Understanding Resident Learning Preferences Within an Internal Medicine Noon Conference Lecture Series: A Qualitative Study

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Abstract

Background The lecture remains the most common approach for didactic offerings in residency programs despite conflicting evidence about the effectiveness of this format.

Objective The purpose of this study was to explore the perspectives of internal medicine residents toward conferences held in the lecture format.

Methods The investigators invited internal medicine residents (N = 144) to participate in focus groups discussing their perspectives about noon conference lectures. The investigators used a semistructured guide to ask about motivations for attendance and effectiveness of noon conferences, transcribed the recordings, coded the discussions, and analyzed the results.

Results Seven focus groups with a total of 41 residents were held. This identified 4 major domains: (1) motivations for attendance; (2) appropriate content; (3) effective teaching methods; and (4) perspectives on active participation. Residents' motivations were categorized into external factors, including desire for a break and balance to their workload, and intrinsic attributes, including the learning opportunity, topic, and speaker. Appropriate content was described as clinically relevant, practical, and presenting a balance of evidence. Identified effective teaching methods included shorter teaching sessions focused on high-yield learning points structured around cases and questions. While active participation increases residents' perceived level of stress, the benefits of this format include increased attention and learning.

Conclusions This study furthers our knowledge of the learning preferences of internal medicine residents within the changing environment of residency education and can be used in conjunction with principles of adult learning to reform how we deliver core medical knowledge.

Editor's Note: The online version of this article contains the focus group guide used in this study, and a table presenting resident learning preferences applied to principles of adult learning.

Introduction

The Accreditation Council for Graduate Medical Education (ACGME) mandates that residency programs provide regularly scheduled didactic sessions.[1] While there is flexibility in this process, a review of family medicine residency programs found that most programs offered 60-minute lectures during the noon hour an average of 3 times per week.[2] The lecture remains popular because it is an efficient and inexpensive way to disseminate medical knowledge to a large group of residents. Yet, studies show that lectures demonstrate short-term knowledge gains but no long-term retention.[3–8] Several studies report a variable correlation between residents' conference attendance and scores on specialty-specific national in-training examinations.[9–14] Because of variability in the evidence supporting the use of the lecture format, it is not clear whether the lecture format should be improved or replaced with another learning modality.[15]

With changes in residency education from duty hour reforms and the ACGME's Next Accreditation System, educators need to provide optimal learning opportunities for residents to achieve the complex medical knowledge Milestones.[16] It is important to understand the unique challenges of teaching residents, including resident-specific

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learning preferences and their learning environment. To explore the richness and depth of internal medicine residents' perspectives on noon conference, we used a qualitative design to identify (1) motivations for attending conferences, (2) appropriate content, (3) effective teaching methods, and (4) attitudes about enhancing active learning.

What was known

While lectures are commonly used for noon conference presentations, there is conflicting evidence about the effectiveness of this format.

What is new

Focus groups with postgraduate year (PGY)–1 through PGY-4 internal medicine residents identified factors motivating or discouraging their noon conference attendance.

Limitations

Single-institution, single-specialty study may limit generalizability.

Bottom line

Lectures were perceived to be more effective when they addressed clinically relevant and readily applicable topics, were presented succinctly, and offered in a safe learning environment.

Methods

Setting and Participants

The University of Pittsburgh Internal Medicine Residency Program includes a longitudinal core curriculum conference series that occurs twice weekly from noon to 1:00 PM, with food provided to attendees. Subspecialty education coordinators are given a list of topics to present at the conference. There is little guidance given to faculty regarding teaching methods, and lecture is the predominant educational method. Some lecturers choose to use an electronic audience response system as part of the conference.

We conducted focus groups to elicit residents' perceptions about the use of a lecture-based conference series.[17] We invited all 144 internal medicine, internal medicine–pediatrics (medicine-pediatrics), preliminary, and transitional year residents at our institution to participate via an announcement at the noon conference and e-mail. We sent follow-up e-mails and made personal contact to encourage participation.

The study was approved by the Institutional Review Board of the University of Pittsburgh.

