Generating Developmentally Appropriate Competency Assessment at a Family Medicine Residency

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BACKGROUND AND OBJECTIVES: Ten years after the Accreditation Council for Graduate Medical Education's (ACGME) mandate that residency programs evaluate learners' competency, research is needed to guide efforts to meet this challenge. During an innovative residency redesign, the authors developed a process to effectively measure "competence." This particular family medicine residency admits six residents per class year and is sponsored by an academic community hospital. Our objective was to generate developmentally appropriate observable behaviors that assess competencies.

METHODS: Eight steps guided the development of this assessment system: (1) Generate residency-specific competencies, (2) Define residency-specific competencies, (3) Identify principles of assessment, (4) Compose and analyze narratives of excellence within each competency, (5) Distill standard statements from narratives and organize into Dreyfus levels of competence, (6) Derive observable behaviors from standard statements to directly correlate behaviors and competency levels, (7) Design assessment tools (based on observable behaviors) for six residency learning sites, and (8) Translate assessment tools for ACGME competencies.

RESULTS: The results of this process include an assessment system that (1) features six tools used with strategic frequency throughout the academic year and (2) generates global assessment of residents' performance in both ACGME and residency-specific competencies.

CONCLUSIONS: Narrative reflection was an effective method to tie observable behaviors to competencies. The process was time intensive; however, greater efficiency and enthusiasm is expected in the use of these assessment tools, with greater confidence in the program's capacity to assess training outcomes. Future research should include comparison of these tools with those of other programs.

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In 1999, the Accreditation Council for Graduate Medical Education (ACGME) endorsed six general competencies through the Outcome Project—an initiative to evaluate medical residency programs on the basis of "actual accomplishments" rather than "the potential to educate."[1,2] The principles of outcomes-based assessment require that explicit efforts be directed toward identifying actual changes in learners' knowledge, behaviors, and attitudes rather than relying on completion of a time-based requirement as evidence of competence. Existing methods for assessing competence have been criticized as lacking objectivity, but little advice exists on how to improve assessment procedures.[3]

In fall 2006, a call for proposals (Association of Family Medicine Residency Program Directors, American Board of Family Medicine, TransforMED) invited family medicine residencies to prepare family physicians for the challenges of current and future health care environments. The initiative, Preparing the Personal Physician for Practice (P4), supports education that trains family medicine residents to provide personalized and continuous care to their patients and to respond to an increasingly complex

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and fragmented health care system.[4] This combination of the Outcome Project and P4 provided an opportunity to rethink the age-old "apprenticeship" approach and instead develop an integrated curriculum and assessment system based on the ideals of competence as demonstrated.

Based on our experience of curriculum and assessment redesign in a P4 program, the authors describe a method through which medical education programs can develop "observable behaviors," which are the basis of competency-based assessment tools. Specifically, this article advocates working iteratively from concrete experience to abstract concepts; that is, from ideal definitions of competence (the abstract) to behavioral descriptions that reflect assessable learner performances (the concrete) and back again. Journals and educational repositories[5-8] present tools to assess a range of skills and competencies; however, few articles focus on the systematic process of developing such tools. Notable exceptions are Dannefer and Henson's[9] description of portfolio-based assessment, which offers a process for developing standards statements and organizing curricular content; Graham et al,[10] who use nominal group process to define systems-based practice; and Yudkowsky et al,[11] who describe institution-based assessment of resident interpersonal skills. These processes are limited because they refer either to isolated competencies or refer only to medical school assessment.

Narrative is central to medical culture. Stories are used throughout medical education and practice, including illness stories that support the development of empathy,[12,13] patient and family histories, case presentations, and narrative reasoning in assessment and diagnosis.[14,15] Rita Charon is perhaps the best-known researcher of narrative medicine, but stories are also central to Kathryn Montgomery's and others' work related to medical reasoning and decision making.[16] Although narrative is ubiquitous in medicine, the assessment of quality in medical education and clinical practice tends to rely on quantitative measures such as checklists and Likert-type scale measures. This article describes a method based on narrative reflection that avoids the pitfalls of Likert-scale measures by focusing on concrete behaviors, is transferable to multiple educational settings, and can define both ACGME and program-specific competencies.

