2016 | 14:1

ACADEMIC INTERNAL MEDICINE INSIGHT

By the Numbers

92%

Residents who indicated that panel management is a valuable addition to their ambulatory medicine experience

Page 7

35%

Infectious disease programs that participated in the match but were unable to fill their fellowship positions

Page 15

12

Key strategies for successfully teaching the physical exam at the bedside

Page 17

AAIM Board Chair Update

As we celebrate a new year, I hope this letter finds you all well and enjoying the incredibly rewarding but sometimes frenetic pace of academic internal medicine. The Alliance has had an extraordinary year, moving forward on many key initiatives to further the growth and unity of academic internal medicine, and is developing a robust plan for the year ahead. It is a true pleasure to be part of such a collaborative and hard-working group of administrators, department chairs, clerkship and residency directors, as well as subspecialty division leaders. I am continuously amazed by the amount of hard work and dedication our members demonstrate on a daily basis. While we have many things about which to be proud, I would like to share a few highlights of work over the past year as well as exciting plans to come.

The AAIM Innovation Center continues to be front and center in supporting many of our strategic initiatives, including high value care (HVC), one of the Alliance's priorities. **Figure 1** lists the leaders of the AAIM Innovation Center Oversight Committee. In conjunction with the American College of Physicians (ACP), the AAIM High Value Care Work Group—ably led by Alisa Duran—this year formalized an "academy" for HVC faculty development; created new curricular and assessment tools for students, residents, and fellows; and developed a joint AAIM-ACP-American Board of Internal Medicine (ABIM) position statement. In addition, the funding for AAIM Innovation Grants doubled, and submissions for FY 2016 increased in diversity, including from ASP, MPPDA, and AIM as well as APDIM and CDIM. As a result of its call for "disruptive innovations" from councils and committees, the AAIM Innovation Center will begin to explore the use of flexible competency-based educational training pathways for students, residents, and fellows.

FIGURE 1. AAIM Innovation Center Oversight Committee

Lisa M. Bellini, MD, Chair
Donna J. Astiz, MD
D. Craig Brater, MD
Stephanie A. Call, MD
Kelly J. Caverzagie, MD
Bergitta E. Cotroneo, FACMP
Craig DeGarmo
G. Dodd Denton, MD
Andem E. Ekpenyong, MD
Mark W. Geraci, MD
John Joseph Gough
Karen E. Hauer, MD, PhD
James D. Marsh, MD
Diana B. McNeill, MD
Lauren Meade, MD
Amy B. Zelenski, PhD

Educational programming remains a major focus for the Alliance. The AAIM Educational Program Planning Task Force (**Figure 2**) continues to develop plans for the new meetings format, beginning with the 2016 AAIM Skills Development Conference and the new Academic Internal Medicine Week 2017. The energy of this group is enormous and it has already completed a considerable amount of work. The new Academic Internal Medicine Week, with participation from all five organizations as well as the larger constituency groups, will undoubtedly provide a larger forum to enhance our educational offerings and extend our reach. In addition, the AAIM Skills Development Conference will hopefully bring more members of the academic internal medicine community to the table, particularly junior faculty who will be able to garner specific skills and develop their careers. In addition to planning for the future, we have enjoyed a great deal of success in our current meetings. Academic Internal Medicine Week 2015 in Atlanta, GA, was our second largest ever, and the 2016 APDIM Spring Conference in Las Vegas, NV, promises to break last year's registration records.

In addition, we have had a clear presence on the national stage. So far in FY 2016, the Alliance hosted the AAIM Subspecialty Summit (October 11, 2015), which focused on the question of "all-in" participation for the fellowship match and a uniform start date for fellowship, and The Third Consensus Conference on the Physician Investigator Workforce (November 12–13, 2015). AAIM leaders also have actively participated in several important stakeholder meetings including two internal medicine leadership summits convened by the American Board of Internal Medicine in April and November 2015.

