacy in promoting faculty awareness of their relative background expertise. The survey was distributed to all participants in the curriculum across two academic years (2021-2023), a total of ten trainees participated in the curriculum. The response rate was 100%. This study was reviewed prior to implementation by the institutional IRB and certified exempt.

## Results/Case Report

Trainees feel that case-based PAL curriculum improved their knowledge base. (Table 2: survey questions 2,4,6,5). 100% of survey participants (10/10) responded "Strongly Agree" when asked whether discussions during the case-based learning curriculum improved their knowledge base. Similarly, 100% of participants responded "Always" when asked whether they learned valuable knowledge from peers during case-based discussions. 90% of survey respondents (9/10) stated they retained more useful knowledge through the case-based PAL sessions compared to the traditional lecture format, with 8 responding "Strongly Agree" and 1 responding "Agree". The majority of survey respondents (9/10) also reported enjoying the format of case-based learning more than the traditional lecture format. PAL increases trainee respect for peers. (Table 2: survey questions 7,8). 80% of trainees reported they respected their peers more after participating in the discussion and teach-back portion of the learning sessions (8/10 responded "Strongly Agree", 2/10 responded "neither agree nor disagree"). Additionally, 100% of respondents reported feeling more appreciative of the value of discussing challenging cases with peers after participating in the case-based learning sessions, 8/10 responding "Strongly Agree" and 2/10 responding "Agree".

Learners felt that faculty better understood their background knowledge after the session. (Table 2: survey question 3). Learners perceived faculty appreciation of their own knowledge background improved after completing the case-based exercise. 90% of respondents felt facilitating faculty gained a better understanding of their knowledge base after completing the learning session, with 7/10 responding "Strongly Agree", 2/10 responding "Agree", and 1/10 responding "Neither Agree Nor Disagree".

## Discussion

This case-based curriculum incorporating peer-teaching was not only perceived as more effective than traditional lecture formats, but it was also reportedly more enjoyable for learners. Prior reports on the efficacy of PAL in undergraduate medical education indicate that peer-teaching can be more effective as well as more engaging [3]. Consistent with prior findings, this case-based peer-learning activity had the added benefit of increasing trainee respect for peers of different medical disciplines [4]. Collectively, these findings suggest that implementing a case-based PAL curriculum is an effective way to introduce complicated medical knowledge to multidisciplinary trainees. Importantly, learners also perceived faculty appreciation of their individual strengths improved with participation in the curriculum. Finally, these encouraging results have important implications for advanced medical education that can extrapolate to other multidisciplinary specialties.

## References

1. Ambrose, S. A., Bridges, M. W., DiPietro, M., Lovett, M. C., & Norman, M. K. (2010). *How learning works*. John Wiley & Sons.
2. Kern DE, Thomas PA, Hughes MT. *Curriculum Development for Medical Education: A Six-Step Approach*. 2nd ed. Baltimore, MD: The Johns Hopkins University Press; 2009.
3. Jauregui J, Bright S, Strote J, Shandro J. A Novel Approach to Medical Student Peer-assisted Learning Through Case-based Simulations. *West J Emerg Med*. 2018 Jan;19(1):193-197. doi: 10.5811/westjem.2017.

4. Staudt MD. The Multidisciplinary Team in Pain Management. *Neurosurg Clin N Am.* 2022 Jul;33(3):241-249. doi: 10.1016/j.nec.2022.02.002.

## Disclosures

No

## Tables / Images

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Table 1: Case based curriculum topics	
Case 1	Patient with diabetes and hypertension presenting with leg pain.
Case 2	Epidural steroid injection in patient with cervical radiculopathy resulting in cardiac arrest during procedure
Case 3	Young patient presenting with axial back pain
Case 4	Depressed patient with migraine headache presenting for treatment then evaluated for serotonin syndrome
Case 5	Patient presenting with elbow pain diagnosed with lateral epicondylitis then developing CRPS
Case 6	Pancreatic cancer patient presenting with severe abdominal pain
Case 7	Patient with a history of multiple sclerosis presenting with facial pain
Case 8	Patient with sickle cell presenting with acute on chronic pain
Case 9	Patient with chronic pain presenting for change of provider and seeking opioid prescription

Table 2: Survey Questions	
1	The content of the case-based learning curriculum was relevant to my level of learning
2	The discussions during the case-based learning curriculum improved my knowledge base.
3	I feel that the facilitating faculty was able to gain a better understanding of my knowledge base after the case-based learning sessions.
4	I learned valuable knowledge from my peers during the case-based discussions.
5	I enjoy the format of case-based learning more than the traditional lecture format
6	I retained more useful knowledge through participating in the case-based learning sessions compared to attending the traditional lecture format
7	I respect my peers more after participating in the discussion and teach-back portions of the case-based learning sessions.
8	I am more appreciative of the value of discussing challenging cases with my peers after participating in the case-based learning sessions.