Methods

Context

This dually accredited, 3-year family medicine residency is based at an academic community hospital and admits six residents (± 1) each year, totaling approximately 18–21 residents at any given time. The interdisciplinary faculty is comprised of eight full-time physician faculty (including both the department chair and the program director), four part-time physician faculty, two behavioral medicine faculty (one is part-time), a clinical pharmacist, a research coordinator, and a program coordinator. During this project, the faculty also included two full-time PhD medical educators (grant funded) who led this effort.

Steps 1–3 described below were emergent; Steps 4–8 were designed based on existing work in narrative and competency assessment.[17] All faculty were involved at some level in one or more of the steps described. Workload distribution for faculty is described at each step.

Step 1: Generating Residency-specific Competencies

During fall 2006, the faculty met to articulate their understanding of what is required to practice family medicine in the current and future health care environment, and seven core concepts (or competencies) emerged through consensus. These residency-specific competencies reflected the local values, philosophies, and combinations of skills the faculty deemed necessary for graduates to succeed in primary care in the 21st century. All faculty participated in identifying the seven residency-specific competencies (which complement the six proposed by the ACGME): they are (1) relationship-centered care, (2) comprehensive care, (3) information literacy and knowledge creation, (4) leadership and change management, (5) community health partnership, (6) lifelong learning, and (7) self care.

Step 2: Defining Competencies

In August 2007, the entire faculty met weekly to brainstorm definitions for the competencies and agreed that they must (1) relate to resident performance and (2) assess behaviors relevant to the P4 program. Defining these competencies required several iterations as the faculty grappled with the implications of word choice. The seven competencies listed above were not changed; however, it was necessary to operationalize the competencies so that the definitions were adequate (sufficiently describing the breadth), accurate (the definition did not overlap other definitions), and clear (understood by others who were not part of generating these definitions, ie, had face validity).

Step 3: Cultivating Principles of Assessment

In September 2007, the faculty met to clarify the broader context of assessment in our department and was asked, "What are our assumptions about assessment?" Five principles of assessment emerged through thematic analysis of data from that meeting: (1) direct observation is ideal and includes both assessment and feedback, (2) multiple methods are appropriate, (3) assessment is consistent to the extent that visible behaviors are identified, and variations of interpretation are minimized, (4) assessment and feedback are timely and expected, and (5) effective assessment practices are dependent upon ongoing faculty development. These principles cemented the commitment of the faculty to a process of resident assessment

that was based on observable behaviors, comprehensive, both formative and summative, supervised, and consistent.

Step 4: Crafting Narratives

At the 2007 ACGME meeting in Chicago, Glenn Regehr[17] identified fundamental problems with evaluating performance in the field, particularly that the use of scales tends to result in a narrow range of reported performance (with most learners scoring above the midpoint of the scale).[18] Also, evaluators' expert impressions of learners can be quite remote from the abstract categories and numerical scales on an assessment form. In response, Regehr and colleagues developed a process in which evaluators' holistic impressions of learners were matched to iconic vignettes (or stories) representing a range of learner performances.[19] Evaluators' ratings using vignettes were more reliable and more discriminating when compared to a rating scale. In addition, the vignette method identified a number of learners as "unsuitable for practice" who were formerly "passed" by the same evaluators using a Likert-type rating scale.

In an effort to realize the benefits of narrative in the development of our own assessment tools, the authors presented the seven residency-specific competencies with their preliminary definitions to the entire faculty, community preceptors, and the residents to stimulate written narratives that show what the enactment of these competencies look like in actual practice. The narrative process promised four improved outcomes: (1) increased consistency of evaluation (thus, greater inter-rater reliability), (2) development of professional characteristics for residents (without trying to create cookie-cutter "types"), (3) avoidance of what Regehr calls the Lake Wobegon Effect ("where all residents are above average"), and (4) local ownership (including residents and community preceptors).

