2013 | 11:2

ACADEMIC INTERNAL MEDICINE INSIGHT

By the Numbers

5

Number of microskills in the One Minute Preceptor Model
Page 8

60%

Higher costs of patient care delivered in the context of medical education
Page 13

2,000

Apps available for clinician use
Page 20

Also in This Issue

The Next Horizon

Five years ago, I joined AAIM as executive vice president. Externally, many issues impacting academic internal medicine were at the forefront—declining numbers of physician scientists, resident duty hours, competency-based education and training, declining reimbursements and increasing numbers of the uninsured and underinsured.

What was to be done about graduate medical education (GME) financing? How would we elevate the level of quality of care and improve patient safety? Lots of big questions, (some yet to be fully answered) coupled with stretched resources, and no quick answers.

Internally, AAIM leadership had committed to merging the five charter associations—a task both prescient and daunting. How would we artfully merge five unique and distinct membership cultures and preserve those brands as we moved the alliance forward from its nascent stage to begin serving as the strong, united voice for academic internal medicine many had envisioned so many years ago?

Merger Completed

As of June 30, 2013, AAIM has emerged as a consolidated entity with five strong, vibrant founding member organizations poised to launch new strategic initiatives in fiscal year (FY) 2014. The merger not only afforded AAIM business processes improvements, but has also yielded a stronger senior management team, led by myself and AAIM President D. Craig Brater, MD.

The AAIM Governance Task Force led by CDIM Past President Jennifer Kogan, MD has proposed a revamped governance structure. The AAIM Board of Directors has three representatives from each of the five founding member councils.

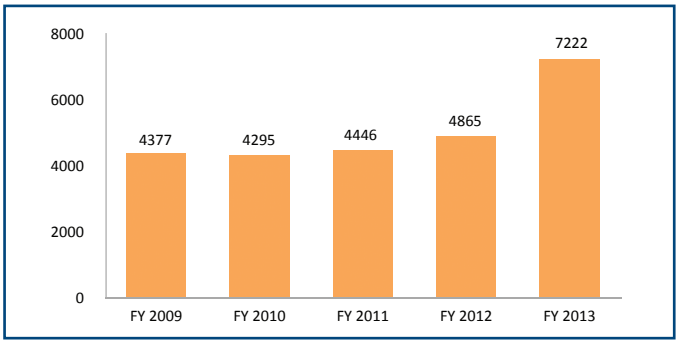
The merger affords members tremendous networking and learning opportunities via live meetings and conferences as well as via online communities.

Stronger Membership

The new AAIM membership structure, introduced at the beginning of FY 2013, has yielded unprecedented growth in membership across all groups. AAIM has grown from 4,377 members in FY 2009 to over 7,200 members in FY 2013.

Figure 1 shows incremental increases in membership FY 2009 through FY 2012, but FY 2013 shows an explosion in total membership post-merger.

FIGURE 1. Membership Growth



Leveraging Our Strengths

A strategic goal for AAIM (since 2008) has been to improve existing stakeholder relationships, develop new ones, and be invited to discussions about decisions that impact the future of academic medicine. As I have reported in previous updates, AAIM actively pursues opportunities to collaborate with organizations intent on improving the work and learning environments for faculty, residents and students.

A few examples of FY 2013 collaborative efforts include:

- Stronger ties with the American College of Physicians (ACP); collaborative efforts include reciprocal positions on our respective education and public policy/advocacy committees.
- AAIM is entering the third year of a highly successful collaboration on the Quality and Safety Educators Academy with the Society for Hospital Medicine (SHM). A jointly sponsored program offered annually to AAIM and SHM members, the academy has exceeded registration targets in each of its first two years.
- AAIM was instrumental in convening the Academic Internal Medicine Education Redesign Advisory Board with support from the American Board of Internal Medicine (ABIM) and the Accreditation Council on Graduate Medical Education (ACGME). This advisory board led by Dr. Brater and AAIM Education Redesign Committee Chair Lee R. Berkowitz, MD, has had tremendous impact on the development and dissemination of internal medicine milestones, entrustable professional activities (EPAs) and the rollout of the Next Accreditation System (NAS). The advisory board is truly representative of the "house of medicine" in that it also includes volunteer leaders from the Society for General Internal Medicine (SGIM), the American Medical Association (AMA), the Association of Specialty Professors (ASP), SHM, and ACP.
- The chair of the Medicare Payment Advisory Commission (MedPAC) has agreed to speak at several AAIM conferences to provide important information on MedPAC's position on the future of GME financing.
- The chair of the Residency Review Committee-Internal Medicine (RRC-IM) participates on the advisory board, and is often a resource to AAIM leadership as we design programs to assist faculty in navigating the shifting teaching paradigm.
- Likewise, with the support of ACGME and ABIM, AAIM convened a summit on subspecialty milestones development and implementation. All internal medicine subspecialty societies are actively participating in this process. Two in-person work sessions have been held to date.
- AAIM continues to enjoy working with the internal medicine subspecialty societies through participation in our aging grants and integrating geriatrics initiatives. The societies also have to opportunity to appoint volunteer leaders to the ASP Council.

Strategies for the Future

The AAIM Board of Directors, ably led by FY 2013 board chair Lisa M. Bellini, MD, and FY 2014 board chair Michael Bronze, MD, finalizing the 2014-2016 strategic initiatives list. With input from the five councils, the board has developed a list of key initiatives my staff will be charged to develop and execute in the next three years.

Figure2 shows where AAIM volunteer leaders think we should deploy resources in the next two fiscal years.

FIGURE 2. Strategic Plan

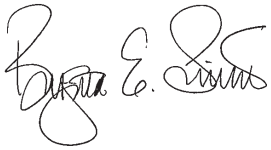
As part of the strategic planning process, a workflow analysis has been performed to look at staffing capacities and processes, with an eye toward continuous quality improvement and assessing opportunities to increase member engagement and enhance member benefits. With almost 2,500 new members who have decided to make the alliance their professional home and a loyal cohort of long-term members, AAIM staff is committed to delivering excellent member service.

On the Horizon

Some of the issues from FY 2009 still loom large. We've figured out duty hours… sort of. AAIM is supporting faculty as your programs and institutions brace for NAS and milestones. We are actively engaging external organizations like MedPAC and making every attempt to monitor other groups whose decisions impact academic medicine. In the past five years, AAIM has been invited to provide testimony, participate in open sessions with the Institute of Medicine, and join groups like ACP by signing off on written feedback to Congress. We monitor dialogue related to GME financing and the ever-decreasing support for important research from the National Institutes of Health (NIH). In some ways progress has been slow, but steady. External groups now actively seek AAIM's feedback.

AAIM's horizon is clear. Thank you for your unflagging support. Please let me know how we can improve your member experience in the future. It has been a great five years!

Warmest regards,



Bergitta E. Smith, FACMPE
Executive Vice President

AAIM
Alliance for Academic Internal Medicine

Academic Internal Medicine Insight
Owned and published by the Alliance for Academic Internal Medicine (AAIM)

Alliance for Academic Internal Medicine
330 John Carlyle Street
Suite 610
Alexandria, VA 22314

Telephone: (703) 341-4540
Fax: (703) 519-1893
E-mail: AAIM@im.org
Web site: www.im.org

Qualitative Research 101: Basics for Medical Educators

Although qualitative inquiry is gaining recognition in medical education, most medical educators are not familiar with its use. Qualitative research is appropriate when studying domains that are difficult to measure, such as professionalism, or when exploring a problem with unknown variables. For example, qualitative research is well suited to trying to understand the nature of educational problems and exploring the perspectives of learners and teachers (1, 2).

Qualitative research is distinct from traditional quantitative research **(Figure)**. While quantitative research is hypothesis-driven, qualitative research is observation-driven and exploratory. One of the advantages of qualitative research is that it allows for a more in-depth understanding of an area that may not lend itself well to quantitative measurement (1). Whether a qualitative approach is appropriate for research depends on the research question, the audience, the researcher's experience, and available resources (2).

Formulating a Research Question in Qualitative Research

One of the first steps in conducting qualitative research is formulating the research question. A good one will help focus the study and allow for selection of the appropriate methodological approach. Before formulating the research question, though, one needs to clearly articulate the problem of interest. Like laying the groundwork for a quantitative study, it involves conducting a literature search and identifying the specific knowledge gap to address.

For instance, for a study on physical examination teaching, the authors identified the following problem: "While bedside teaching has been associated with student perceptions of high-quality teaching and is a critical component of learning the physical examination, its incidence has declined, with one potential barrier being patient discomfort. Yet few studies have focused on patient's experience being the subject of physical examination teaching." The authors then formulated a central research question and subquestions to focus the study (3).

The central research question was "what is the patient's experience undergoing physical examination teaching?" Subquestions were:

1. What occurs during physical examination teaching?
2. What meanings do these occurrences have for patients?

In general, qualitative research questions are open-ended, nondirectional, broad, and evolving. Questions focus on how and what rather than why. Subquestions identify major concerns or issues that need to be solved.

Whether a qualitative approach is appropriate for research depends on the research question, the audience, the researcher's experience, and available resources.

Methodological Approach and Data Collection Methods

Research questions may naturally lend themselves to a particular methodological approach and data collection methods. The major approaches to qualitative research include (4):

- Ethnography: the researcher describes a cultural or social group and seeks to understand the perspective of people in that group.
- Phenomenology: the researcher examines and understands how one or more individuals experience a phenomenon.
- Grounded theory: the researcher develops a theory grounded in data from the field.
- Case study: the researcher analyzes in-depth a single case or multiple cases.