A new priority for this year as well as the year ahead is that of member engagement, with a focus on the new member experience, member recognition programs, easy-to-access discussion forums, and the creation of local "ambassador" programs to heighten recognition of the value of Alliance membership at the institutional level. AAIM is undergoing a complete renovation of its website and content management system. We are excited to offer more web-based educational offerings, including the successful AIM webinars, the new CDIM webinar series, and the online learning modules Scholarship Pearls developed by the CDIM Survey and Scholarship Committee. Work is in progress to develop more

FIGURE 2. AAIM Educational Program Planning Task Force

Dominick Tammaro, MD, Chair
Michael S. Bronze, MD
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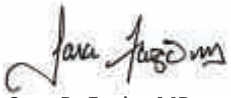
web-based resources so that members may participate even when unable to attend a meeting.

One of the aspects that I have most enjoyed as the Alliance has brought together its constituent organizations is the incredible degree of collaboration across both councils and committees. Examples include the work of the AAIM Graduate Medical Education Financing Task Force that made recommendations to the Institute of Medicine, the AAIM Duty Hours Feedback Writing Group that provided comment to the Accreditation Council for Graduate Medical Education, the Undergraduate Medical Education Task Force on Competency-Based Education, and the white paper on wellness recently written by the AAIM Education Committee. I often hear from members that it has been an incredible experience for them to get to know individuals across organizations and work on projects that benefit the entire internal medicine community.

In closing, I feel very privileged to work with such an incredible group of talented and inspirational individuals and want to express my appreciation to all of our volunteer leaders and to our members as well as to a staff that is truly second to none. Your support and hard work have been truly outstanding, and I look forward to seeing more in the year to come.

Sincerely,



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Alliance for Academic Internal Medicine

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

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The Need and Role for Dedicated Physical Exam Teaching Rounds

Declining abilities in physical examination in today's learners have been well documented (1-4), and there has been increasing interest in rekindling bedside skills (5,6). The third-year internal medicine (IM) clerkship represents a prime opportunity to build on the foundations of physical examination skills instruction that students typically receive in the first two years of medical school (7). Lamentably, the current training environment may not be particularly suited to improving third-year student physical examination skills. Dedicated real-time teaching of physical examination now has taken a minor role in IM attending rounds because of competing clinical demands, rounding practices away from the bedside, and duty hour requirements (8-11). Additionally, faculty physicians and senior house officers often lack confidence in their own physical examination skills (2,3). Thus, these preceptors may not be modeling appropriate techniques or routinely incorporating physical examination teaching into clinical activities. Furthermore, preceptors may not be familiar with more practical methods in physical examination instruction such as a hypothesis-driven approach (12).

Students report conflicting information on how often they are observed performing physical examination while in the IM clerkship. Results from the Association of American Medical Colleges graduation questionnaire suggest that most students are being observed performing physical exams during their IM rotations (13). However, this data set does not capture details on the frequency or quality of such observations. Other studies from the past decade offer a conflicting view and demonstrate an alarming paucity of direct observation of student physical examinations (14-16). Taken together, these data—derived entirely from self-reported behaviors—suggest that students are receiving some mentored hands-on instruction in physical examination. At worst, though, these data reflect that students are being observed once or twice by a relatively inexperienced preceptor during their IM rotations.

Given the perceived knowledge deficits of IM learners and the lack of dedicated teaching on this skill set, we believed third-year students would benefit from dedicated practice in physical examination while completing their IM clerkship requirements. In the 2014–2015 academic year, we piloted physical exam teaching rounds (PETR) at our institution. Our primary outcome of interest was how often students reported being observed performing physical examinations.

Our Intervention

Our third-year students rotate on the IM clerkship in eight-week blocks consisting of approximately 35 students. In the 2014–2015 academic year, we instituted PETR as shown in **Figure 1**.