To collect the narratives, we distributed a single-page form with a competency title and definition at the top, brief instructions, and lined space for respondents to write. Regehr's process was adapted by soliciting examples of excellence rather than asking for a range of performances. The prompt to generate narratives for the Comprehensive Care competency was:

- Your Competency Is: Comprehensive Care
- The Definition Is: "Collaborates with patients in the context of family and community to facilitate health and illness care across the lifespan; appropriately explores the impact of multiple aspects of human experience on health and illness."
- Your Charge Is: To write a short narrative about when you recognized the performance of excellent Comprehensive Care being enacted by a resident or colleague.

We used several strategies to solicit the stories, including providing dedicated time at meetings. After approximately 8 weeks, the data reached saturation when themes and examples in the narratives began to repeat. In total, we collected 52 narratives, giving each competency either seven or eight illustrative examples from which to develop the next phase of the project.

Step 5: Developing Standards Statements

In a 3-hour meeting, we adapted a process for the assessment of medical students in a portfolio system, which requires "standards statements" for each competency to describe what learner performance should look like for each year of the program.[9] The 52 narratives from Step 4 were used to identify what the community had seen (and expected to see) in relation to each competency.

A select group of faculty (the program director, two medical educators, three physician faculty, the clinical pharmacist, two behavioral medicine faculty, the program coordinator, and the research coordinator) analyzed the narratives to distill specific standards from the stories. Faculty worked in pairs on a single competency for 60 minutes. We generated a preliminary set of standards and then refined and organized those initial statements by plotting them on a large grid with the seven competency titles on one axis and PGY 1, 2, and 3 on the other. Each pair recorded the standards for their competency across PGY levels and posted them on the grid. As a group, we reviewed the standards and reached consensus regarding both sequence and relevance of a given standard.

We used the Dreyfus Developmental Model of skills acquisition.[20,21] Rather than consider each resident as a homogeneous member of their PGY group, the Dreyfus Model recognizes that each learner develops differently. Thus, we reconceptualized our standards statements according to the Dreyfus categories of novice, advanced beginner, competent, and proficient. Table 1 provides our result, including definitions and standard statements at each level. As suggested by theoretical treatments of expertise, we declined to define the expert level.[22]

Step 6: Operationalizing Observable Behaviors

Because the goal of this process was to move more deliberately from the abstract to the concrete, identifying standards statements served as a precursor to identifying how the standards might be observed in practice, specifically observable behaviors. For the Comprehensive Care competency, Table 2 provides examples of observable behaviors for each Dreyfus level.

We derived some of these observable behaviors from the original narratives; others were prompted by sharing the standards statements with faculty and soliciting specific examples. For example, the Clinical Hand[23] is a model that—among other things—guides clinicians through stages of a health care encounter and reminds them of specific tasks (connecting, negotiating the agenda, etc) related to effective clinician-patient communication. Because it plays an essential role in our

Table 1: Summary of Standards Statements

The standards below are summative (rather than formative) at each level.

Competency/Definition	Novice	Advanced Beginner	Competent	Proficient
Comprehensive Care Collaborates with individuals in the context of their family and community to facilitate health and illness care across lifespan; appropriately explores impact of multiple aspects of human experience on their health and illness experiences.	• Differentiates the limbs of the Clinical Hand[23] and identifies the role of each limb in a patient's health story. • Facilitates goal clarification, treatment choices; enhances activation in wellness care.	• Utilizes the limbs of the Clinical Hand appropriately in the patient assessment process. • Collects information from patient family, health partners, and own medical expertise in wellness care to develop common understanding.	• Utilizes the limbs of the Clinical Hand in crafting treatment plans. • Confidently delivers acute care across all gender variance as well as the breadth of lifespan.	• Synthesizes information from patient family, health partners, and own medical expertise in the context of complex illness. • Facilitates goal clarification, treatment choices, and enhances patient activation in complex illness care.
Relationship-centered Care Emphasizes communication and connection in acknowledging the participation of the "whole person" (including self and family system) while working toward shared decision making and goal setting.	• Participates in self-reflexive activities (Balint, Mega-Clinic, and Continuity Care Cases) to enhance comprehension of the physician's emotional life.	• Recognizes bias and works to overcome barriers. • Practices from a model of shared decision making.	• Incorporates culture, context, and family systems into clinical interaction and decision making.	• Models and teaches RCC to other residents and clinical partners. • Integrates patient story in long-term patient care.
Leadership and Change Management Advocates for continuous improvement and innovation in complex health care systems.	• Recognizes the qualities of small-group dynamics and productive time management	• Embraces and practices reflective listening.	• Utilizes knowledge of group dynamics to facilitate goal-oriented teamwork.	• Sponsors collaboration to enhance productivity and increase efficiency.