The choice of data collection techniques may be influenced by which approach is taken.

Interviews and Focus Groups

Interviews are conversations guided by the researcher for the purpose of learning the participant's feelings, thoughts, and experiences as they pertain to the research question. The questions are usually open-ended but can be more structured and specific. The researcher records the answers by taking notes or by audio-recording the interview.

Focus groups are group interviews, typically involving between four and 12 participants. The group setting can foster dialogue and may allow insight into cultural norms and values. The focus group moderator designs a moderator's guide that contains carefully phrased questions and elicits responses from the group participants. The guide may change as understanding emerges from earlier interviews (4).

Observations

Observations may allow data collection for individuals in natural settings over a period of time. The observer can interact with the subjects or may simply take on the role of spectator. Writing observational field notes allows the researcher to focus observations as questions emerge from the data collected in the field.

Written Narratives

In written narratives, participants respond to open-ended questions or writing prompts. Rather than short answers, participants generally write a detailed story (narrative) about a personal experience that relates to the research question. This opportunity allows for an in-depth assessment of the selected topic. Other documents such as meeting minutes, syllabi, curriculum objectives, and program descriptions can all serve as data.

Audiovisual Materials

Images or visual materials such as photographs, videotapes, digital images, paintings, and pictures are used with increasing frequency in qualitative research. The researcher collects audiovisual materials to understand the phenomenon under study (2).

Data collection continues until the researcher reaches a point of data saturation, which occurs when subsequent data collection adds no new information. Unlike quantitative researchers who wait until the end of the study to analyze their data, qualitative researchers analyze their data throughout the study.

Assessing the Quality of Qualitative Research

Qualitative research is subject to the same scrutiny and rigor as quantitative research. Regardless of the selected methodological approach and data collection methods, it is important to ensure trustworthiness in qualitative research. Trustworthiness aims to ensure that the findings are "true" (that is, the research accurately reflects the experience studied) and "certain" (that is, the research findings are supported by the evidence) (5). The paradigms used to establish trustworthiness include credibility, dependability, confirmability, and transferability, generally correlating to the quantitative research concepts of internal validity, reliability, objectivity, and external validity, respectively.

Credibility is an evaluation of whether findings represent a "credible" conceptual interpretation of the data. Dependability is an assessment of the quality of the processes of data collection, analysis, and theory generation. Confirmability is a measure of how well the findings are supported by the data collected. Finally, transferability is the degree to which the findings are applicable or transferable beyond the bounds of the specific research study (5).

To ensure credibility, the researcher may use triangulation. Data triangulation refers to obtaining and analyzing information from multiple points of view and sources. Peer debriefing and member checking are techniques used to confirm that the research findings and interpretations are accurate. During peer debriefing, the researcher meets with trusted peers to discuss information obtained, explore potential new and hidden meaning, ensure lack of bias, and resolve methodological issues. In member checking, the researcher meets with study participants to ensure that the interpretation or understanding by the researcher reflects the experiences and ideas of the participants rather than those of the researcher (6).

continued on page 21

FIGURE. Qualitative versus Quantitative Research

Qualitative Research	Quantitative Research
How, What	Why, Where, When
Words, meaning	Numbers
Smaller, focused samples	Larger, random samples
Holistic, contextual	Reductionism (perspective of causality)
Inductive approach: the design emerges as the study unfolds; conducted in natural environments; researcher is "immersed"	Deductive approach: all aspects of the study are carefully designed before data collected; conducted under controlled conditions; researcher is "detached"
Subjective: individuals' interpretation of events is important (uses participant observations, in-depth interviews, focus groups, field notes etc)	Objective: seeks precise measurement and analysis of target concepts (uses numbers, rating scales, closed-ended items, etc.)
Qualitative data are "richer," more time consuming, and less able to be generalized	Quantitative data are more efficient, able to test hypotheses, but may miss contextual detail
Reliability and validity determined through multiple sources of information (triangulation)	Reliability and validity determined through statistical and logical methods

Speaking with Leaders: AAIM Interviews John P. Fitzgibbons, MD

John "Jack" P. Fitzgibbons, MD, is Senior Advisor to the Department of Medicine at Stamford Hospital and Professor of Clinical Medicine at Columbia University College of Physicians and Surgeons. He was previously the Leonard Parker Pool Chair of Medicine at Lehigh Valley Hospital for 20 years. He served as APDIM President in 2004-2005 and on the Residency Review Committee for Internal Medicine from 2006 to 2012.

His interviewer, Paul B. Aronowitz, MD, is APDIM Past President and Clerkship Director in the Department of Medicine at University of California, Davis, School of Medicine.

What were some of your earliest leadership lessons?

One is that you make mistakes, especially at the beginning. If you don't get fired, you bounce back and you move on. Nobody's perfect.

The other lesson is my approach to leadership. I think that we all like to think of leading as getting in the motor boat, sighting the goal on the horizon, and motoring at a good clip over a calm lake to the goal. But it's simply not like that. It's more like sailing. You tack from this point to that point over choppy water with changing tides and winds, making your way back and forth as you try to keep moving forward.

Did you always see the "goal" on the horizon you were trying to get to on the other side as you moved forward?

No. Not always. Having a successful department and residency program was the ultimate goal but what that meant changed over time.

How do you hire?

That's a tough question. I made some mistakes over the years and that was hard. Generally, I tried to ask someone what his or her ideal job might be; I asked them to describe it in detail to see if what we're interviewing for is the right fit both ways. It's just terrible when you make the wrong selection. It's a disservice to the applicant who gets plugged into the wrong position and a disservice to the department. I had to fire a few people over the years and I felt very badly about it—that we had wasted that person's time in the wrong job and that we'd put him or her through all the trauma of being fired.

What was the biggest mistake you ever made as chair?

I can think of lots of mistakes but the biggest one was less than six months after I became chair and I almost lost my job over it. Just before I arrived, the hospital had decided to stop billing for reading EKGs. They had paid the cardiologists $15 per EKG read but told the cardiologists that if they did the billing, they could keep all the revenue.

When I showed up as chair, I had no revenue coming into the department. I told the cardiologists that they could keep most of the revenue but that I wanted 30% of the billing revenue to come to the Department of Medicine which I thought it was fair. If they collected all of the revenue, it would mean that each cardiologist would get about $70,000 to $80,000 more each year, which just didn't seem right. After I made the announcement, there was a revolt. Ultimately I had to back down. Lesson learned: Don't try to go after their wallets!

While the rewards for those in leadership positions are not as immediate as for those providing clinical care, and may take a long time to achieve, you hope your efforts will have a lasting influence on the department, the institution and ultimately lead to improved care of patients.

Why would anyone want to be a leader in the medical field?

It is the opportunity to have an impact on a much larger scale. It's a great responsibility but incredibly humbling. You really have to see yourself as one part of the larger whole that you're working to move forward. While the rewards for those in leadership positions are not as immediate as for those providing clinical care, and may take a long time to achieve, you hope your efforts will have a lasting influence on the department, the institution and ultimately lead to improved care of patients.

One of the hardest things that a physician leader has to deal with is never wanting to be the bad guy. How did you deal with this as a leader for 20 years?

[Laughs] Yes, we're not trained to be bad guys in medical school and it can be one of the toughest parts of the job. But it comes with the turf. You can't be nice all the time and succeed. If you can't take a punch, you shouldn't try to lead.

Give me an example of a time where you struggled with this problem.

Very early on, I surmised most medical systems would go with hospitalists. I read Lee Goldman and Bob Wachter's *New England Journal of Medicine* "Sounding Board" article published in 1997 and immediately a light bulb went off for me. I called together our division leaders to ask them for their thoughts on the article. A number of them thought the idea was ridiculous and that it would be the death of internal medicine as we knew it. There was simply no way they were going to embrace the concept—at least at that time. Sometimes leadership requires listening and patience.

I asked them to come up with a call system instead of starting a hospitalist program. They came back with a schedule with various core general internists on call for the emergency department. It didn't take long for this system to flounder but it took a year or two to fail. I called them together again and asked how we were going to fix it. They reluctantly agreed to have a hospitalist group added to the department. Sadly, a few were never able to adjust and it wasn't easy being the bad guy in their eyes.

A number of years later, I had to remove the director of the hospitalist group and that was also tough. This person had been an intern, resident, and chief resident with us and was a respected member of the community but was just not succeeding as a director. He was really upset but I had to do it, as painful as it was. Sometimes people are not cut out for leadership roles and you have to "fish or cut bait" with them. It's never easy to "cut bait." Fortunately this individual went on to be very successful in other areas of medicine.

Approximately 40% of program directors have been in their jobs fewer than three years. The turnover in program directing is substantial—why do you think this is the case?

I think that there are a couple of things. For one, I think a lot of people see the program director job as a stepping stone to something else. In that case, it's not so much the job that motivates people to leave after a few years—it's that they're moving on to something else, something they believe is better or more suited to them.

My other observation is that program directors tend to live in silos. They do not understand how all the cogs in the hospital interact. Though always advocates for their residents and for education, they don't understand how to work within the structure of the institution to acquire what they need. I think it hurts them. This problem can become very, very frustrating for program directors—especially when they can't get what they think they need and deserve to run their programs. They get frustrated, burned out and then leave.

It's not so much the job that motivates people to leave after a few years—it's that they're moving on to something else, something they believe is better or more suited to them.

Similarly, according to the literature, the average "life span" for a chair of medicine is around four years but you lasted 20 years—what was your magic?

