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ORIGINAL RESEARCH

## Using the *Teaching Perspectives Inventory* as an Introduction to a Residents-as-Teachers Curriculum

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### INTRODUCTION

The Anesthesiology Milestone Project includes a specific milestone for assessing teaching attributes of residents within the competency of Practice-based Learning and Improvement (PBLI). PBLI 4 addresses resident performance level as it pertains to the education of patient, families, students, residents, and other health professionals.<sup>1</sup> The defined criteria for each level of PBLI 4 are illustrated in Table 1. Despite the detailed assessment criteria, residency programs must determine how best to implement and incorporate each milestone into its curricula.

“Residents-as-Teachers” programs have been described in the medical literature, yet there is no consistency as to the curricular design or content. Most Residents-as-Teachers programs fail to employ a conceptual, theoretical, or organizing framework to guide the development or delivery of the curriculum.<sup>2</sup> In fact, a recent systematic review of established Residents-as-Teachers curricula deemed only 1 article to be fully reproducible when describing both educational content and assessments.<sup>3</sup> A literature search reveals few articles that broadly discuss Residents-as-Teachers in the context of anesthesiology residency programs.<sup>4-6</sup> However, articles are lacking that specifically addressing PBLI 4 with concrete recommendations or best practices to help residents in our specialty achieve this milestone.

We intend to develop an educational curriculum to assist our residents in

successfully accomplishing this milestone. According to Kern’s Curriculum Development for Medical Education,<sup>7</sup> conducting a targeted needs assessment is a fundamental step. Identifying the needs of a curriculum’s targeted learners aids in facilitating the alignment of resources with strategy, motivating learners, and guiding the creation of goals and objectives. We believe that, specific to the Residents-as-Teachers curriculum, an important component of the needs assessment is acquiring an understanding of our residents’ teaching philosophy. In addition, it is important for residents to reflect on their own teaching philosophy, which will give them insight into their role and responsibility of being an educator.<sup>8,9</sup> Once this is accomplished, we can create curricular goals and content aimed at helping residents develop effective educational strategies with their underlying teaching philosophy in mind. The goal of this study is to identify the specific teaching perspectives and intentions of our residents and promote residents’ comprehension of their own teaching philosophy.

### METHODS

To achieve our primary study goal, we utilized the Teaching Perspective Inventory (TPI) (available at [www.teachingperspectives.com](http://www.teachingperspectives.com)).<sup>10</sup> Developed by Pratt and Collins in 2000, the TPI has been extensively studied and used by educators across a wide range of disciplines and has been proven to be a valid, reliable tool.<sup>8,11</sup> Numerous publications have described its use for faculty development, teaching

assessment, teaching improvement, peer reviews of teaching, and higher education research.<sup>12-15</sup> More importantly, the TPI has been used to evaluate clinical teaching perspectives of medical educators and clinicians in several specialties, including pediatrics, plastic surgery, and psychiatry.<sup>16-18</sup>

The TPI is a 45-item inventory that assesses teaching philosophy, focusing specifically on an individual’s interrelated set of educational beliefs and intentions that gives direction and justification to his or her actions.<sup>10</sup> In addition to completing the TPI items, respondents answer a series of brief questions about their academic background, employment experiences, geographic locations, and types of learners they teach. The respondents’ TPI scores are calculated based on a 5-point scale for each item. Results of the TPI include identification of dominant and recessive teaching perspectives along with interpretive paragraphs. Teaching perspectives are classified as: (1) transmission, (2) apprenticeship, (3) developmental, (4) nurturing, and (5) social reform.<sup>9</sup>

Institutional Review Board (IRB) approval was obtained from Vanderbilt University Medical Center. The study was given IRB exempt status. Anesthesiology residents were invited to complete the TPI and a follow-up survey via Research Electronic Data Capture (REDCap).<sup>19</sup> Completion of the survey was voluntary, and the responses

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were anonymous. Survey items included year of training, career pathway preference (academic medicine or private practice), and primary dominant and recessive teaching perspectives. A final item asked how important identification of their teaching perspective is to their role as a clinical educator.

Descriptive summary statistics were used to characterize the sample group. Data were processed in Microsoft Excel (Microsoft, Redmond, WA), and statistical analysis was performed using SPSS version 24 (IBM, Armonk, NY). Associations between categorical variables, year in training, and primary dominant teaching perspective, as well as between career pathway and dominant teaching perspective were evaluated using the chi-square test. A *P*-value of  $\leq 0.05$  was considered statistically significant.

## RESULTS

A total of 33 (51%) anesthesiology residents in our program completed the TPI and survey. Twice as many residents indicated a preference for an academic medicine career pathway compared to a private practice career. The dominant and recessive teaching perspectives were compared between the academic medicine pathway and private practice pathway groups (Table 2). The most common dominant teaching perspective for both groups is apprenticeship, with nurturing as the second most common. The recessive teaching perspectives are also consistent between the 2 groups with social reform and developmental as the most common. The 2 groups differed in the importance of knowing their dominant teaching perspective. Of the residents planning an academic career, 78% either agree or strongly agree that identifying their teaching perspective is beneficial to their role as a clinical educator, compared to 54% of those anticipating a career in private practice. Table 3 summarizes TPI results by year in training. Analysis of dominant teaching perspective found no statistically significant differences when comparing either year in training or career pathway.