Focus Group Guide

The study investigators, comprising core residency faculty, developed a focus group guide according to described focus group methodology.[18] The guide included questions about demographics and perspectives on noon conference. A draft of the guide was pilot-tested, first as an interview and second as a focus group with general internal medicine fellows. Using feedback from the pilots, we refined and finalized the focus group guide (provided as online supplemental material).

Focus Groups

We conducted 7 one-hour focus groups, 3 with postgraduate year (PGY)–1 and 4 with upper-level (PGY-2–PGY-4) residents. The number of participants per focus group ranged from 5 to 7. A team member (D.L.) trained as a focus group moderator, and independent from the residency training program, served as moderator for all sessions. The principal investigator (A.P.S.) took notes at each session. All focus groups were completed in the spring of 2012 and were audio recorded for further analysis. Lunch and refreshments were served in appreciation for participation.

Analysis

The moderator transcribed each focus group verbatim and deidentified the transcripts for analysis. The transcripts were uploaded to ATLAS.ti version 6 (Scientific Software Development, Berlin, Germany), a computer software program to support the analysis of qualitative data. We used the "editing approach" to qualitative analysis developed by Crabtree and Miller.[19] The principal investigator and the qualitative expert (S.L.Z.) reviewed each transcript and developed a codebook. Two coders trained in qualitative methods (A.P.S. and K.B.) applied the codebook to the pilot transcripts and refined the codebook, which was further reviewed by the qualitative expert. The 2 coders independently applied codes to the focus group transcripts and adjudicated differences through discussion. The study investigators entered the final codes into the coding database, analyzed the codes with subsequent quotations, outlined the main themes, and picked exemplary quotations.

Before the adjudication process, we used the individual coding files to calculate intercoder reliability by using the Cohen κ statistic. The total mean κ value for the assignment of codes was 0.80, demonstrating what Landis and Koch[20] describe as a "substantial" agreement.

Results

Forty-one internal medicine, medicine-pediatrics, preliminary, and transitional year residents participated in 1 of 7 focus groups; 17 (41%) were PGY-1 and 24 (59%) were PGY-2 through PGY-4 residents. Twenty-two (54%) were men.

We identified central themes on resident learning preferences and categorized them into 4 domains:

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TABLE 1 **Motivations for Attending or Not Attending Resident Noon Conference**

Motivations	Quotations
A. External factors	
1. Break in the day/eat lunch	I like that it's protected lunch time. I like that I have time to sit and eat something because I can always justify spending my time in another way on the floor. (PGY-2-C) It is a chance to sit down and take a break from a hectic day. (PGY-3-C)
2. Requirement	If there was absolutely no requirement to go, you'd probably prioritize work over noon conference way more often, so I actually like the requirement to be honest. It's one more thing to make me go. (PGY-1-T) The only thing that's keeping you going is that I have to go. It's not really something that I can reason through or negotiate with the senior resident. (PGY-1-P)
3. Workload	I feel anxious because [there are] all these things that I should be doing during noon conference and there is no way I can accomplish it. (PGY-1-C) So we definitely attend conferences when we are able to go, but there are plenty of months where you are not likely to go, like ICU months or [off-site location] months. (PGY-3-C)
B. Intrinsic attributes	
1. Learning opportunity	You are working throughout the day, so it feels like this is your special time, your breakaway time that you can actually learn and that's all you have to do there, try to learn new material, you don't have any other responsibilities. (PGY-1-P) My motivation for going is the hope that I would learn something new. (PGY-4-MP)
2. Topic	If it's something that I know I'm going to be interested in, I'm going to want to go more, as opposed to something that's not in my specialty of interest, I'm probably not going to feel that thrilled about going there. (PGY-2-C)
3. Speaker	If you see a speaker and you are like, I work with them. They are fantastic. That would motivate me more to go. (PGY-3-C)

Abbreviations: PGY, postgraduate year; C, categorical; T, transitional year; P, preliminary; ICU, intensive care unit; MP, medicine-pediatrics.

(1) motivations for attendance; (2) appropriate content; (3) effective teaching methods; and (4) perspectives on active participation during noon conference.

Motivations for Attendance

External Factors The main external factor motivating conference attendance was the opportunity for a break in the day and time to eat lunch; these motivations were discussed as often as intrinsic attributes of the conference. First-year residents also discussed their appreciation of an attendance requirement. The main external factor that affected nonattendance was workload, including being on a busy rotation (ie, inpatient floor or intensive care unit) or rotating at an off-site location. Residents also discussed needing to leave conference if they received multiple pages about clinical care.