FIGURE 1. Institution of Physical Exam Teaching Rounds (PETR)

	PETR Format	Students (n)
Control Group	Not offered	69
First Intervention Group	Facilitated by faculty	33
Second Intervention Group	Facilitated by faculty and volunteer IM residents	98

PETR occurred at two of our teaching sites—a tertiary teaching hospital and a Veterans Administration hospital. During the intervention period, each student was assigned to at least two sessions of an hour-long PETR over a four-week block. Students were preferentially scheduled on "non-call" dates to minimize conflicts with other clinical responsibilities. Approximately two to three patients were examined during each PETR session. Sessions consisted of three to five third-year students and a facilitator. Prior to the session, students were asked to identify patients on their team who had interesting findings and would be amenable to a group of learners.

PETR facilitators included two core faculty members, occasional faculty volunteers (general internists and hospitalists), general internists and hospitalists, a chief resident, and volunteer IM residents. Resident volunteers who had limited bedside teaching experience could opt to initially shadow a faculty preceptor prior to leading PETR independently. Resident volunteers also were given optional readings and brief "flipped classroom" online videocasts to prepare them with teaching scripts for common bedside teaching scenarios. These teaching topics included the approach to the patient with heart failure, the evidence-based pulmonary exam, the exam for cirrhosis and ascites, and the approach to systolic murmurs.

Methods

We collected student responses on our end-of-clerkship evaluation. Agreement with having a physical exam observed was scored on a six-point Likert scale (henceforth called the "agreement score"). Using data from our 2014–2015 student evaluations, we performed a one-way analysis of variance test to compare the effect of the PETR format on agreement to having a physical examination.

With improved clinical efficiency throughout the year, residents might have more opportunities to teach physical examination. We were concerned that improvements, if at all, in the agreement score over the academic year might simply represent the natural maturation of students and residents as clinicians. To correct for this possibility, we performed a

multiple regression analysis that compared student ratings independent of the time point during the academic year.

Results

During the intervention period, there was a statistically significant increase in agreement that the students had their physical examination observed directly by a resident or fellow. However, there was no statistically significant increase in agreement that students had their physical examination observed directly by an attending physician (**Figure 2**). Unpaired two-tailed t-tests showed an increase in resident or fellow observations ($p = 0.004$). In a multiple regression analysis with agreement score as the dependent variable, PETR demonstrated a significant effect on frequency of physical examination observation that was not accounted for by the time of the academic year (**Figure 3**).

Discussion and Conclusions

Dedicated teaching rounds significantly increased opportunities to observe student physical examinations during the 2014–2015 academic year. Because the control group rotated earlier in the academic year, the increased rate of direct observation of student exams during the intervention could be related to the natural improvement of residents as teachers.

FIGURE 2. Agreement Scores by Intervention Group

Mean Agreement Score	Control Blocks (n = 69)	Intervention Blocks	
		PETR: Faculty Only (n = 33)	PETR: Faculty and Residents (n = 98)
Observation by resident/fellow	5.1	5.5*	5.5*
Observation by attending physician	3.8	3.7	4.2

F*ANOVA (single-factor): $p = 0.007$

FIGURE 3. Effect of Each Variable on Agreement Scores

	Effect on Agreement Score	95% Confidence Interval	P Value
Time of academic year	–0.13	(–0.33, 0.06)	0.18
PETR: Faculty	0.57	(0.097, 1.0)	0.02
PETR: Faculty and residents	0.90	(0.17, 1.6)	0.02

However, our multiple regression analysis controlled for time during the academic year and still showed a positive impact.

Practically, PETR are feasible within the context of the IM clerkship, but this intervention requires a significant time investment by faculty. We expanded our pool of potential facilitators by seeking resident volunteers. While this approach may have resulted in less experienced facilitators, teaching by "near peers" has growing support in the literature (17). In fact, PETR may still be effective even when led by facilitators less experienced than residents. A recent report found that bedside teaching rounds led by senior medical students are valuable for junior and senior students alike (18).

Obviously, our results are based on self-reported activities. We did not measure more meaningful outcomes such as improved examination skills or improved application of the physical examination in clinical reasoning. However, preliminary evidence shows that PETR can have more durable effects. For example, Roberts et al found that conducting PETR in a similar format to our group actually improved third-year student physical examination scores on objective structured clinical exams (19).