## DISCUSSION

Using the TPI as an introduction to a

Residents-as-Teachers curriculum in anesthesiology has not been previously reported in the literature. A primary reason for using the TPI is to acquire an understanding of our residents' teaching philosophy. In addition, it is important for residents to reflect on their own teaching style and intuition, which will give them insight into their role and responsibility as an educator. The TPI provided valuable information pertaining our curricular needs assessment and will allow for the development of a more focused curriculum. An emphasis of the goals and content of our curriculum will be on teaching residents to identify effective educational strategies with their underlying teaching philosophy in mind. Providing them with formal instruction of teaching theory and specific teaching techniques may increase their effectiveness as educators and ensure achievement of PBLI 4 milestone.

The TPI assessment tool categorizes the respondent's teaching beliefs, intentions, and actions into 5 different classifications (see sample TPI Profile report in Figure 1). The transmission perspective encompasses the idea that good teaching requires mastery of the subject matter or content and conveying that information in a clear and organized fashion. Individuals with an apprenticeship perspective believe good teachers are highly skilled practitioners of what they teach. The developmental perspective embraces the notion that good teachers must understand how their learners think and reason about the content. Educators with a nurturing perspective believe learners become motivated and productive when they are working on issues or problems without fear of failure. From the social reform perspective, effective teachers seek to change society in substantive ways by considering the object of teaching as a collective rather than an individual.<sup>9,20</sup>

Residents in our department have a significant role in educating medical students in the perioperative setting. Based upon the nature of our specialty, it is not surprising that apprenticeship is a common dominant teaching perspective among our residents. Apprenticeship has been dominant in surgical education for over 100 years.<sup>16</sup> However, Pratt makes a distinction between apprenticeship and

apprenticeship teaching perspective. The apprenticeship model refers to an expert passing down the traditions of a craft or trade to a learner. The apprenticeship teaching perspective is a way of thinking that is encompassing—founded on the belief that skill, judgment, and confidence are best learned through experience. Educators with this perspective are highly skilled practitioners and are recognized for their expertise.<sup>21</sup> Apprenticeship teachers believe that effective teaching involves mentoring, guiding, coaching, and socializing learners into a community of practice. Immersing students into genuine practice provides motivation to learn. Students are encouraged by the relevance of being able to legitimately contribute and play a valued role within the community.<sup>22</sup>

Teaching in the operating room setting poses challenges, especially for the novice educator. To become effective teachers, residents will need to understand the importance of engaging students by allowing them to assist with clinical tasks while sharing their knowledge and experience. Matching the learner's capability with legitimate tasks can be difficult, especially with students who have little clinical experience. It will be vital for them to appreciate the challenges of permitting a student to perform procedural skills while maintaining patient safety.

With the apprenticeship perspective, teaching goes beyond demonstrating and supervising specific skills. It also encompasses the process of integrating learners into a team or community with an emphasis on professional identity.<sup>9</sup> Thus, it will be imperative for residents to understand that teaching based upon this perspective includes modeling appropriate team and leadership skills, coordination of patient care, professionalism, and communication skills in the perioperative setting. The concept of role modeling as an effective teaching method is supported by a recently published study by Karani et al.<sup>23</sup> The authors explored specific teaching strategies used by resident teachers in their interactions with students in the clinical environment. Medical students described role modeling as the most common method of teaching used by excellent resident teachers. Therefore, our Residents-

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as-Teachers curriculum will include educational content aimed at effective role modeling techniques.

For residents with a nurturing teaching perspective, our Residents-as-Teachers curriculum must focus on the interrelated concepts of relationship and feedback. To be effective teachers, residents must promote a supportive learning environment and understand that the relationship with each learner is vital. In turn, feedback is critical because the value and interpretation of feedback depends on the relationship between educator and learner.<sup>9</sup> Thus, our curriculum must incorporate strategies to help residents establish this teacher-learner relationship, provide effective feedback, and develop a balance between challenging and supporting the medical student.

Social reform was the most common recessive perspective amongst our residents. Interestingly, many of our residents choose to participate in the Vanderbilt International Anesthesia program, a global health elective during their CA-3 year in which they spend a month providing care in an underserved area. During this experience, residents play a vital role in educating and supervising local anesthesia learners in a clinical setting. Although educators tend to have a primary teaching perspective, Pratt<sup>22</sup> states it can change depending upon the learners, context, and educational circumstances. Therefore, including teaching strategies aimed at the social reform perspective will be necessary as residents with an interest in global health have an opportunity to pursue this view of teaching.

A potential challenge is appealing to those residents who are planning a career in private practice and may feel there is minimal benefit for educators to understand their teaching perspective. Our Residents-as-Teacher curriculum must emphasize that this particular milestone also assesses teaching attributes pertaining to patient and family education. Therefore, we need to identify strategies to engage those planning a career in the private sector, as patient and family education will be an important aspect of their career.

Limitations of this study included a small sample size and response rate of only 51%.