Intrinsic Attributes All residents discussed attending lectures for the opportunity to learn and were motivated by the topic or the speaker. First-year residents discussed learning to enhance their confidence, while upper-level residents were more likely to discuss the pressure to prepare for their national board examination as a motivation for attendance. Residents were more likely to attend when topics were interesting or clinically relevant, and the speaker's reputation was good. Upper-level residents were more likely not to attend on the basis of previous negative experiences with the lecturer or topic (TABLE 1).

Appropriate Content

Topic Selection Residents desired topics that were clinically relevant, practical, and readily applicable to patient care. They noted that content should be geared to an appropriate resident level. Upper-level residents were more likely to want information that is included on national certification examinations. Residents uniformly expressed that subspecialty lecturers should not include topics that are too specialized, as they are perceived as irrelevant to their current practice and geared to a more advanced level of learner.

Amount and Type of Evidence Residents reported that conferences should present balanced evidence to support clinical practice. Presenting too much evidence was overwhelming, and residents suggested focusing on landmark trials that would change their current clinical practice. Presenting research that is not clinically relevant (ie, basic science research) should be avoided (TABLE 2).

Effective Teaching Methods

Learning Points Residents believed that the most effective lectures had 3 to 5 clearly stated learning points, presented succinctly and with frequent summarization.

Shorter Teaching Sessions Residents stated that making sessions shorter (30 to 45 minutes) would allow for a more focused discussion of salient learning points, hold their attention, and create less conflict with the other demands on their time.

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TABLE 2 **Appropriate Content for Resident Noon Conference**

Content	Quotations
A. Topic selection	
1. Clinically relevant	The ones that they go over certain topics or cover things that I'm going to use on the floors or during rotations are the ones that I like the most. (PGY-1-P) The best lectures are ones that are clinically directed. Either how to manage a particular problem or manage a particular patient. (PGY-2-C)
2. Practical/applicable	For me it's kind of like, how am I supposed to apply this clinically? That's the question I always ask and I feel like half the time it is not really answered and then I'm like, so what do I do? (PGY-1-C) I think the more clinical and practical it is . . . the more useful it is . . . the practical [information is] what we need to know to take care of these patients. What are the current recommendations, treatment, diagnosis, etc? I find [this information] the most helpful and easiest to remember and actually use later on. (PGY-1-T)
3. Appropriate to level of learner	Teaching to our knowledge level, so that it's not over our heads, or underneath. (PGY-1-C) I feel like level of the content—it's a challenge that there is a wide range of learners in the room, but I also feel like we should not be tailoring our lectures to third-year and fourth-year medical students. (PGY-3-C)
4. Not too specialized	I will be honest; I left because this cardiologist was talking about derivatives—like dV/dt and all this stuff—and I was like, no, I can't do physiology right now. Tell me about diastolic dysfunction and how you manage it. (PGY-3-C)
B. Evidence	
1. Balanced amount	I feel that whatever we do clinically, there should be evidence behind it, presented along with it, so I don't have to go look for it on my own, if you want me to take something from that conference. (PGY-2-C) I don't find it as useful if they're going over years of research or covering lots of papers. (PGY-1-T)
2. Presentation of key evidence	What makes them more useful is when it is something new that will change our management. If it's just echoing why we do certain things it isn't as important to me, whereas if it's new research that says we don't need to do this anymore or we should start doing this every time, instead of just sometimes, that's much more useful. (PGY-1-P) I feel like we should be talking about landmark trials. I mean, there are big trials that I think we should be familiar with, and they aren't discussed at our conferences and that's part of why we aren't familiar with them. (PGY-3-C)
3. Avoidance of basic science research	We've had topics where people have come in and talked about research that's not clinically relevant to us and it doesn't seem to me like it even always enhances your understanding of the bigger disease process, so stuff like that I would try to avoid. That seems more esoteric than relevant to what we're doing. (PGY-3-C)

Abbreviations: PGY, postgraduate year; P, preliminary; C, categorical; T, transitional year.