(continued on next page)

curriculum, it was important to include observable behaviors related to the Clinical Hand. The brainstormed observable behaviors were analyzed for relevance in relation to the standards statements and then ordered in a logical progression from novice to proficient. The first author cleaned up the articulation of the behaviors to ensure rhetorical consistency. As a validity check, five physician faculty members confirmed the observable aspect of observable behaviors, highlighted those that remained abstract and, in some cases, rejected them. This step generated 188 observable behaviors describing development across seven competency areas.

Step 7: Designing Assessment Tools for Learning Sites

To apply the observable behaviors to assessment, the first, third, and fifth authors (the Assessment Team) designed tools for each of six major learning sites where residents could be seen functioning as family doctors. The six learning sites are (1) Continuity Care Sites (outpatient care), (2) Hospital Service (inpatient care), (3) Behavioral Medicine Clinic, (4) Continuity Care Teams (interdisciplinary, outpatient health care teams), (5) Learning Labs (half-day, interactive small-group learning activities), and (6) Educational Planning (meetings with advisor related to individualized learning). Faculty members representing each learning site contributed to the designation of specific observable behaviors as essential to summative assessment at that site. A high level of agreement was achieved, with at least three faculty members independently selecting the same observable behaviors for each learning site. This process served three purposes: (1) demonstrated the face validity of the competency definitions, (2) demonstrated

Table 1 (continued)

Competency/Definition	Novice	Advanced Beginner	Competent	Proficient
Community Health Partnership Recognizes the influence of community, culture, and the health care system on health and illness; builds effective relationships that improve health for the population we serve.	• Identifies resources within the community. • Recognizes multiple social, economic, and cultural differences within the community.	• Considers obstacles to care when making recommendations (ie, finances, diet, language)	• Evaluates and recommends resources from the community for both prevention and treatment. • Uses existing systems to promote local, state, and federal health initiatives.	• Integrates Ecological-Transactional model into clinical practice. • Partners with community groups and patient groups to create collaborative teams.
Information Literacy and Knowledge Creation Applies the skills of practice-based learning to improve quality of care; demonstrates critical thinking skills needed to expand the base of medical knowledge.	• Develops skills in selective data acquisition. • Knows how to formulate a focused clinical question and draws from appropriate resources for solution.	• Expands critical thinking skills by applying knowledge of research methodology in the appraisal of new medical conclusions/clinical trials.	• Recognizes evidence-based medicine triad as the integration of physician experience and patient experience of condition along with conclusions drawn from clinical research.	• Locates and contrasts medical literature and draws appropriate conclusions that become integrated into clinical practice.
Lifelong Learning Integrates cognitive and affective experiences that allow synthesis of new knowledge; develops an active practice that supports professional development.	• Identifies mentors that provide meaningful feedback and constructive criticism.	• Recognizes and appreciates colleagues with specialized knowledge and learns from them.	• Refines knowledge base by regularly attending conferences and continuing medical education activities.	• Encourages colleagues and patients to pursue lifelong learning. • Evaluates and critiques the changing nature of medicine.
Self-care Identifies and explores personal needs; takes steps to enhance individual growth and well-being.	• Develops self-awareness; is able to self reflect and consciously works to reduce blind spots.	• Identifies when capacity to fulfill professional responsibilities is reduced.	• Regularly participates in activities that contribute to personal well-being across all limbs of the Clinical Hand.	• Encourages recognition of reflection and self renewal in colleagues.