The low response rate was likely due to the voluntary nature of this survey. In addition, twice as many residents who completed the survey are planning a career in academic medicine compared to private practice. This may represent a selection bias because those interested in academic medicine and education were more likely to complete the TPI and survey. Finally, this was a single-center study. Thus, the generalizability to other anesthesiology residency programs is unclear.

As we approach the next of phase of curriculum development, goals and objectives will largely reflect the TPI results, as a targeted-needs assessment. Based upon Residents-as-Teachers literature, additional considerations include an emphasis on learner-centered teaching approaches, establishing an ongoing curriculum according to residents' level of training, integrating the curriculum into residents' daily work, and developing educational skill sets specific to anesthesiology.<sup>24-27</sup> It is imperative for us to focus on the overarching themes from our needs assessment, as they will guide our development of goals and objectives. In summary, the TPI can be an important initial step as a needs assessment prior to implementing a Residents-as-Teachers curriculum in any residency program.

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**Table 1. Practiced-based Learning and Improvement 4: Education of patient, families, students, residents, and other health professionals<sup>1</sup>**

Level	Knowledge, Skills, Attitudes, and Other Attributes
1	Discusses medical plans and responds to questions from patients and their families. Acknowledges limits and seeks assistance from supervisor.
2	Explains anesthetic care to patients and their families. Teaches basic anesthesia concepts to students and other health care professionals.
3	Effectively explains subspecialty anesthetic care to patients and their families Teaches anesthesia concepts to students and other residents.
4	Explains anesthesia care and risk to patients and their families with conditional independence. Teaches anesthesia concepts, including subspecialty care, to students, other residents, and other health professionals.
5	Serves as an expert on anesthesiology to patients, their families, and other health care professionals (locally or nationally). Participates in community education about anesthesiology.

**Table 3. Summary of TPI Results by Year in Residency Training**

	PGY-1	PGY-2	PGY-3	PGY-4
Number of Responses	4	12	8	9
Dominant Teaching Perspective				
Apprentice	2 (50%)	5 (42%)	4 (50%)	4 (45%)
Nurturing	0	5 (42%)	3 (37.5%)	3 (33%)
Developmental	2 (50%)	0	1 (12.5%)	2 (22%)
Transmission	0	1 (8%)	0	0
Social Reform	0	1 (8%)	0	0
Recessive Teaching Perspective				
Social Reform	1 (25%)	5 (42%)	6 (75%)	6 (67%)
Developmental	1 (25%)	4 (34%)	1 (12.5%)	3 (33%)
Apprentice	2 (50%)	1 (8%)	1 (12.5%)	0
Transmission	0	1 (8%)	0	0
Nurturing	0	1 (8%)	0	0

**Table 2. Summary of TPI Results Based Upon Career Pathway**

	All Resident Responses	Residents Planning an Academic Career Pathway	Residents Planning a Private Practice Career Pathway
Number of Responses	33	22	11
Dominant Teaching Perspective			
Apprentice	15 (45%)	10 (46%)	5 (46%)
Nurturing	11 (33%)	8 (36%)	3 (27%)
Developmental	5 (15%)	4 (18%)	1 (9%)
Transmission	1 (3%)	0	1 (9%)
Social Reform	1 (3%)	0	1 (9%)
Recessive Teaching Perspective			
Social Reform	18 (55%)	13 (59%)	5 (46%)
Developmental	9 (27%)	6 (27%)	3 (27%)
Apprentice	4 (12%)	2 (9%)	2 (18%)
Transmission	1 (3%)	1 (5%)	0
Nurturing	1 (3%)	0	1 (9%)
Identifying my teaching perspective is beneficial as a clinical educator			
Strongly Agree	7 (21%)	7 (32%)	0
Agree	16 (48%)	10 (46%)	6 (54%)
Neither	9 (27%)	4 (18%)	5 (46%)
Disagree	1 (3%)	1 (4%)	0
Strongly disagree	0	0	0

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**Abstract**

**Objective:** The Anesthesiology Milestone Project includes a milestone for assessing the teaching attributes of residents within the competency of Practice-based Learning and Improvement. We intend to develop a Residents-as-Teachers

educational curriculum to assist our residents in successfully achieving this milestone. The goal of this study is to identify the specific teaching perspectives and intentions of our residents and to promote residents' comprehension of their own teaching philosophy.

**Methods:** We invited our residents to complete the Teaching Perspective Inventory (TPI) and a follow-up survey to gather information regarding dominant and recessive teaching perspectives, their intended career pathway, and their view of the importance of understanding teaching perspectives.

**Results:** The two most common dominant teaching perspectives are apprenticeship and nurturing for residents who are planning a career in both academic medicine and private practice. A greater percentage of residents planning an academic career agree that identifying their teaching perspective is beneficial to their role as a clinical educator, compared to those anticipating a career in private practice.

**Conclusions:** Based on this pilot data, our Residents-as-Teachers curriculum will include instruction of educational strategies specifically designed towards the apprenticeship and nurturing perspectives.

**Key words:** teaching perspectives; resident education; milestones; residents-as-teachers

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Figure 1. Sample TPI Profile report.

