

curriculum utilizing bedside nurses and respiratory therapists as educators at low cost. Participants appreciated its practical, interdisciplinary nature and increased their knowledge, comfort with, and participation in bedside care. Given its flexibility and customizability, POINTER is likely generalizable to any field with bedside care provided by non-physicians willing to educate learners.

References

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NEW IDEAS

Nonprofit Board Membership: A Novel Mechanism for Authentic Community Engagement and Leadership Development for Resident Physicians

Setting and Problem

Many residency programs have increased curriculum emphasis on the social determinants of health in recent years, and genuine longitudinal experiences for community engagement can be rare and challenging to design. The pediatric residency program at the University of Pittsburgh Medical Center Children's Hospital of Pittsburgh has its separate Pediatric Advocacy-Leadership-Service (PALS) program track with 6 total residents across all trainee levels in a given academic year. Since 2011, the PALS program's mission is to train residents to be outstanding primary care pediatricians with the knowledge and skills to provide effective health care, leadership, and advocacy on behalf of children and families in medically underserved communities. This specific training is accomplished through multiple elements in the spirit of the acronym. Authentic leadership training, beyond personality profiles and suggested readings, is exceptionally difficult to provide. The PALS program

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TABLE

List of Participating Nonprofit Organizations as of 2021

Nonprofit	Type of Organization	No. of Residents
A+ Schools	Education advocacy	3
Adagio Health	Healthcare and reproductive health	1
Danny's Ride	Transportation/substance use recovery	1
Greater Pittsburgh Community Food Bank	Food insecurity	1
Healthy Start Center for Urban Breastfeeding	Lactation support	1
Hilltop Community Children's Center	Childcare center/violence prevention	1
Human Services Center Corporation	Community organization coordination	2
Just Harvest	Food insecurity	1
Rebuilding Together Pittsburgh	Housing	1
Trying Together	Early childhood education and childcare	1
Women's Center & Shelter of Greater Pittsburgh	Intimate partner violence women's shelter	1
Variety, The Children's Charity	Mobility-related equipment	1

provides the following unique training opportunity to meet this need.

Intervention

Enabling authentic community engagement while simultaneously offering robust leadership development, the PALS program facilitates each resident to be a member on the board of directors of a local nonprofit organization during residency training. This pairing is done with individual attention to each resident's interests and the community organization's vision and values. First-year PALS residents are asked to critically reflect on personal strengths, goals, and areas of growth. Local community pediatrician and public health leader, Dr Amy Nevin, has years of experience with grassroots community health networks to coordinate "the match" between each nonprofit organization and resident. To enable junior residents to contribute meaningfully as board members, she and the PALS third-year residents provide specific mentorship and are in communication with various local nonprofits gauging specific organization needs. First, an interview is completed, and the nonprofit leadership decides whether the resident physician is their desired board member candidate. If all parties are interested in proceeding, clear expectations are outlined upfront. For example, residents are never expected to make large personal financial donations to the organization. Residents are transparent regarding their rigorous clinical schedules. Nonprofit organizations provide board meeting times to the residents and share reasonable attendance expectations. Residents then provide board meeting times in advance to residency program leadership for accommodations when possible. The timeline varies per each pairing but is

finalized by the end of intern year at the latest to provide at least 2 full years of active nonprofit board membership.

Outcomes to Date

The resident nonprofit board membership experience has been an empowering community opportunity with mutual benefits for both local nonprofits and residents. Several residents have cited their nonprofit board role as one of their most rewarding experiences of residency. Many residents invited their community partners to visit the hospital for guest lectures during teaching conferences. Community nonprofits have utilized resident perspectives, often the only medical voice on many boards, on numerous occasions including navigating the COVID-19 pandemic. The list of participating nonprofit organizations (TABLE) has grown even as some partners actively seek a new resident board member as graduating ones complete their residency programs. Most residents had never previously held board responsibilities, and this leadership opportunity intends to serve all graduates as future community health leaders in their careers. Further investigation is needed longitudinally to survey graduates and community partners of this experience to understand its long-term career impact.

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NEW IDEAS

Understanding the Shades of Gray in Diagnosis—An Online Course in Bayesian Reasoning

Setting and Problem

Foundational skills in Bayesian reasoning may aid clinical decision-making, decrease overreliance on single diagnostic tests, and improve patient care. However, clinicians are often unskilled in applying Bayes' rule at the bedside, such as using likelihood ratios to calculate posttest probabilities.¹

While published literature measures clinicians' abilities to update conditional probabilities based on dichotomous test results, many diagnostic tests used in clinical practice are not dichotomous.¹ One of the gaps in clinical decision-making revolves around the interpretation of continuous tests such as D-dimer, troponin, and procalcitonin. Although often dichotomized

as "normal" and "abnormal" for simplicity, the test's degree of abnormality may have a profound effect on how the result changes the disease probability. Explicit instruction in understanding the "shades of gray" in diagnostic test interpretation is lacking.

Clinicians who are deficient in knowledge of Bayesian reasoning are often involved in trainee education. Faculty development initiatives to improve Bayesian reasoning would presumably have positive downstream effects on learners. Educational efforts may be limited by faculty time, availability, and lack of local experts in Bayesian reasoning. Furthermore, the recent COVID-19 pandemic has presented additional challenges to designing and delivering in-person educational curricula.

Intervention

We developed an online, self-paced, asynchronous, case-based curriculum in Bayesian reasoning. The course uses a flipped classroom approach and revolves around 10 core clinical cases. Each case represents a realistic patient scenario. The learner reads each scenario and answers a series of questions assessing a range of skills involved in Bayesian reasoning. The learner is asked to incorporate various findings in the estimation of disease probability, updating disease probability based on new information and integrating this information to guide subsequent management decisions. Each case is followed by video explanations that guide learners through the fundamentals of Bayesian reasoning. The course gradually builds from simple test characteristics, such as sensitivity and specificity, to understanding multilevel likelihood ratios, receiver operating characteristic curves, and action thresholds when making decisions under uncertainty. Course completion is estimated to take 6 to 8 hours. All course materials were created by the study authors.

The course was piloted to faculty volunteers beginning June 2021 for the Division of Hospital Medicine faculty at the University of Colorado. Informed consent was obtained. Each participant took 15-question pre- and posttests to evaluate the baseline and gained knowledge. Participants also self-assessed their prior knowledge, ranked the importance of Bayesian reasoning in their clinical care, and noted their satisfaction with the course on a 4-point Likert scale that excluded neutral responses. The Colorado Multiple Institutional Review Board granted the study an exempt status.

Outcomes to Date

As of October 2021, 18 out of 20 invited faculty members started the course, and 12 (67%) completed

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