This table provides examples of each competency standard.

the utility of specific observable behaviors for given sites, and (3) exposed some observable behaviors as less central to our overall assessment of competence within our residency. Next, each of the assessment tools was pilot tested by faculty, residents, and/or community preceptors, and feedback was solicited. This was by far the longest step in the process as the Assessment Team met for approximately 3–5 hours a month for several months, analyzing contributions from faculty and pilot testing the tools in different sites.

In addition, assessment tools were customized for each site (Table 3). For example, the Learning Labs assessment asks the assessor to identify the frequency with which each behavior is observed (eg, never, rarely, sometimes, always). In comparison, the Hospital assessment asks the assessor to select "all [behaviors] that apply." Some tools are used exclusively by faculty assessors (eg, preceptors in the continuity clinics) and others use a multi-perspective approach that includes self-assessment. Although physicians have demonstrated a limited ability to accurately self-assess in a previous study,[25] this limitation is mitigated by the fact that residents are not solely responsible for self-reports of performance and may benefit from seeing their self-assessments along with how their peers assessed them. It is significant that the Dreyfus levels of each observable behavior are not identified on the assessment tools, and the order of the behaviors is purposefully jumbled. Table 3 provides a summary of the different tools, how often they are utilized, by whom, and the estimated time to complete each assessment.

Table 2: Sample Observable Behaviors for Comprehensive Care and Relationship to ACGME

Dreyfus Level	Observable Behavior	ACGME
Novice	Delivers organized presentation, able to cross from the patient's frame to the medical frame.	Patient Care
Advanced beginner	Develops appropriate differential diagnosis and then provisional diagnosis drawing knowledge from more than one limb of the Clinical Hand.[23,24]	Medical Knowledge, Patient Care
Competent	Formulates treatment plan in partnership with patient, paying attention to medical issues, patient resources, and obstacles to care.	Medical Knowledge, Patient Care, Systems-based Practice
Proficient	Reviews negotiated treatment plan with patient by exploring successes and challenges, negotiates revision to plan.	Medical Knowledge, Patient Care, Systems-based Practice, Interpersonal Skills and Communication
Expert	Undefined	

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Table 3: Summary of Assessment Tools

Learning Site	Assessor	Frequency	Estimated Time to Complete Per Resident	Tool Description
Continuity care site	Preceptors	After each clinic session	5 minutes	Seven observable behaviors per version; assessor instructed to choose from a four-level nominal scale (routinely observed, observed, not observed, N/A this session); five versions of the tool; space for comments
Hospital service	Attending Residents	After each week-long rotation (nine times per year)	20 minutes	68 observable behaviors in five categories; assessor instructed to "check all that apply"; one version of the tool; space for comments.
Behavioral medicine clinic	Behavioral medicine faculty	Twice a year	20 minutes	40 observable behaviors; assessor instructed to "choose the behavior that best describes this resident;" one version of the tool; space for comments.
Continuity care teams	Residents Faculty Nurses Office staff Self	Three times per year	10 minutes	38 observable behaviors in six categories; assessor instructed to "check all that apply"; one version of the tool; space for comments.
Learning labs	Faculty Residents Self	Three times per year	5 minutes	Nine observable behaviors per version; assessor instructed to choose from a 4-level nominal scale (frequently, sometimes, rarely, never); three versions of the tool; space for comments.
Advising	Advising team Self	Three times per year	10 minutes	25 observable behaviors; assessor instructed to "check all that apply;" one version of the tool; space for comments.

Step 8: Translating Observable Behaviors to the Six ACGME Core Competencies

To ensure generalizability of our system to multiple residency programs both within our institution and elsewhere, the Assessment Team worked with the grid of observable behaviors and the ACGME competencies, mapping correspondence between the definitions and the observable behaviors (Table 2). This process ensured that the observable behaviors we identified in the course of using the new assessment system could be tracked to a corresponding level of competence within the ACGME requirements.

