

Utilization of a Resident-as-Educator Model in Pathology: Unique Challenges, Opportunities, and Recommendations

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In contemporary medical education, the role of residents as educators has been increasingly recognized and formalized through the “resident-as-educator” (RAE) model, which incorporates resident-based teaching as an intentional element of medical education. Using near-peer learning principles, residents who are closely situated within the educational continuum are employed as teachers who can effectively facilitate the connection between theoretical knowledge and practical application for learners. Although the RAE model works well for many medical specialties, pathology presents distinct challenges and opportunities. This is due in part to limited and late medical student exposure to the field and the pathology resident learning curve paralleling that of their learners. This commentary examines the RAE model’s application, associated challenges, and potential within the field of pathology.

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The Resident-as-Educator Model in Medical Education

In general, the RAE model is a structured approach to medical education that emphasizes the resident physician’s often underrecognized role in educating medical students, junior

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residents, and other learners. Traditionally, residents have contributed to education in an informal manner, with instruction occurring naturally during procedural, bedside, and clinical discussions. The RAE model elevates this interaction to a deliberate pedagogical strategy, providing structure, recognition, and, increasingly, formal training to help residents develop as effective educators.¹ The model utilizes the resident’s unique position as a near-peer to bridge the gap between learners and attending physicians. Near-peer teaching recognizes that someone just ahead in their training can guide those slightly behind by more effectively providing accessible, relatable, and level-appropriate teaching.² This framework is especially powerful in medical training, where hierarchical structures are well defined but learning is continuous and collaborative.

The RAE model offers numerous medical educational benefits. Near-peer teaching fos-

ters a more supportive learning environment in which students often feel more comfortable asking questions and acknowledging areas of confusion.² Since residents have recently navigated similar learning challenges, they are often better equipped to explain complex

concepts in ways that resonate with novices. Teaching also reinforces residents’ own knowledge, promotes leadership development, and builds essential skills for future roles in academic or clinical education.^{1,3-4}

Challenges and Advantages of a RAE Model for Pathology Learners

Pathology offers a unique context for implementing the RAE model. The primary challenges stem from curriculum timing and structure. Unlike fields such as internal medicine or surgery, pathology receives minimal emphasis in both preclinical studies and clinical clerkships.^{5,6} This limited exposure compresses opportunities for students to appreciate the specialty’s complexity into a short elective rotation. Consequently, many students begin their rotations with limited foundational knowledge, requiring resident educators to devote considerable time to basic concepts in histology

or laboratory medicine rather than exposing students to the day-to-day practice of the specialty.

Clinical skills learned in medical school are generally applicable to many patient-facing specialties, allowing students to participate even without prior exposure. In contrast, pathology requires different foundational skills, making it uniquely inaccessible to learners without direct instruction. Insufficient exposure to in vivo pathology practice can have detrimental effects on students and the specialty. For instance, persistent stereotype—such as the perception that pathology only entails autopsies or is disconnected from patient care—may not be corrected.⁷ Additionally, survey studies indicate that experiential exposure is a key factor in attracting students to pathology,⁸ an important consideration given the growing concern regarding workforce shortages.⁹ The current timing and structure of pathology education may therefore reduce hands-on opportunities for learners and potentially affect future recruitment.

A RAE model can help alleviate some of these issues by strategically addressing both educational limitations and recruitment challenges. Given the compressed and often late exposure to pathology many medical students experience, residents are uniquely suited to bridge gaps in foundational knowledge while simultaneously showcasing the specialty's real-world relevance. Pathology residents possess valuable insight into the difficulties associated with learning fundamental histopathology, having recently navigated these challenges themselves. As near-peers, residents are well positioned to adapt their teaching methods to meet the distinct learning needs of their trainees.¹⁰

Additionally, the resident role is particularly valuable in combating misconceptions stemming from pathology's marginalization in medical training. By engaging students in near-peer teaching, residents can demystify the specialty and directly counter stereotypes through relatable, first-hand examples of pathology's central role in interdisciplinary care. The delivery of this information by a near-peer may enhance the effectiveness of this message.¹¹ Resident-led educational encounters also serve a critical recruitment function: approachable and enthu-

siastic residents often leave a stronger impression on students than more formal instruction, influencing specialty perceptions during a pivotal decision-making period for learners. Given current workforce shortages, leveraging the RAE model is a proactive strategy to increase visibility, correct misconceptions, and foster engagement with the field.