We believe PETR are a valuable addition to the clerkship experience and fill a critical educational void. While limited in time and scope, at minimum they facilitate direct observation of student examination skills. There are likely other benefits of PETR beyond direct observation that merit further investigation.

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continued on page 6

continued from page 5

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Engaging Residents in Population-Based Care through a Panel Management Curriculum

Residency curricula must reflect the shift in orientation of primary care delivery toward population-based care. Population-based care involves teams providing proactive care to all patients within a clinician's panel, regardless of their availability for face-to-face care. Panel management, a key strategy for providing population-based care, involves identifying those patients within a clinician's panel who have gaps in care. The literature on panel management identifies four key components: a database for sorting patient information, protected time for clinicians to direct activities to close identified care gaps, staff with both training and time, and structured workflows (1). Although many primary care clinics have incorporated panel management, its role in residency curricula is less well established, despite being required by the Accreditation Council for Graduate Medical Education (ACGME).

We describe a panel management curriculum that 1) satisfies the ACGME requirement, 2) exposes residents to team-based population care, and 3) engages residents in ambulatory quality improvement that is inspired by the needs of their own patients. Additionally, this curriculum facilitates evaluation of milestones associated with the physician competencies systems-based practice (SBP) and practice-based learning and improvement (PBLI). We discuss implementation of this curriculum within an academic primary care clinic at an urban community hospital.

Innovation

Theoretical Framework

Knowles' theory of andragogy emphasizes that adults learn best when content is problem-based, immediately relevant, and communicated through direct experience (2). Therefore, we structured our curriculum to involve learners in each step of panel management, in contrast to nonteaching settings where panel management is carried out by nonclinician staff with clinician oversight (1,3). We teach the mechanics of panel management in the context of the Chronic Care Model (4), which is the theoretical framework for our learning objectives (**Figure 1**).

Curriculum Overview

Our curriculum is composed of both didactic and experiential components. The didactic component addresses primary care delivery system design, quality improvement, clinical communication skills (including motivational interviewing), and guidelines for chronic disease and preventive care. The experiential component has two levels: foundational panel management and advanced panel management. Only after demonstrating proficiency in the foundations of panel management do interns transition to advanced panel management.

Foundational Panel Management

Using a worksheet based on the Plan-Do-Study-Act (PDSA) cycle from the Model for Improvement (5), residents use population management software (i2iTracks) (6) to sort and analyze prespecified data from their patient panel to identify deficiencies with respect to established standards of care (**Figure 2**; Appendix 1: Panel Management Project Worksheet and Appendix 2: Sample Panel Report are available online at www.im.org/Publications/Insight). They propose a specific goal and interventions to address the identified care gaps. This step involves investigating barriers to chronic disease self-management and exploring solutions with patients by telephone. Residents collaborate with the care team to carry out their interventions, which may include obtaining updated laboratory data, rebooking patients, and summoning resources both within the clinic and in the surrounding community. After a prespecified time, residents analyze an updated panel report to identify successes and opportunities for further intervention. They refine the same goal or begin a new PDSA

FIGURE 1. Learning Objectives and Curricular Activities Linked to Components of the Chronic Care Model

Learning Objective of Panel Management Curriculum	Activity during Panel Management Session	Component of Chronic Care Model
Review standards for chronic disease and preventive care relevant to panel	Didactic activities and using embedded guidelines in EHR	Decision support
Use population management software in clinical practice	Using panel data to identify gaps in patient care	Clinical information systems
Work effectively within inter-professional teams and to develop leadership skills in care coordination	Address care gaps utilizing health care system and community resources	Delivery system design/community resources and policies
Develop motivational interviewing-based counseling skills	Phone-based motivational interviewing	Self-management support