Results

Through this eight-step process, this residency program articulated definitions of local competencies and created almost 200 observable behaviors (Table 4) identified as meaningful through the process of narrative reflection. We also developed six different assessment tools used in the contexts where family medicine competency is important (Table 3). These competency-based tools shift the focus of residents and assessors away from both the time-based apprenticeship model and the attainment of abstracted "scores" and toward the behaviors that both count in the delivery of patient care and are markers of professional conduct.

The time elapsed from the development of assessment principles to the finalized assessment tools was 18 months and was facilitated by two grant-funded PhD medical educators. Having identified and described the steps in this process, subsequent efforts by others in other contexts will necessarily be more efficient. Preliminary feedback on the tools indicates that faculty and residents alike perceive the observable behaviors as corresponding to those they experience in the course of residency education and as valued features of resident performance.

The tools have been used successfully for 1 year and, following a second year of use, will be analyzed for utility and modified accordingly. Ongoing training has been provided to faculty, community preceptors, and residents to ensure that the assessment tools are utilized appropriately as well as to solicit ongoing feedback. An obvious challenge for any residency is to maintain an environment where assessment represents room for improvement and functions to avoid the Lake Wobegon affect. Therefore, leadership has stressed the responsible use of these assessment tools as a dimension of professionalism.

Discussion

As evidenced by the use of Individual Education Plans (IEPs) in our program, residents are encouraged to identify an individual path to competence with the understanding that competencies—whether ACGME-endorsed or residency specific—are essential to determine progress toward graduation. Thus, it was necessary to generate a clear picture of these competencies as anticipated training outcomes so that they could guide the residency community in curriculum development as well as resident assessment.

Although other residencies may have a less flexible curricular structure, all residencies must be able to demonstrate how they are measuring residents' progress and achievement of competence. The systematic method described in this article requires several conditions for success: (1) Narrative as a concept should be understood as being comprised of characters, scenes, often dialogue, and plot development rather than generalized or abstract descriptions or summaries,[26-28] and clear directions and examples of narratives will help guide inexperienced contributors toward more effective narrative writing, (2) A thorough understanding of personnel responsible for teaching and assessment and the inclusion of these personnel in the process is essential—for example, medical educators worked with community preceptors to gauge their comprehension of residency-defined competencies, (3) Because this method of developing assessment is radical in the sense that it takes nothing for granted, it was time-consuming. We felt fortunate to have had considerable input from residents and community preceptors in the crafting of narratives and for the evaluation of the assessment tools during the pilot-testing stage. Due to the time and training required to complete the early part of the process, we elected not to include patients' narratives—however, a comparison of some competencies with patient narratives of excellent care could prove a worthwhile test of validity. Similarly, although it might have been advantageous to elicit more input from community preceptors and residents in all steps in the process, time was an important consideration as we were determined to have these assessment tools completed in time for the beginning of the subsequent academic year. Also, given that the goal was to develop assessment tools for the residents, it may have proven counterproductive to involve them more deeply in the process of writing observable behaviors because they may have ended up performing to the tool (a version of "teaching to the test") rather than investing in an adoption of competent behavior.

It is also important to recognize that we do not perceive our "finished" product as carved in stone. One of the unintended benefits of the first 6 months of use was the discovery that the liberal comments sections on each of these assessment tools yielded more observable behaviors that will likely be folded into future versions of these tools. We may find that some of the observable behaviors that are currently included are redundant or better represented in contexts other than those to which they were initially assigned.

Future research on this assessment system is necessary. Although the difficulty of validating the assessment of clinical competence is well documented,[8,29] it is appropriate to begin by testing the reliability of these tools. This will be

Table 4: Examples of Observable Behaviors Across Competencies and Dreyfus Levels With Corresponding ACGME Competencies