Challenges and Advantages of a RAE Model

For pathology residents, the RAE model presents additional advantages and challenges. Fundamentally, such teaching supports competencies outlined by the Accreditation Council for Graduate Medical Education (ACGME), which emphasizes educational development as a key component of professionalism.¹² Teaching also reinforces essential pathology concepts. Preparing to instruct requires residents to structure information methodically, revisit essential topics, and address probing questions—processes that promote deeper learning for the educator.¹³ Participation in structured teaching also enables pathology residents to acquire early mentorship experience, a key competency for future academic roles. This role enhances communication skills, nurtures confidence, and develops residents' capacity to convey complex information clearly skills vital not only in educational settings but also in interdisciplinary collaboration.

Nonetheless, unique challenges exist. In patient-facing specialties, medical students can learn from residents by observing direct patient-physician interactions, allowing residents to integrate teaching into their daily clinical workflow. In contrast, pathology residents are not required to articulate their reasoning in the absence of a learner. Pathology RAEs must therefore expend deliberate effort to integrate teaching into their daily routines. Furthermore, medical students often encounter pathology late in their training and for only a brief period, making resident-led teaching both influential and high stakes. Most pathology residents themselves begin their training with limited prior exposure, creating a steep learning curve mirroring that of their students. Unlike residents in surgical or internal medicine programs, who benefit from sustained clinical

involvement in medical school, pathology residents must concurrently acquire new skills and fulfill teaching responsibilities. This parallel learning can enhance empathy but also may strain residents' cognitive resources.

Moreover, given the limited and often singular pathology exposure students have during medical school, the quality, accuracy, and impact of resident-led instruction carries heightened significance. For many students, a brief rotation may be their only direct experience with the specialty, making it a crucial opportunity to dispel persistent misconceptions and present a realistic, nuanced understanding of pathology's capabilities and limitations. Thus, this brief window is pivotal for shaping how future physicians perceive and engage with the specialty. Effective instruction can lay the groundwork for stronger interdisciplinary collaboration, more appropriate test utilization, and more informed clinical decision-making.¹⁴

Conversely, if residents deliver outdated, oversimplified, or inaccurate information, they risk reinforcing distorted views that persist into practice. This concern is especially pressing in pathology, where exposure is woefully scarce and misconceptions often go unchallenged. Consequently, pathology residents in a RAE model bear a dual responsibility: providing effective education and accurately representing the specialty. Given their limited exposure to pathology prior to residency, this may pose a significant challenge.

Qualities of a Successful Resident Educator in Pathology

A successful RAE in pathology must possess a unique blend of enthusiasm, humility, and communication. Passion is critical.¹⁵ A resident who expresses genuine excitement for the intellectual rigor and diagnostic importance of pathology can spark curiosity and shift perceptions, even during a short rotation. First impressions matter, particularly in underrepresented specialties, and a passionate resident may be a student's first—and only—ambassador for pathology.

Humility is equally important. Acknowledging personal limitations and openly discussing knowledge gaps contributes to a culture of collaborative learning. Good RAEs understand

when to seek assistance. When residents model intellectual honesty and actively seek input from attending physicians or senior colleagues, they normalize the process of lifelong learning. This behavior enhances teaching quality and sets a powerful example for medical students regarding professional development and interdisciplinary learning.

Finally, strong pathology RAEs embrace the concept of a “united front.” While they serve as teachers, they are also learners—just further along the path. Presenting the rotation as a collective learning experience fosters open communication, reduces student apprehension, and cultivates rapport. By emphasizing that mastering pathology is an ongoing process, residents help establish a supportive, inclusive, and growth-oriented environment.

Conclusions

The resident-as-educator model presents an invaluable strategy in pathology, particularly in addressing structural and perceptual barriers that may limit student engagement. Through near-peer teaching, resident educators can clarify the specialty’s role, address misconceptions, and increase awareness of career opportunities; however, a thoughtful approach is essential given the model’s unique challenges within pathology.

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