It wasn't all about me. The CEO was so important. He had my back. He was a transformational leader. We didn't always agree on everything but he was very engaged. Each department chair reported directly to him and we would meet with him each week so that he could hear our issues and know what was going on. He was a good listener and he was plugged in. He didn't always do what we thought he should, but he was usually supportive and he knew the issues because he took the time to learn about them.

For my part, I felt it was important to stay involved in clinical care…to remain in the trenches so to speak. I also felt it was critically important to have an "open door policy". When someone wanted to meet with me, I made sure there were no barriers preventing them from getting to me. Unless I was out of town, my secretary knew that if someone called and said they needed to see me that day, we would make that meeting happen, no matter what else was going on. At the same time, I was a stickler for returning phone calls and messages. Keeping the lines of communication open is critical.

What are the things that really set you off—that "push your buttons"?

I hate it when people lie. I don't understand it, can't identify with it, and it makes me angry. If I went to bat for a person on an issue, advocating for them based on false information, it did serious harm to our relationship

A Final Pearl from Dr. Fitzgibbons

It's so often about the people around you, who support you and help you get what you need to succeed, that makes all the difference.

ACKNOWLEDGMENT

This interview format is based on "Corner Office," a regular column published by Adam Bryant in the Friday and Sunday business sections of *The New York Times.*

Interested in interviewing one of your heroes for *Academic Internal Medicine Insight?* Contact *Insight* Editor Sheila T. Costa at (703) 341-4540 or publications@im.org.

Effective Teaching Models in the Ambulatory Setting

Ambulatory precepting requires unique teaching skills. Known challenges include teaching learners at different developmental levels, managing multiple problems in an encounter, and juggling time constraints of teaching and patient care in an appointment-driven environment (1-4). Ambulatory preceptors must have effective strategies to diagnose patient problems while assessing and managing learner needs. Ambulatory preceptors with variable teaching styles and episodic exposure to learners may struggle to identify the highest-yield learning issues that provide rewarding ambulatory teaching experiences.

The recent increase in the required number of resident continuity clinics, resident inertia toward general internal medicine, and the desperate need to expand the primary care workforce make high-quality ambulatory education crucial in these changing times. Several models exist that may be useful in enhancing preceptor ambulatory teaching skills. The One-Minute Preceptor (OMP) model focuses on clinical pearls and diagnostic reasoning; it is easy to administer, making it ideal for the current climate (2). The SNAPPS model targets Accreditation Council for Graduate Medical Education (ACGME) competencies of practice-based learning and creates lifelong learners by identifying resident learning needs and knowledge deficits (3).

Traditional Model

In the traditional precepting model, the case is presented by the learner; typically, the preceptor interrupts to ask clarifying history and physical examination questions (2,3). The goal of this interaction is to establish the diagnosis and discuss the plan of care (4). The preceptor and the learner often see the patient together, with the preceptor acting as expert consultant and the learner as the reporter and information gatherer. Studies show that more than 75% of the interaction is spent on patient care issues, leaving little time for learner-centered teaching and learner feedback (5).

The traditional model is brief, efficient, and patient-centered. Most preceptors and learners were trained using this model, and most preceptors still use it in their ambulatory teaching. Unfortunately, the learner's knowledge level and educational needs are generally not elicited during the presentation. Therefore, teaching tends to be less targeted to the learner's knowledge or skill levels because it is unclear what the learner actually knows (3).

One Minute Preceptor

OMP provides a framework for effective feedback and assessment of learners' knowledge deficits by using five microskills that are applied to each patient encounter **(Figure 1)** (1,3,6).

OMP establishes a motivating learning climate in which the teacher assesses learner knowledge, builds upon that knowledge, and gives it context. As opposed to the traditional model—in which the preceptor is the expert consultant sharing his or her wisdom—OMP is learner-centered and the teaching is based on the learner's needs and learning gaps (6). The model incorporates guided feedback and promotes problem-solving by the learner (3). OMP has been studied with both preceptors and learners at the medical student and resident levels. Preceptors were equally able to diagnose patient problems and to diagnose the learner's needs using this model as they were with the traditional model. In addition, preceptors felt OMP was more efficient and more effective (2). Preceptors also show a shift from teaching general process skills toward teaching higher order thinking about specific diseases and disease processes (7). In another study, preceptors trained in the OMP model felt that they had more opportunities to assess the learners and were more likely to

FIGURE 1. Five Microskills of the One Minute Preceptor Model

1. **Get a commitment from the learner about what he or she thinks is going on with the case.**
   Preceptor: "So, what do you think is going on with this patient?"
   Learner: "I think she has pneumonia."
2. **Probe for underlying reasoning to explore the learner's understanding.**
   Preceptor: "What else was in the differential? What led to your conclusion?"
   Learner: "It could be bronchitis or CHF. But the abnormal lung exam and fever make it more likely to be pneumonia. We should order a CXR and prescribe antibiotics."
3. **Teach general rules pertaining to the case.**
   Preceptor: "We will need to target antibiotics to the most likely bacterial organisms of pneumonia, which in this age group are pneumococcus and atypicals, like Mycoplasma."
4. **Reinforce what the learner did correctly through specific positive feedback.**
   Preceptor: "Your body language with the patient and avoidance of medical jargon really created a welcoming setting for your discussion."
5. **Correct the learner's errors and make recommendations for improvement.**
   Preceptor: "Before we consider outpatient treatment, we need to assess her risk for resistant infections and her acuity for admission."

provide useful feedback that was linked to specific behaviors as opposed to generalized feedback (5).

Applying and mastering the steps of the OMP model takes time, skill, and practice. It is a model that preceptors must fully embrace because it requires active practice with a variety of case presentations (the early versus advanced learner, urgent care visits, follow-up visits, routine visits) before it becomes natural. Although it is believed to be a more time-consuming model, it takes a similar amount of precepting time to the traditional model (2). OMP's efficiency and its ability to simultaneously diagnose the learner and the patient make it a very feasible model for current time-constrained ambulatory clinics.

SNAPPS

The SNAPPS model is a learner-initiated, learner-directed, and learner-centered model for ambulatory teaching (3). "SNAPPS" is the acronym for the six steps used to focus the learning experience **(Figure 2).**

The SNAPPS model builds on and contextualizes preexisting knowledge and teaches to learner-identified gaps in knowledge. The six steps facilitate learning and feedback through active learner involvement.

Applying and mastering the steps of the SNAPPS model take time, skill, and practice—for both preceptor and learner. As Wolpaw et al wrote: "In this cognitive 'dance,' one partner may lead but each must know the steps" (4). This balance means direct communication of expectations and review of anticipated style of presentation. It is a model that both preceptors and learners must embrace for it to be successful because it takes active practice with several case presentations before it becomes natural.

The SNAPPS model may be most effective for advanced learners; it can be challenging to use with disorganized presenters, unmotivated learners, complex multi-problem encounters, early learners unable to narrow and analyze their differential diagnoses, and learners unable to self-identify learning needs. While the SNAPPS model has been shown to take longer than the traditional model, it has also been shown to increase the number of differential diagnosis items discussed and the likelihood of justifying differential diagnosis items. Compared with the traditional model, the SNAPPS model better facilitates self-directed learning (4).

Conclusion

Regardless of the teaching model used, the most important goals are to set a comfortable learning climate, ask questions that probe the learner's understanding and thought process, teach general principles that "fill in the blanks" of their knowledge, and actively provide and seek feedback. Encouraging preceptors to change the focus of the teaching encounter from fact reporting by the learner to expressing rationales and uncertainties will improve the encounter, regardless of whether a specific model of ambulatory teaching is used.

AUTHORS

Kerri Palamara, MD
Assistant Program Director
Department of Medicine
Harvard Medical School Massachusetts General Hospital

Eva M. Aagaard, MD
Assistant Dean for Lifelong Learning
University of Colorado School of Medicine

Margaret C. Lo, MD
Assistant Professor
Department of Medicine
University of Florida College of Medicine

Christopher L. Knight, MD
Associate Professor
Department of Medicine
University of Washington School of Medicine

continued on page 23

FIGURE 2. Six Steps of the SNAPPS Model (3)

1. **Summarize the history and exam findings briefly.**
   Learner: "Ms. A is a 34-year-old woman with three days of cough and fevers. No rhinorrhea, sore throat, or sinus symptoms. Physical exam is notable for temp of 100.4°F and decreased breath sounds in right lower lung field. Rest of the exam is unremarkable."
2. **Narrow the differential diagnosis to two or three relevant possibilities.**
   Learner: "Most likely, this is a bacterial pneumonia, but also on my differential is viral bronchitis or exacerbation of her underlying COPD."
3. **Analyze the differential by comparing and contrasting the possibilities.**
   Learner: "I think pneumonia fits best with the fever and focal lung findings. I shouldn't hear a consolidation with bronchitis, and lack of risk factors for CHF make heart failure less likely."
4. **Probe the preceptor by asking questions about uncertainties, difficulties, or alternate approaches.**
   Learner: "How do I decide which antibiotic to start for outpatients with pneumonia?"
5. **Plan management for the patient's medical issues.**
   Learner: "I would like to get a chest x-ray to confirm my findings and start antibiotics. Should I consider steroids, given her COPD?"
6. **Select a case-related issue for self-directed learning.**
   Learner: "Based on this case, I think I should read about antibiotics and steroids for specific patient populations."