Local Competencies	Novice	Advanced Beginner	Competent	Proficient
Comprehensive Care	Differentiates the limbs of the Clinical Hand and identifies the role of each limb in a patient's health story. (Patient Care)	Synthesizes information in the context of an acute illness to develop shared understanding. (Patient Care)	Utilizes the limbs of the Clinical Hand in crafting treatment plans. (Patient Care)	Facilitates goal clarification, treatment choices, and enhances patient activation in complex illness care. (Medical Knowledge)
Relationship-centered Care	Demonstrates active listening skills (Interpersonal and Communication Skills)	Recognizes biases and works to overcome barriers. (Professionalism)	Engages in broader conversation with patient; establishes common ground and interests. (Interpersonal and Communication Skills)	Models and teaches RCC to other residents and clinical partners. (Practice-based Learning)
Leadership and Change Management	Acknowledges the importance of time management (Systems-based Practice)	Appreciates constructive criticism and feedback from colleagues (Interpersonal and Communication Skills)	Utilizes knowledge of group dynamics to facilitate goal-oriented teamwork. (Systems-based Practice)	Respectfully challenges the status quo and advocates for stakeholder group. (Practice-based Learning)
Community Health Partnership	Identifies multiple social, economic, and cultural differences within the community. (Professionalism)	Considers obstacles to care when making recommendations such as finances, diet, language. (Systems-based Practice)	Evaluates and recommends resources from the community for both prevention and treatment of disease. (Systems-based Practice)	Partners with community groups and patient groups to create collaborative teams. (Systems-based Practice)
Information Literacy and Knowledge Creation	Knows how to formulate a focused clinical question and draws from appropriate resources for solution. (Medical Knowledge)	Demonstrates skills in diagnostic reasoning and problem representation. (Medical Knowledge)	Recognizes evidence-based medicine triad as the integration of physician experience and patient experience of condition along with conclusions drawn from clinical research. (Medical Knowledge)	Integrates the three circles of evidence-based medicine triad into all aspects of patient care. (Patient Care)
Lifelong Learning	Actively seeks experiences that promote intellectual growth. (Practice-based Learning)	Recognizes and appreciates colleagues with specialized knowledge and learns from them. (Interpersonal and Communication Skills)	Refines knowledge base by regularly attending conferences and continuing medical education activities. (Medical Knowledge)	Evaluates and critiques the changing nature of medicine. (Practice-based Learning)
Self-care	Acknowledges that caring for others first requires caring for self. (Professionalism)	Identifies when capacity to fulfill professional responsibilities is reduced. (Professionalism)	Utilizes stress management techniques, such as mindfulness-based stress reduction. (Professionalism)	Provides colleagues with support when their retreat and renewal are necessary in times of reduced capacity. (Interpersonal and Communication Skills)

ACGME—Accreditation Council for Graduate Medical Education

accomplished first by assessing the inter-rater reliability of those completing the assessment. The power of the tools to detect differences within the resident population, to show progress over time, and to reflect a full range of performance (avoiding the Lake Wobegon effect) will be determined by comparing performance profiles of residents; that is, to see whether the tools capture progress of each resident through the Dreyfus levels of competence and whether a range of performance is captured across residents. External validity of the assessment tools will be tested by correlating their ratings with those evaluations completed in other rotations or through a standardized measure of resident performance such as in-training scores. Finally, as the developers of these tools, we intend them to be both powerful in their ability to assess performance and versatile in their utility; thus, questions will also need to be addressed regarding ease of use and accessibility.

We concede the possibility that this assessment system implies a substantial initial time commitment for faculty, particularly during development and implementation. Nevertheless, the ACGME Outcome Project is grounded in the idea that physician training is more effective when actual trainee accomplishments—changes in knowledge, behaviors, and attitudes—are identified. Faculty will spend less time with assessment tools as they become accustomed to their use and, most importantly, will come closer to capturing the results of training efforts rather than the holistic impressions of assessors. Although this indicates a radical culture shift, this does not mean that assessment will be more difficult.

The assessment tools that were created by this process satisfy the ACGME requirement to move to a competency-based model and avoid the Lake Wobegon effect typically derived from Likert-type scales.[12] These tools avoid the reduction of assessment to a set of minimally related measures. These assessment tools also address the challenge of providing far more qualitative feedback than is generally collected from the comments section of typical assessment forms. The residency-specific competencies and the six identified learning assessment sites work in concert to provide a comprehensive picture of resident performance in context.

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