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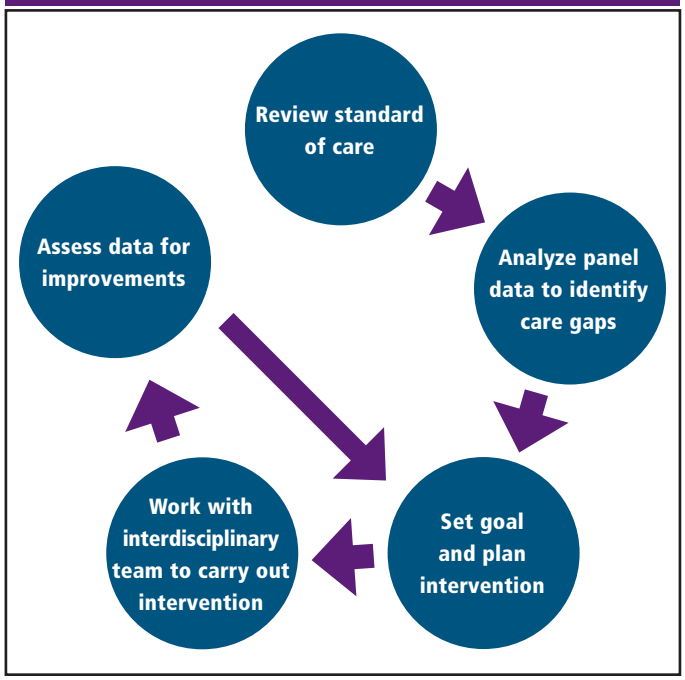
FIGURE 2. Steps of Foundational Panel Management Cycle



cycle. Using this procedure, residents create improved quality metrics for their patients. For example, one resident reduced the percentage of her diabetic patients with an HbA1C greater than 9% from 40% (10 patients) to 12% (three patients) within six months. Another resident increased the rate of mammography screening from 30% (eight patients) to 79% (19 patients) within six months.

Advanced Panel Management

Initially, the experiential component of our curriculum was limited to foundational panel management. However, resident interest in more extensive interventions (often involving health indicators not available in i2iTracks) motivated us to experiment with using panel management as a bridge to ambulatory quality improvement projects (Appendix 3: Advanced Panel Management Workflow is available online at www.im.org/Publications/Insight). For example, after mastering the foundational panel management process, one resident wished to increase the safety of chronic opiate prescribing for his patients. He sorted his panel to identify patients receiving chronic opiate therapy to determine the percentage that had been appropriately risk stratified and had a controlled medication use agreement on file. He subsequently developed a standardized workflow for safer opiate prescribing throughout our clinic.

Four key features distinguish advanced from foundational panel management: residents may engage in primary data collection to obtain data not available within our clinical database, residents must review the literature to identify existing tools and strategies to address the identified care gaps, residents are encouraged to undertake systems-level improvements related to interventions, and projects have the potential to develop into scholarly work.

Implementation

Implementation of this curriculum is feasible without significant additional faculty resources and can be integrated into variable scheduling models. When we initiated this curriculum in 2009, our residency program was using a traditional block schedule. In that format, each resident was scheduled for 11 sessions per year, which were clustered during subspecialty rotations. Sessions were composed of one hour of didactics followed by three hours of experiential learning and were facilitated by one dedicated faculty member. We recently transitioned to an X plus Y curriculum (every fourth week is ambulatory medicine). In this format, each resident is scheduled for one session during each ambulatory week. Each clinic preceptor supervises sessions in which three residents see patients and one does panel management. Sessions consist of four hours of experiential learning while the didactic component is delivered as independent study of assigned readings, electronic modules, and small group instruction during our "academic half-day" (Appendix 4: Structure of Didactic Curriculum is available online at www.im.org/Publications/Insight). Sessions take place in our continuity clinic so that residents have direct access to nonclinician care team members.

Faculty Development

We train faculty to supervise panel management by discussing session structure and processes and reviewing the printed materials contained in the appendices during primary care division meetings. Quality improvement theory and motivational interviewing are taught by dedicated faculty with formal training in these subjects.