How to Implement an X+1 Scheduling System in Your Residency Program

There has been a need for major redesign in internal medicine training (1-6). Reasons for redesign include changes in the practice of medicine, inadequate ambulatory training, increased requirements for continuity clinic, and poor patient continuity. Most training programs utilize four-week block rotations with continuity clinic occurring a fraction of each week (1). This disjointed model often creates conflict by requiring residents to concomitantly care for patients in both inpatient and outpatient venues. Eliminating this conflict would be beneficial for both ambulatory and inpatient training (7). Furthermore, the Residency Review Committee for Internal Medicine (RRC-IM) mandates that programs "develop models and schedules for ambulatory training that minimize conflicting inpatient and outpatient responsibilities"(8).

To reduce this conflict, many residency programs have adopted scheduling systems that alternate blocks of inpatient time with dedicated ambulatory blocks. The first of such systems reported in the literature was a 4+1 model in which traditional four-week rotations alternated with one-week ambulatory blocks (9). Since then, programs have employed variations on the theme including 3+1, 4+2, and 6+2 systems. The most prevalent models are based on one-week ambulatory blocks, which we refer to as "X+1" models. With increasing interest in such models, developers of the original 4+1 model and developers of an early 3+1 model have collaborated to provide a reference for programs that wish to implement such a model.

The Logistics of the X+1

Initial Thoughts to Consider

Some pre-work is necessary to ensure that a residency is able to undertake an X+1 restructuring project. Planning should commence at least one year prior to the "go-live" date to allow for appropriate changes and budgeting. Early "brainstorming" exercises with faculty, support staff, and residents allow for "frontline" input that will serve to promote buy-in and allow key questions to be asked. This timeframe is also when to prioritize changes that need to be made in various rotations and engage key institutional stakeholders. Although not an exhaustive list, **Figure 1** outlines a list of questions that may help guide early brainstorming sessions.

Choosing the "X"

The next step in making the X+1 schedule is deciding what the "X" will be. X will represent the length (in weeks) of the non-ambulatory rotations. There are advantages to various choices for X, but determination of the value depends on residency size, educational and service priorities, capacity,

FIGURE 1. Questions to Consider When Implementing an X+1 Schedule

Should any current rotations be eliminated?
Should previously required rotations be elective experiences?
What rotations should remain a set number of weeks and which can be modified to one or two weeks in duration?
Are all core RRC regulations being met?
How many continuity clinic sites are optimal?
Are there appropriate numbers of residents and faculty at these sites?
What number of continuity clinic sessions is optimal?
What is the optimal number of inpatient teams (e.g., wards, ICUs)?
What is the optimal inpatient resident team structure (e.g., one resident, two interns)?
Is this ratio of interns/residents variable or does it need to be fixed?
What rotations absolutely need a resident presence on the inpatient services, and which rotations can tolerate weeks without residents?
Which rotations can accommodate a fixed number of residents? Which are variable?
Are there other pools of learners to consider (e.g., preliminary interns, residents in specific training tracks, medical students)?
Will preliminary interns have a continuity clinic and participate in the X+1 system, or should they be separated out to integrate and complement inpatient teams?
If the program rotates at multiple sites, what changes needed to be made so that one master schedule can be developed?
After changing to the X+1 model, will faculty scheduling need to be altered to accommodate learning and supervision objectives?
How will the changes in the scheduling template affect other departments (e.g., neurology, emergency medicine)

and how the internal medicine residency interacts with other residencies. Non-internal medicine residents rotating on medicine services, medicine residents rotating on other services, internal medicine tracks, and combined programs (for example, medicine-pediatrics) may play a role in determining the optimal X.

The Stagger

Once X has been determined, the participating residents must be grouped into cohorts. There will be a total of X+1 cohorts. For example, if the chosen X is 4, one will need 4+1, or five cohorts. Each cohort should have similar numbers of residents from each postgraduate year to minimize variations for future academic years. Cohorts are then staggered to ensure a resident presence during each ambulatory block. **Figure 2** illustrates the basic template structure for a 4+1 model (9).

Filling in the Template

Constructing the initial schedule using an electronic spreadsheet allows for a visual depiction of the schedule. Counting functions can be employed that signal when inpatient teams are adequately populated or when there are potential violations to residency regulations (for example, too many weeks of critical care). To fill in the template, start with the highest priority rotations (that is, rotations that must have residents and a consistent team structure). **Figure 3** illustrates how to begin to populate a 4+1 template starting with an inpatient general medicine service of one resident and two interns (9). Populating resident teams using members from multiple cohorts allows "overlapping" of residents. This overlap enhances care transitions by preventing the entire team from rotating off-service at the same time. Once higher priority rotations are scheduled, lower priority rotations, electives, and vacations can be added. If appropriate counters

FIGURE 2. 4+1 Schedule Template Format – Initial Transition Stagger

COHORT	Initial Transition Scheduling									
	1	2	3	4	5	6	7	8	9	10
A	Rotation				AMB	Rotation				AMB
B	AMB	Rotation			AMB	Rotation				AMB
C	RTN	AMB	Rotation			AMB	Rotation			
D	Rotation		AMB	Rotation			AMB	Rotation		
E	Rotation			AMB	Rotation			AMB	Rotation	

FIGURE 3. 4+1 Schedule Template Format – Core Rotation General Internal Medicine

COHORT	Residents	10 Week Segments													
		1	2	3	4	5	6	7	8	9	10	1	2	3	4
A	PGY-1	Inpt Gen Med				AMB					AMB				
	PGY-1	Inpt Gen Med				AMB					AMB				
	PGY-2/3					AMB	Inpt Gen Med				AMB				
B	PGY-1	AMB				AMB					AMB				
	PGY-1	AMB				AMB					AMB				
	PGY-2/3	AMB	Inpt Gen Med			AMB					AMB				
C	PGY-1		AMB				AMB				AMB	Inpt Gen Med			
	PGY-1		AMB				AMB				AMB	Inpt Gen Med			
	PGY-2/3	Gmed	AMB				AMB				AMB				
D	PGY-1			AMB				AMB	Inpt Gen Med			AMB			
	PGY-1			AMB				AMB	Inpt Gen Med			AMB			
	PGY-2/3			AMB				AMB				AMB	Inpt Gen Med		
E	PGY-1				AMB	Inpt Gen Med				AMB				AMB	
	PGY-1				AMB	Inpt Gen Med				AMB				AMB	
	PGY-2/3				AMB					AMB	Inpt Gen Med			AMB	

are set, holes in the schedule can be identified. Having a pool of residents not involved in the X+1 template can help fill in these "holes" and complete team structures. For example, at Lehigh Valley Health Network, transitional year interns (traditionally scheduled using 13 four-week blocks) were woven into the 4+1 schedule, thus providing flexibility (9).

This master schedule can be created without specific resident names included. Residents can then be "back-filled" in the template. Early on, it may be beneficial to complete each yearly schedule separately to gain familiarity with the process. Once experienced, however, a schedule spanning several years can be constructed, which allows forecasting of future scheduling "holes" and impending regulation violations.

The Ambulatory Block

Once the master schedule has been constructed, the ambulatory block can be developed. The structure of the block is influenced by the number of continuity clinics desired, the capacity of the clinic(s) to accommodate residents, faculty availability, and the desire to create new experiences. Each ambulatory week can be divided into 10 half-day sessions. The total number of continuity clinic sessions must be sufficient to fulfill Accreditation Council for Graduate Medical Education program requirements (130 sessions over three years) (8). The remaining sessions can include didactic times (for example, an academic half-day), administrative time, or rotations through general medicine or subspecialty clinics as shown in **Figure 4**. A dedicated ambulatory block allows programs to develop ambulatory-specific curricula and include items that do not fit into other rotations well (for example, quality improvement or narrative medicine).

FIGURE 4. Sample Ambulatory Week Schedule for 3+1 Template

	Mon	Tue	Wed	Thur	Fri
AM	Continuity clinic	Continuity clinic	Continuity clinic	Continuity clinic	Academic ½-day
PM	Subspecialty clinic	Subspecialty clinic	Subspecialty clinic	Subspecialty clinic	Administrative time

Conclusion

X+1 scheduling models help answer the call for residency redesign and provide a more balanced training environment. This separation allows for focused practice in both the inpatient and outpatient arenas and helps ease some of the conflict between these two training venues. Other benefits, such as better learner and patient continuity and lower "no-show" rates, have also been realized (9). Since the first report of the 4+1 scheduling model was published, dozens of residency programs have employed some sort of inpatient/outpatient block scheduling model. This "separation" trend is expected to continue.