Structure Residents considered lectures to be the most useful if they were centered on clinical cases and questions, highlighting clinical reasoning to make the learning points clear, applicable, and engaging (TABLE 3).

Perspectives on Active Participation

Creating a Safe Environment Residents believed that active participation engaged them in learning, but could be stressful. They discussed the need to create a safe environment for active participation, specifically one safe from judgment or embarrassment. Residents noted that setting the expectations ahead of time would encourage participation and alleviate some of the unnecessary stress, and that asking questions in a nonthreatening way encourages engagement. Residents shared that they did not want to be put on the spot or forced to answer questions. Another identified stressor was the number of people in the audience. Programs need to address resident culture and expectations; residents may not be prepared to regularly participate unless it is established as part of the residency program culture.

Using the Audience Response System Residents noted that an audience response system could be a good way to invite participation without the stress of speaking in a larger group, but others indicated it may be ineffective at maintaining resident engagement in the lecture (TABLE 4).

Discussion

The results of these focus groups demonstrate important concepts to drive innovation in residency education. Awareness of residents' motivation for attending or not attending noon conference, their perception of topics as clinically relevant and readily applicable, and their desire for shorter sessions and a safe learning environment may contribute to creating an effective learning experience.

In an era of duty hour limits, educators need to focus attention on efficient and effective education strategies to meet goals for competency in medical knowledge.[21] Internal medicine residents reported less exposure to formal conferences after the 2003 restrictions on duty hours.[22] Because of its efficiency at delivering content in the

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TABLE 3 **Effective Teaching Methods for Resident Noon Conference**

Methods	Quotations
A. Learning points	
1. Focused, limited number (3–5)	I think what you need is high-yield points, and not as much information. (PGY-3-C) We've all agreed that too much information is just overload for that hour. There should be some format or some instruction that [the conference organizers] could give to the lecturers to keep it simple. (PGY-2-C)
2. Clearly stated	The lecturers that I take the most from are the presenters who make it clear. Within the first 15 minutes, objectives have to be clear . . . basically point out this is exactly what you need to get out of this talk. (PGY-3-C)
3. Repetition/ summarization	Some of the good lecturers, if they want to hit home the point, they say it 3 times. They summarize frequently to make sure they hit the high points, instead of waiting for the very last slides. (PGY-4-MP)
B. Shorter teaching sessions	
1. Maintain attention	I think if it were shorter, I would be able to pay attention more. (PGY-1-C) If I have to leave, it's because [the lectures] are long and drawn out, and they cite multiple studies and I don't know where I am supposed to focus my attention. (PGY-1-C)
2. Multiple time demands	It seems like everyone is looking at the clock and they need to fill this hour. Just give us a little bit of useful information and then we can go, it's fine. We all have things that we want to do anyway. Even if it was just a half an hour, that's fine, it's not a big deal, as long as that was a useful half an hour. (PGY-1-P)
C. Structure	
1. Case based	In general, things being case based are helpful because it illustrates a point, it makes it clinically applicable, and it makes the case real rather than just talking about a generic topic. (PGY-3-C)
2. Questions	I think the most effective lecturers are the ones that take you through the question because the question makes it relevant. The question makes you identify your own strengths and weaknesses. (PGY-1-P) That would be awesome if it were a half-hour of lecture and a half-hour of MKSAP [Medical Knowledge Self-Assessment Program] questions. (PGY-2-C)
3. Highlight clinical reasoning	It's really nice to learn the reasoning behind that as well. That rounds you out as an educated physician, instead of just reading the textbook and going from there. (PGY-3-C)

Abbreviations: PGY, postgraduate year; C, categorical; MP, medicine-pediatrics; P, preliminary.

cognitive domain, the standard lecture is the most common way to provide didactics despite limited evidence of its durable effectiveness. The literature on the effect of the lecture format on long-term knowledge retention and test performance is very small, with only 1 study finding "educationally significant" gains in in-training examination scores after a year of conference attendance.[14] This raises the question of whether the conference needs to be improved or whether there needs to be a fundamental change in the way we teach residents. Our study is a step in helping to resolve that question and our data can serve as a guide for future innovation within the lecture format. Our findings on resident learning preferences concur with adult-learning principles outlined by Knowles and colleagues[23] and further research in adult learning.[24] Knowles et al[23] describe adult learners as individuals who are self-directed, are able to take responsibility for their learning, are reliant on their previous experience, and are motivated to learn to perform tasks or deal with problems. Adult-learning principles suggest that adults do not learn well in passive, static settings where they cannot immediately see the relevance of the material to their everyday practice.