AUTHORS

Marc Shalaby, MD
Program Director
Internal Medicine – Primary Care Residency
Perelman School of Medicine at the University of Pennsylvania

Maria C. DeOliveira
Administrative Director, Graduate Medical Education
Harvard Medical School Beth Israel Deaconess Medical Center

Craig Noronha, MD
Associate Program Director
Department of Internal Medicine
Boston University School of Medicine

Ryan Zitnay, MD
Fellow
Section of Geriatrics
Boston University School of Medicine

REFERENCES

1. Meyers F, Weinberger S, Fitzgibbons J, et al. Redesigning residency training in internal medicine: The consensus report of the Alliance for Academic Internal Medicine Education Redesign Task Force. *Acad Med.* 2007;82(12):1211-1219.
2. Fitzgibbons J, Bordley D, Berkowitz L, et al. Redesigning residency education in internal medicine: A position paper from the Association of Program Directors in Internal Medicine. *Ann Intern Med.* 2006;144(12):920-926.
3. Batalden P, Leach D, Swing S, et al. General competencies and accreditation in graduate medical education. *Health Affairs.* 2002;21(5):103-111.
4. Holmboe E, Bowen J, Green M, et al. Reforming internal medicine residency training: A report from the Society of General Internal Medicine's Task Force for Residency Reform. *JGIM.* 2005;20:1165-1172.
5. Weinberger SE, Smith LG, Collier VU. Redesigning training for internal medicine. *Ann Intern Med.* 2006;144:927-932.
6. American Board of Internal Medicine. *Crossing the Quality Chasm: Shared Vision on Quality and Leadership for Training in Internal Medicine.* Online. http://www.abimfoundation.org/FoundationReport2004/index.htm. Accessed October 12, 2005.
7. Thomas KG, West CP, Popkave C, et al. Alternative approaches to ambulatory training: Internal medicine residents' and program directors' perspectives. *JGIM.* 2009;24(8):904-910.
8 Accreditation Council for Graduate Medical Education. *Program Requirements for Resident Education in Internal Medicine.* 2009. Online. http://www.acgme.org/acgmeweb/Portals/0/PFAssets/ProgramRequirements/140_internal_medicine_07012009.pdf. Accessed June 22, 2013.
9. Mariotti JL, Shalaby M, Fitzgibbons JP. The 4:1 schedule: A novel template for internal medicine residencies. *J Grad Med Educ.* 2010;2(4):541-547.
10. Bowen J, Salerno S, Chamberlain J, et al. Changing habits of practice: Transforming internal medicine residency education in ambulatory settings. *JGIM.* 2005;20:1181-1187.

Development of a Cost-Conscious Curriculum for Undergraduate Medical Education

An estimated $700 billion in waste annually, 17% of the gross domestic product, and $2.6 trillion in costs annually describe the current economics of health care in the United States (1). With health care spending reaching an unsustainable level, the federal government and health care organizations are looking for ways to control costs.

Although physicians direct as much as 87% of all health care spending (1), numerous studies demonstrate that physicians lack knowledge about the costs of medical care (2-4). Similarly, learners (residents and medical students) do not receive instruction on cost awareness (4). Studies have shown that the cost of medical care delivered in the context of medical education is 20% to 60% higher than care provided in nonteaching environments (5-6). As a result, undergraduate and graduate medical education programs are realizing the need for training on health economics and cost-conscious care.

According to the 2011 Association of American Medical Colleges (AAMC) graduate questionnaire summary report, 45.9% of students reported inadequate instruction on managed care, and 63.8% of students reported inadequate instruction on health economics. These numbers have remained unchanged over the past five years, reflecting no perceived improvements by students in our ability to teach these concepts (7). After a report showed similar findings from graduating students at our institution, Ohio State University created a task force in June 2011 to develop an integrated, longitudinal clinical curriculum to provide medical students knowledge in health economics and cost-effectiveness principles.

According to the 2011 Association of American Medical Colleges (AAMC) graduate questionnaire summary report, 45.9% of students reported inadequate instruction on managed care, and 63.8% of students reported inadequate instruction on health economics.

Cost-Conscious Curriculum Development

Before the formation of the task force, students received during their preclinical years a one-hour lecture on managed care. The remainder of their "education" on cost was left to the implicit curriculum. The creation of a task force allowed faculty members across departments to collaborate on an integrated curriculum on cost-conscious care during the clinical years. The task force approached this curricular development by first identifying the learning outcomes we expected students to achieve (**Figure**).

For this curriculum to be effective, content would be integrated across clerkships during the third and fourth years. Initial efforts focused on the development of an interactive case conference to blend clinical reasoning with concepts of cost-effectiveness. This curriculum was introduced during an eight-week, unique subinternship-emergency medicine experience in March 2012. In this case conference, discussants used a patient case with real hospital charges to highlight how inefficiencies, lack of communication, and redundant care can impact cost. In July 2012, we added experiences across inpatient internal medicine, family medicine, and emergency medicine settings. During inpatient internal medicine, students complete a guided-learning module that outlines principles of cost-effectiveness and provides guidance on how these principles can be applied in the inpatient setting. During family medicine, students participate in a lecture-discussion on health care financing and the impact of the patient-centered medical home. During emergency medicine, students view an interactive, Articulate-based module on the impact of Medicaid and the uninsured population on health care costs. During the surgery clerkship, a discussion session co-led by a business analyst and a faculty surgeon addresses factors influencing costs in the operating room.

FIGURE. Learning Outcomes for Cost-Conscious Care in the Clinical Curriculum

1. Review the basic structure and format of managed care in the United States.
2. Discuss the influence of managed care on health care financing in the United States.
3. Analyze the impact of medical costs on the affordability and accessibility of medical care in the United States.
4. Define the effects of diagnostic testing on the costs of medical care.
5. Describe how physicians can affect the costs of patient care.

Curriculum Resources

With a renewed interest in high-value health care, several groups have published resources on cost-conscious care that are available for common use. In April 2012, the American Board of Internal Medicine launched its *Choosing Wisely* campaign (www.choosingwisely.org), which asks health professionals and patients to choose care that is evidence based, not duplicative, and truly necessary (8). To that end, they have asked every medical specialty to come up with "Five Things That Physicians and Patients Should Question." As of February 2013, 35 specialties have published their lists, which can be accessed at www.choosingwisely.org/doctor-patient-lists.

Similarly, the American College of Physicians (ACP) has a high-value care initiative that aids physicians in reducing unnecessary costs while continuing to provide the highest quality care (9). In collaboration with AAIM, they created a high-value cost-conscious care curriculum that provides 10 interactive modules with presenter notes (hvc.acponline.org/curriculum.html). Although this curriculum is geared toward resident learners, it is appropriate for medical student education; we are working to adapt the materials to fit within the existing curriculum.

Curricular Evaluation and Student Assessment

With any curricular innovation, methods are needed to determine how students will be assessed and how the curriculum will be evaluated. During the internal medicine clerkship, students complete a reflective exercise that describes a scenario in which a patient experienced lack of attention to cost-conscious care; they are asked to identify solutions and barriers to reducing inefficiencies. During emergency medicine, students complete a quiz on the content of their interactive module. Recognizing the need for more robust student assessments, the task force is working toward this end. Although students need basic foundational knowledge on these topics (which can be assessed easily through medical knowledge exams), they also need a forum to discuss real patient experiences in the context of cost-conscious care. Small group discussions on cost-conscious care with faculty assessment of student performance are another opportunity for student assessment.

The overriding goal of the curriculum is that students will be able to use and apply the knowledge they gained in realistic settings. To that end, the task force is in the process of developing a tool that would allow for the application of cost-conscious principles utilizing common clinical scenarios. While it could serve as a global student assessment tool, the tool will be used to primarily evaluate the effectiveness of the curriculum.

Challenges

Finding space for additional curricular content is difficult, particularly at the graduate level. This challenge can be partly overcome by incorporating principles of cost-conscious care into more traditional, disease-specific didactics. A more important challenge is reinforcing classroom lessons in the clinical environment. This reinforcement is particularly difficult in curricular areas that are relatively new to faculty as well as to learners. Faculty development is an important component to the success and buy-in of a curriculum on high-value care.

Conclusion

Student response to the curriculum has been uniformly positive, with many students requesting additional exposure to principles of cost-conscious care. The institution of a simple yet relevant longitudinal curriculum in the clinical years of undergraduate medical education can provide exposure and knowledge, and, ultimately, it can allow for the application of cost-conscious health care.

AUTHORS

Kimberly M. Tartaglia, MD
Assistant Professor
Department of Internal Medicine
The Ohio State University College of Medicine

Nicholas E. Kman, MD
Assistant Professor
Department of Emergency Medicine
The Ohio State University College of Medicine

REFERENCES

1. Sager A, Socolar D. *Health Costs Absorb One-Quarter of Economic Growth, 2000–2005.* Boston: Health Reform Program, Boston University School of Public Health, 2005.
2. Dresnick SJ, Roth WI, Linn BS, Pratt TC, Blum A. The physician's role in the cost-containment problem. *JAMA.* 1979;241(15):1606-1609.
3. Fowkes FG. Doctors' knowledge of the costs of medical care. *Med Educ.* 1985;19(2):113-117.
4. Reichert S, Simon T, Halm EA. Physicians' attitudes about prescribing and knowledge of the costs of common medications. *Arch Intern* Med. 2000;160(18):2799-2803.
5. Sloan FA, Feldman RD, Steinwald AB. Effects of teaching on hospital costs. *J Health Economics.* 1983;2(1):1-28.
6. Frick AP, Martin SG, Shwartz M. Case-mix and cost differences between teaching and nonteaching hospitals. *Medicine Care.* 1985;23(4):283-295.
7. Association of American Medical Colleges. *Medical School Graduate Questionnaire: All Schools Summary Report.* Online. https://www.aamc.org/download/263712/data/gq-2011.pdf. Accessed February 27, 2013.
8. American Board of Internal Medicine. *Choosing Wisely.* Online. http://www.choosingwisely.org/. Accessed February 27, 2013.
9. American College of Physicians. *High-Value Care.* Online. http://hvc.acponline.org/. Accessed February 27, 2013.

Bridging the Generational Chasms

Introduction

In the mid-2000s, an unprecedented event occurred in US history. For the first time, four generations found themselves learning and working together in medical schools and teaching hospitals (1,2). Shaped by common historical and social events, parental attitudes, popular culture, and technological milieu experienced during their formative years, each generation developed shared values, attitudes, and learning styles (**Figure 1**). Differences among the four generations, however, can lead to miscommunication and conflict in the perceived core principles of medicine. Understanding and respecting these differences can help bridge the gaps among the four generations.