Our study also helps explain findings from other areas of research on improving resident education. Attempts at increasing active learning through audience response systems have demonstrated variable impact on knowledge acquisition and retention when compared to traditional lecture format without audience response.[25–27] Residents reported that this mode of engagement, while being safe, may not be able to maintain interest after the novelty subsides. Allowing residents to tailor their own learning by using online or podcast lecture series has shown no detriment to learning compared to the traditional conference format,[28–33] although this may not cater to the residents' need for break time, food, and socialization. Other formats may be better in addressing residents' need for a safe environment, and there may be a need to create a culture that sets expectations for participation. Using a small group format was better than using a lecture for teaching evidence-based medicine to residents,[34] as

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TABLE 4 **Residents' Perspectives on Active Participation During Noon Conference**

Methods	Quotations
A. Overall impressions	
1. Engages	If you know that the presenter is good, and interactive, and is going to call on people in the audience or at least make the talk entertaining and repetitive enough to cement things in your mind, but not overly redundant, then you are going to be more invested in the outcome. (PGY-1-C) The speaker there more often engages the audience, so it kind of forces people to pay attention more. They'll have some questions interspersed in their talk and it's less of a lecture and more of a discussion. (PGY-3-C)
2. Enhances learning	A few lecturers are completely interactive. They call on residents throughout the whole presentation voluntarily or involuntarily, but those are much more memorable, the ones that are interactive. (PGY-2-C)
3. Stressful	It's frightening to get called on, but it's nice that the thinking is interactive rather than passive because you are coming up with a differential and you are thinking about it in your own mind as the group is talking about it, as opposed to having the information fed to you. (PGY-1-C)
B. Creating a safe environment	
1. Setting expectations	I think you have to build the precedent that we want to encourage participation, not put people on the spot for answering because it is a big group and it would be intimidating if you felt like you were being pimped in front of a huge group of people. (PGY-2-C)
2. Asking questions	The way questions are asked is very important for making it a friendly environment. (PGY-2-C)
3. Number of people	There's probably a critical mass of people in the room that you get to, where it suddenly becomes uncomfortable, and it's public speaking rather than participating. (PGY-3-C)
4. Rest	[Active participation] probably does make people pay more attention. But there are many days when I just want to sit there and eat lunch and take in what I take in . . . if you have too much of that it makes it not a break anymore. (PGY-1-C)
5. Resident culture	I think if you have interaction in a way that's not intimidating and everybody is expected to go and participate, and I don't feel like I'm being judged if I throw out a wacky idea. Some of that is setting that precedent. (PGY-3-C)
C. Audience response system	
1. Anonymous engagement	That's why I think the anonymous [audience response system] clickers are a good thing because you're not forced to speak out in front of 30 of your peers who you may or may not want to speak in front of. (PGY-1-T)
2. Ineffective engagement	I guess it's better than having no participation. I mean, it's some interaction. I don't know how dynamic it is. It's better than nothing. (PGY-2-C)

Abbreviations: PGY, postgraduate year; C, categorical; T, transitional year.

residents feel more comfortable in smaller groups. Engagement in problem-based learning can increase residents' self-directed learning behaviors.[35] And, team-based learning improved residents' satisfaction with learning.[36]

Several factors may limit the generalizability of our findings. First, the primary author played a large role in data collection and analysis. Second, our study used data from a single specialty and was conducted at a single, large, university-based institution, and the findings may not be applicable to other disciplines and settings. Third, our internal medicine residency participated in ACGME's Education Innovation Project, which may affect the views of our residents toward innovation.

Conclusion

In the changing environment of residency education, medical educators need to evaluate how residency programs structure their educational curriculum. This study furthers our knowledge of the learning preferences of residents within this changing environment and can be used, in conjunction with principles of adult learning, to reform how we deliver core medical knowledge in residency education and improve educational outcomes.

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