While generational influences cross the many racial, ethnic, cultural, and religious communities in the United States, indiscriminately assuming all individuals in a particular generation share the same traits leads to bias, prejudice, and stereotyping. With this caution in mind, the generational archetypes are useful in understanding the similarities and differences in attitudes, values, and behaviors commonly encountered in the medical classroom and workplace (1,2).

The Veterans

The Veterans, or "traditionalists," represent less than 10% of all active physicians. Most individuals are now very senior physicians and emeritus professors. Shaped by the stock market crash of 1929, the ensuing Great Depression, and World War II, this generation values honor, loyalty, patriotism, respect for authority, dedication, and sacrifice.

In the classroom, they prefer the traditional, hierarchical structure with a teacher clearly in control of content and structure. Veterans do not like to share feelings or personal information and do not enjoy role-playing. They prefer to learn the "big picture" first and then fill in the details later. Surprisingly, they are not technophobic due to their "can-do" attitude but they do need help to use technology. The Socratic method is an effective approach for Veteran learners.

In the workplace, they will do what is asked of them and are less likely to complain in public. Feedback is not as an important motivator for this generation because they value a job well done as its own reward. The best way to motivate them is to be respectful of their past contributions, experience, and work ethic.

Baby Boomers

The Baby Boomers, or "me generation," are the largest generation in numbers and compose 40% of all active physicians. They often occupy the highest leadership positions in medical organizations. Shaped by the rise and assassinations of John F. Kennedy, Jr. and Martin Luther King, Jr. and the post–World War II economic expansion, Baby Boomers are idealistic and optimistic. They "live to work" and often value professional advancement over all else.

In the classroom, they respond best when treated as equals. They prefer the lecture format but also enjoy interactive, small-group discussions. They do not like role-playing. Above all they do not want to show their weaknesses in public. Feedback should be planned and written documentation provided. As committed lifelong learners, they value education as an end unto itself.

In the workplace, they are "workaholics" whose jobs define their identities. As supervisors, they are often intolerant of individuals who work shorter hours or insist on a life outside of work. If they are your subordinates, be democratic and involve them in decision making whenever possible. They will vocally advocate for change. To motivate Baby Boomers, give them a chance to prove their worth and praise them publicly.

Differences among the four generations, however, can lead to miscommunication and conflict in the perceived core principles of medicine. Understanding and respecting these differences can help bridge the gaps among the four generations.

Generation X

Generation X, or the "latchkey kids," composes 30% of all active physicians. Most are now junior faculty and some occupy middle-management leadership positions. Growing up, they were often left home alone because parents were either divorced or worked in full-time jobs. Gen-Xers became self-reliant, resourceful, less idealistic, and more practical. They want a work-life balance and "work to live."

In the classroom, they ask "is this going to be on the test?" because they are trying to survive in an uncertain situation. They grew up with personal computers and their multitasking abilities are often misinterpreted as short attention spans. They prefer immediate, frequent, and face-to-face feedback.

In the workplace, their communication style is blunt and not "politically correct" because hierarchy and advancement are not that important to them. Be clear about what you want them to accomplish, but do not micromanage them. Typical Gen-Xers will leave work at 5:00 p.m. to spend time with family, then work evenings and on weekends to finish their projects. They are not necessarily slackers, but approach work in a different manner. Generation X most often clashes with Baby Boomers.

FIGURE 1. Generational Archetypes (3,4)

GENERATION	Veterans (Traditionalists)	Baby Boomers	Generation X	Generation Y (Millennials)
Approximate Years of Birth	1922–1945	1946–1964	1965–1980	1981–2000
Approximate Numbers	30 million Americans	77 million Americans	45 million Americans	75 million Americans
	10% of active physicians	40% of active physicians	30% of active physicians	25% of active physicians and growing
Defining Historical Events	The stock market crash (1929)	President John F. Kennedy's assassination	Corporate downsizing; massive layoffs	Technology and Internet
	The Great Depression (1930s)	The Civil Rights Movement	Political scandals: Watergate, Iran Contra	School shootings: Columbine, Virginia Tech
	Atomic bomb	Martin Luther King's assassination	Space shuttle Challenger disaster	Hurricane Katrina
	World War II	Vietnam War	End of Cold War; Fall of Berlin Wall	Terrorism: 9/11; Oklahoma City bombing
		Moon landing	War on drugs	
Core Values	Dedication; sacrifice	"We live to work."	"We work to live."	Busy and overplanned childhood
	Honor; loyalty	Optimistic; idealistic	Self-reliant; resourceful	World is a dangerous place
	Patriotism; law and order	Want to make a difference	Nontraditional orientation about time and space	Defined by difference: multicultural, embrace diversity
	Hard work	Highly competitive	Like informality	Environmental advocates
	Respect for authority	Do not ask for help	Techno-literate	Techno-savvy
	Adherence to rules	Uncomfortable with conflict	Seeking sense of family and community	Parents are cool
	Duty before pleasure	Youth-focused	Do not value job titles or advancement as much as boomers	More respectful and moral than Generation X
Communication Styles	Formal	Diplomatic	Blunt	Polite
Learning & Teaching Styles	Prefer a command-and-control leadership style	Collegial and consensual	"Is this going to be on the test?" is a question of survival	Combine the can-do attitude of Veterans, teamwork of Boomers, & techno-savvy of Generation X
Educational Characteristics	Uncomfortable discussing feelings	Okay with lecture format; don't be authoritarian—depends on educator	Accustomed to challenging and being challenged—frequently asks "Why?"	Use multimodal sensory stimuli— keep entertained
	Don't like role playing	Don't like role playing	Independent problem solvers	First true cyber generation
	Don't complain publicly	Interactive—like teamwork	Multitaskers (not "slackers" or inattentive)	Egalitarian and like teams
	Are conservative, respectful	Intolerant of those who work shorter hours than they did	Wasting time is taboo; efficiency over working long hours	Accustomed to supervision, structure, and direction
	Prefer big picture first, then details	Learning is an end to itself	Read less than older generations	
	Do not seek feedback	Planned and documented feedback	Want frequent feedback	Want immediate feedback
	Job well done is its own reward	Ask permission to give feedback		Want career planning
Messages That Motivate	"I could really use your help and experience on this project."	"You are important to our success."	Be direct – tell them what needs to be done.	"You will be working with other bright and creative people."
	"It's valuable that the rest of us hear what has—and hasn't—worked in the past."	Give lots of public recognition and show them how to be a star.	Self-starters and independent—"Do it your way."	Use technology to entertain

Generation Y

Generation Y, or the "millennials," are 25% of active physicians and their numbers are increasing. Almost all current medical students, residents, and newest faculty are Gen Y. Their parents hovered over them, kept them involved with many activities, and praised them constantly. They are confident and optimistic. Generation Y is the most tech-savvy of all the generations and social media keep them connected across the world.

In the classroom, Generation Y needs a lot of stimulation. They prefer multimodal and fast-paced learning environments and do not do well in a traditional lecture format. They like structure and supervision in a non-hierarchical environment with team and group activities (5).

In the workplace, millennials crave constant and immediate feedback (6). They may need guidance to accomplish tasks, since they are accustomed to having their parents "hover" over them. Like Generation X, they value work-life balance, and favor the "ROADE" specialties—radiology, ophthalmology, anesthesiology, dermatology, and emergency medicine. They are more polite than Generation X and often get along best with the Veteran generation.

How to Bridge the Gap

In workshops we have used the mnemonic, "don't be a RAT, bridge the GAP" (**Figure 2**) to remind individuals to assess the core generational values causing a conflict in a nonjudgmental manner and plan a solution based on a focus on core values of the medical profession. (This concept was originally developed by Matt Fong, MD, Assistant Professor of Pediatrics at Loma Linda University School of Medicine.) As a profession, we should expect excellence and commitment to the highest quality care and teaching but we must simultaneously respect the value of work-life balance (7). By understanding the values of each generation and linking

FIGURE 2. Crossing the Generational Chasms Worksheet: A Tool for Generational Conflicts in the Workplace

Don't be a RAT, bridge the GAP	
Don't:	**Do:**
React To the situation	**Gauge** Your own reaction
Assume Values for the other person	**Assess** The core generational values causing the clash
Turn Against the other person	**Plan** An intervention to meet on common ground

them to the core attributes of the medical profession, we can improve our effectiveness as managers, teachers, learners, and health care providers.

AUTHORS

Samuel Baz, MD (Generation X)
Assistant Professor
Department of Medicine
Loma Linda University School of Medicine

Lawrence Loo, MD (Baby Boomer)
Professor
Department of Medicine
Loma Linda University School of Medicine

Philip M. Gold MD (Veteran)
Professor
Department of Medicine
Loma Linda University School of Medicine

Leah Tudtud-Hans, MD (Baby Boomer)
Associate Professor
Department of Medicine
Loma Linda University School of Medicine

Leigh VanVranken, MD (Generation Y)
Third-Year Internal Medicine Resident
Department of Medicine
Loma Linda University School of Medicine

REFERENCES:

1. Mohr NM, Moreno-Walton L, Mills AM, et al. Generational influences in academic emergency medicine: teaching and learning, mentoring and technology (part I). *Acad Emerg Med.* 2011;18:190-199
2. Mohr NM, Moreno-Walton L, Mills AM, et al. Generational influences in academic emergency medicine: structure function & culture (part II). *Acad Emerg Med.* 2011;18:200-207.
3. Making the cross-generational workplace work. In Generations at Work: *Managing the Clash of Veterans, Boomers, Xers, and Nexters in Your Workplace.* Zemke R, Raines C, and Filipczak B (eds.). New York, NY: AMACOM American Management Association, 2000.
4. Coates J. A pedagogy for the 21st century. In *Generational Learning Styles.* River Falls, WI: LERN Learning Resources Network, 2007, pp. 129-138.
5. Twenge JM. Generational changes and their impact in the classroom: teaching Generation Me. *Med Educ.* 2009;43:398-405.
6. Tulgan B. Meet Generation Y. The most high-maintenance workforce in the history of the world. In *Not Everyone Gets a Trophy: How to Manage Generation Y.* San Francisco, CA: Jossey-Bass, 2009 pp. 1-17.
7. Smith LG. Medical professionalism and the generation gap. *Am J Med.* 2005;118:439-442.

"Resident Assessment Using EPAs: Helping Program Directors Design Evaluation Systems to Meet Reporting Requirements for the ACGME Next Accreditation System (NAS)" Video Available on AAIM Connect

Held as part of the 2013 APDIM Spring Conference, the precourse gave participants the opportunity to become familiar with key components of NAS. During the meeting, members completed a q-sort activity linking curricular milestones to each of the 16 entrustable professional activities. Also, in a simulated exercise, participants acted as clinical competency committees and evaluated data on residents. Finally, members worked to develop assessment strategies and methods of reporting information on residents.

The precourse video is posted on the APDIM Forum for Milestones Innovation and Collaboration on AAIM Connect. This community is open to all AAIM members. Note that the file is very large and make take several minutes to download.

To join this forum and view the video:

1. Log into AAIM Connect.
2. Select "Communities."
3. Select link under "Communities by Topic" in the AAIM Communities Overview page.
4. Select "Join" next to "APDIM Forum for Milestones Innovation and Collaboration."
5. Select "Member" next to "APDIM Forum for Milestones Innovation and Collaboration."
6. Under "File Library" select "Education:2013 APDIM Spring Education Precourse Recordings."
7. Select "2013 APDIM Spring Education Precourse Video."

Additional resources from the precourse are available on the AAIM website in the NAS Resources in the AAIM Toolbox on www.im.org, including presentation material, sample q-sort materials, assessment strategies, evaluation forms, and a printable list of all 142 curricular milestones.

Using Art to Teach Medical Professionalism

Introduction

The visual arts have been part of medical education for centuries. From the works of Leonardo da Vinci to Frank Netter and beyond, medical illustration has helped students understand scientific concepts and anatomic structures. In more recent decades, medical schools have begun to incorporate arts and humanities—including prose, visual arts, musical composition, and theatrical performance—into the medical curriculum in other creative ways. Medical literature suggests that using creative media can enhance medical education by teaching observation skills, improving student empathy for and understanding of the patient experience, and fostering student well-being (1). In the curriculum described, art was used to stimulate critical reflection during the student's internal medicine clerkship as a way to actively teach professionalism.

Theoretical Framework

Identity formation is the process by which the culture of a group is attained by new members. To take on their identities as physicians by the end of medical school, students must internalize the elements that we embrace as medical professionalism. To help them attain these values, this project was designed around conscious observation, reflection, and group discussion, all of which are elements that have been shown to assist students in the formation of their new identities (2).

The artwork in this project serves a couple of different purposes. First, it is a catalyst for the students to recall a critical incident that they experienced during the internal medicine clerkship. These incidents were defined for the students as an experience, large or small, that triggered novel thoughts or feelings regarding an act of professionalism, observed or performed, or an occasion where the value was notably absent. Second, the images served as a surrogate for the student as he or she reflected on the critical incident and how their involvement may or may not have contributed to it. Learning how to self-reflect is a challenge for the novice, fraught with risk to the ego that actions were wrong. It may be easier for the student to critically examine issues of professionalism if he or she is able to approach issues through the veil of an artistic image.

Curriculum Description

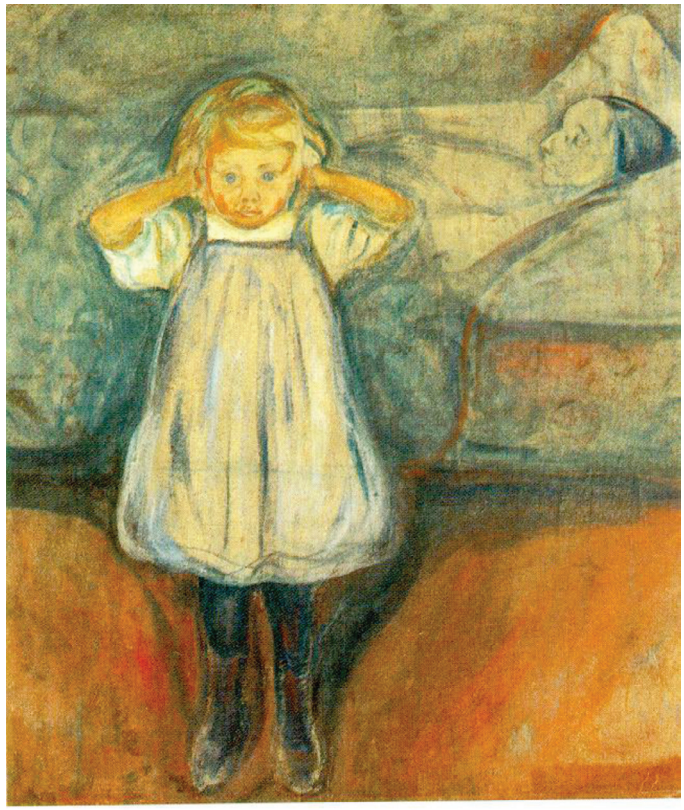
The curriculum comprised five steps that spanned the first six weeks of the internal medicine clerkship at Uniformed Services University of the Health Sciences. During the first week, students accessed didactic material online that summarized Herbert Swick's (3) construct of professionalism and discussed how to describe form or function in a piece of artwork. Explicit instructions on completing the project were also included in the material. Students spent the next five weeks thoughtfully observing their professional environment.

At the end of the fifth week, students chose one piece from 10 preselected works of art (**Figure 1** provides a sample) and wrote 100 word paragraphs describing the artwork and discussing how a tenet of professionalism was illustrated in the image. Students were explicitly told that there were no correct or incorrect ways to write these reflections. Students were also encouraged not to research the meaning of the artwork through online or textbook resources. The papers' focus was to be on each student's personal impressions and experiences.

Next, they were asked to describe a critical incident in which the professionalism tenet that they had chosen was either reinforced or noticeably absent. This recollection may have been stimulated by their description of the artwork. The critical incident could have been their own actions or the actions of their colleagues, housestaff, faculty, patients, or ancillary staff. Students wrote a longer paragraph describing the incident and how the professionalism tenet was or was not present. Students engaged emotionally by identifying an incident from their own personal experiences.

The students wrote a fourth paragraph (250 words) that reflected on the incident and how the situation could have

FIGURE 1. The Dead Mother by Edvard Munch, 1900.



been handled differently or how the students could use the lessons learned to guide their future actions. Reflection in this exercise forced students to move their abstract thoughts to concrete expression through writing.

Finally, students submitted their structured paper to their small group faculty preceptor (teaching attending) and discussed the experience with their small group (typically three to five students on the internal medicine clerkship). Group discussion allowed students to learn from each other's experiences. Review of the papers by a faculty preceptor let potentially harmful experiences come to light for potential action. It also provided an opportunity for reinforcement of the tenets of professionalism, reflective activity, and feedback by a senior experienced clinician who could assist in integrating these experiences into students' developing identities.

Conclusion

There are many ways and many reasons to incorporate the arts into medical education. In this example, art was used as a trigger to recall a critical incident and to stimulate reflection on the elements of professionalism involved in the critical incident. The essays submitted by students shed light on the hidden curriculum to which students are exposed, allowed the preceptor to discuss professionalism by using the student examples, and provided the faculty with valuable insight into the professional development of the students as they progress through their undergraduate medical training. This intervention was easy to integrate into the curriculum, created minimal extra burden on the faculty, and provided meaningful examples for discussing professional behavior.

AUTHORS

Lynn A. Byars, MD
Assistant Professor
Department of Internal Medicine
Uniformed Services University of the Health Sciences

G. Dodd Denton, MD
General Practice Clerkship Director
Department of Medicine
University of Queensland/Ochsner Clinical School

REFERENCES

1. Brett-MacLean P. Use of the arts in medical and health professional education. *University of Alberta Health Science Journal.* 2007;4(1):26-29.
2. Ryynänen K. *Constructing Physician's Professional Identity – Explorations of Students' Critical Experiences in Medical Education.* Oulu, Finland: Department of Psychiatry, University of Oulu, 2001.
3. Swick HM. Toward a normative definition of medical professionalism. *Acad Med.* 2000;75(6):612-616.

continued from page 5

To ensure transferability, researchers must keep meticulous records (for example, field journals, original transcripts, reflective commentaries, data analysis documents, comments from peer debriefing and member checking) relating to the research performed.

Qualitative research may seem foreign to individuals who came to medicine with a strong background in mathematics and scientific methodology. After all, medicine is a science. But medicine is also an art. Qualitative research allows one to explore that art. Exploration of the meaning, experiences, and perspectives of patients, students, and residents allows us to better understand the ones we serve.

AUTHORS

Irene Alexandraki, MD
Associate Professor
Department of Medicine
David Geffen School of Medicine at the University of California, Los Angeles

Katherine Chretien, MD
Associate Professor
Department of Medicine
George Washington University School of Medicine

Carlos Palacio, MD
Clerkship Director
Department of Internal Medicine
University of Florida College of Medicine at Jacksonville

Diane L. Levine, MD
Clerkship Director
Department of Internal Medicine
Wayne State University School of Medicine

REFERENCES

1. Hanson JL, Balmer DF, Giardino AP. Qualitative research methods for medical educators. *Acad Pediatr.* 2011;11(5):375-386.
2. Creswell J (ed). *Educational Research: Planning, Conducting, and Evaluating Quantitative and Qualitative Research (Fourth Edition).* Boston, MA: Pearson Education, 2012.
3. Chretien KC, Goldman EF, Craven KE, Faselis CJ. A qualitative study of the meaning of physical examination teaching for patients. *J Gen Intern Med.* 2010;25(8):786-791.
4. Creswell J. *Qualitative Inquiry and Research Design: Choosing Among Five Traditions.* Thousand Oaks, CA: Sage Publishing. 2006.
5. Lincoln YS, Guba EG. *Naturalistic Inquiry.* Newbury Park, CA: Sage, 1985.
6. Guion L, Diehl D, McDonald D. *Triangulation: Establishing the Validity of Qualitative Studies.* University of Florida IFAS Extension FCS6014. Online. https://edis.ifas.ufl.edu/pdffiles/FY/FY39400.pdf. Accessed February 13, 2013.

Beyond Angry Birds: Apps in Medical Education

In the past 15 years, personal digital assistants (PDAs) have become a fixture in health care. Part of their rise was due to the popularity of a medical reference tool Epocrates, which first came out in 1998. It was a medical reference tool that offered point-of-care data as well as drug dosing and interaction information. As one physician put it, "Instead of fumbling with papers or searching through textbooks and phone books, I'm able to keep the data I need at my fingertips in my PDA, which fits snuggly in my shirt pocket" (1). Other uses of PDAs in health care include note taking, storing practice guidelines, calculating clinical metrics (for example, FeNa, creatinine clearance), and organizing billing. Despite the many valuable uses for clinicians, PDAs have not yet found a role in medical education.

Since the introduction of the iPhone (in 2007) and other smart phones, the popularity of handheld devices has skyrocketed. Recent data suggest that 85% of physicians carry a "smart phone" and 50% have medical applications (apps) on their mobile devices (2). A 2010 survey of 700 medical students found that 96% were using a smart phone (3). More people carrying smart phones meant greater financial opportunities for developers who create apps for mobile devices. The market for apps increased further when tablets were introduced in 2010.

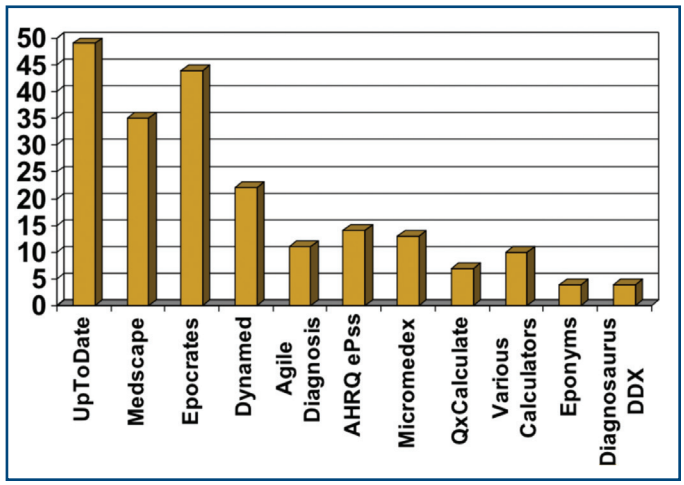
An app is simply software that runs on an operating system. Popular apps range from Microsoft Word to Angry Birds. Web apps that run on the browser instead of a phone's native operating system are also considered apps. Millions of mobile apps are now available for download from the many app stores that have grown to serve the various smart phone operating systems. Given that apps are portable, always accessible, generally inexpensive, accepted by learners, and able to hold an almost limitless capacity of data and information, considerable potential exists for apps to help educate future physicians. Although duty hour pressures might decrease the accessibility of a resident or attending educator, apps are always by a student's side.

In April 2012, it was estimated that there were more than 2,000 apps specifically for clinician use (4). In a survey conducted at University of Chicago in May 2012, nearly 100 medical students volunteered more than 30 apps that they used during their clinical years. Of those apps, the top three were general medical reference tools such as UpToDate, Medscape, and Epocrates (**Figure**). Such apps provide comprehensive information, including risk factors, signs/symptoms, diagnostic and treatment strategies, and prognosticators for most major diagnoses. Other popular apps fell into various categories. AHRQ ePss is an example of an app that provides access to guidelines and protocols for diagnosis and management. QxCalculate and Medcalc are examples of clinical metric calculators. Diagnosaurus, Pepid, and Agile Diagnosis provide focused access to differentials for common symptoms. Lexicon and Micromedex give drug-dosing and interaction information. All of these apps focus on providing clinical information at the point of care, not necessarily on enhancing the effectiveness of medical education.

Given that apps are portable, always accessible, generally inexpensive, accepted by learners, and able to hold an almost limitless capacity of data and information, considerable potential exists for apps to help educate future physicians.

At first, many medical education–focused apps were simply electronic versions of popular textbooks. Increasingly, education-focused apps are taking better advantage of the computing power and the enriched user interface and experience of smart phones and tablets. For instance, Radiology 2.0-One Night in the ED is an app that allows students to review interactive emergency-department clinical cases while they scroll through the stacked images of hypothetical patient CT scans. Prognosis: Your Diagnosis is an app that similarly allows students to experience interactive cases and evaluates their performance at the end of each case. Educational anatomy apps such as 3D Brain allow students to manipulate three-dimensional images of parts of the human body. Such innovations are far more interactive and engaging than the print flashcards and textbooks students used in the

FIGURE. Most-Mentioned Apps Used by Medical Students during Clinical Years



past. It is not just anatomy education that is being innovated; apps like iMurmur2 and ECG Guide provide interactive teaching tools for virtually all topics in medicine. It has also never been easier for students to remain current with the literature. NEJM This Week, Docphin, and Pubmed Mobile give students an easy, personalized portal to medical literature.

Apps also have the potential to enhance the classroom experience. Inkling, Kindle, and iBook provide access to e-textbooks so students can leave their heavy textbooks at home. Noterize and iAnnotate allow students to electronically annotate PowerPoint slides, notes, and textbooks on their phones and tablets in the middle of class. Finally, to integrate all the information and notes from various devices, Dropbox syncs them into a single cloud storage account. These products are just some of the many examples of apps that are helping students to become more effective and efficient learners in the classroom.

Medical educators have been slow to integrate apps into their curricula for many possible reasons; educators might not feel the need for more learning tools, they may not believe the tools that do exist are effective, or they might simply lack familiarity with the tools.

As in planning any curricular change, the first step in integrating apps is to identify a focused objective with which they can help. Apps can teach topics that have been taught via non-electronic means in the past, such as awareness of drug interactions. Clinical reasoning and differential diagnosis are areas where an interactive app could complement traditional teaching. Apps can also be used to teach topics that, though important, were often neglected because it was hard to integrate them into the traditional learning environment. The use of clinical decision rules is a perfect example.

AUTHORS

Jonathan Y. Lee
Medical Student
University of Chicago Pritzker School of Medicine

Adam S. Cifu, MD
Associate Professor
Department of Medicine
University of Chicago Pritzker School of Medicine

REFERENCES

1. ACP Internist. *What the growth of tiny computers means for medicine.* Online. http://www.acpinternist.org/archives/1998/10/tinycomp.htm. Accessed January 2013.
2. Epocrates. *Seventh-annual future physicians of America study.* Online. http://www.epocrates.com/who/media/mediaresources/statistics. Accessed January 2013.
3. Franko OI, Tirrell TF. Smartphone app use among medical providers in ACGME training programs. *J Med Syst.* 2012;36(5):3135–3139.
4. Mobi Health News. *Just launched: Our 2012 consumer health apps report.* Online. http://mobihealthnews.com/17925/just-launched-our-2012-consumer-health-apps-report. Accessed January 2013.

continued from page 9

REFERENCES

1. Teherani A, O'Sullivan P, Aagaard EM, Morrison EH, Irby DM. Student perceptions of the one minute preceptor and traditional preceptor models. *Med Teach.* 2007;29(4):323-327.
2. Aagaard E, Teherani A, Irby DM. Effectiveness of the one-minute preceptor model for diagnosing the patient and the learner: Proof of concept. *Acad Med.* 2004;79(1):42-49.
3. Chacko KM, Aagaard E, Irby D. Teaching models for outpatient medicine. *The Clinical Teacher.* 2007;4:82-86.
4. Wolpaw TM, Wolpaw DR, Papp KK. SNAPPS: a learner-centered model for outpatient education. *Acad Med.* 2003;78(9):893-898.
5. Salerno S, O'Malley P, Pangaro L, Wheeler G, Moores L, Jackson J. Faculty development seminars based on the one-minute preceptor improve feedback in the ambulatory setting. *J Gen Intern Med* 2002;17:779-787.
6. Neher JO, Gordon KC, Meyer B, Stevens N. A five-step "microskills" model of clinical teaching. *J Am Board Fam Pract.* 1992;5(4):419-424.
7. Irby DM, Aagaard E, Teherani A. Teaching points identified by preceptors observing one-minute preceptor and traditional preceptor encounters. *Acad Med.* 2004;79(1):50-55.

AAIM
Alliance for Academic Internal Medicine
330 John Carlyle Street
Suite 610
Alexandria, VA 22314

Presorted Standard
US Postage
PAID
Washington DC
PERMIT NO. 3070