Evaluation

Panel Management as a Tool to Evaluate ACGME Milestones

In addition to teaching residents the theory and practice of population-based care and engaging them in ambulatory quality improvement, this curriculum has enabled us to evaluate ACGME milestones associated with SBP and PBLI competencies we had struggled previously to meaningfully evaluate (Appendix 5: Evaluation Form is available online at www.im.org/Publications/Insight).

Resident Evaluation of Curriculum

This curriculum has been well received by residents. On an exit survey, 92% indicated that panel management is a valuable addition to their ambulatory medicine experience; 70% agreed that the time allotted was adequate to engage in meaningful activities; and 80% stated that both the care of their patients and the quality of their experience in their continuity clinic improved as a result of the curriculum.

Challenges

During six years of experience with this model, we have been particularly challenged in achieving accurate patient empanelment and in evaluating the effectiveness of our model.

Conclusion

In our experience, this curriculum has accomplished four essential goals: engaging residents in population-based care in accordance with ACGME standards, empowering residents to work within interprofessional teams to improve care, meaningfully evaluating SBP and PBLI milestones, and promoting ambulatory quality improvement and scholarly activity related to improving primary care. This curriculum works in two scheduling formats and we are confident that it could be further modified to meet the needs of other training programs. Further study is needed to assess the impact of this curriculum on resident career choice and patient outcomes.

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Faculty Development in ACGME Training Programs: The Challenge

Faculty development is a challenge for many departments and institutions (1). As hours for training have decreased, the need for the most effective teaching programs and faculty teachers increases. Although it is a common Accreditation Council for Graduate Medical Education (ACGME) program requirement, specific definitions or requirements for faculty development are not provided (2). As a result, many program directors and department chairs remain uncertain about which activities meet this standard. The intent of the faculty development requirement is to encourage innovation in the development of programs that fit local needs. The underlying goal is for programs to facilitate faculty development skills such as assessment, feedback, and curriculum improvement (3). This article provides a useful template for program directors and department chairs to create faculty development programs, which is especially important as Clinical Learning Environment Reviews (CLER) are under way.

What Is Known about Faculty Development

In the context of ACGME, faculty development focuses on skills that apply to the educational and clinical learning environment for residents and fellows. These skills include education, clinical skills, research, administration, and mentorship domains, with particular emphasis now being placed on patient safety and quality improvement. Faculty development has traditionally occurred or been available through self-directed, departmental, institutional, and professional organization educational programs (4).

Under the self-directed model, the individual development may be prompted by departmental leadership evaluation of faculty or perceived or real deficits based on learner evaluations.

At the department level, conferences that specifically focus on faculty development may be limited to research and clinical missions. Residency Review Committees (RRCs) may not accept these traditional departmental didactic sessions as an appropriate faculty development program for training programs.

Many institutions offer continuing medical education (CME) activities for faculty development. An example of an institutional faculty development program is the University of Michigan Medical Education Scholars Program—a one-year course that focuses on faculty development in educational leadership and scholarship (5). However, few institution-based programs focus exclusively on attending physicians and participation may be limited due to cost, scheduling, and the increasingly limited discretionary time of faculty.

An ideal approach to faculty development is to achieve the greatest outcome while minimizing the use of resources, including faculty time.

CME activities related to faculty development in clinical, educational, research, and administration skills also are offered through professional organizations. These activities at times may dovetail with maintenance of certification projects. Many of these programs are one-time activities; however, several specialty societies have developed comprehensive ongoing courses. Examples include the Association of American Medical Colleges Medical Education Research Consortium (MERC) Program and the American College of Emergency Physicians (ACEP) Teaching Fellowship. MERC is a series of day-long courses aimed at teaching faculty educational research skills (6). The ACEP Teaching Fellowship involves several weeks of instruction on teaching skills, theory, and research (7).

Ownership of the faculty development program is largely dependent on the model employed, whether it be an organizational strategy, fellowship, comprehensive institutional or departmental program, workshop or seminar, or individual activity (8).

Action Items

We suggest the following individual or self-directed, departmental, institutional, external, and hybrid models to

FIGURE 1. Action Items

1. Identify faculty development gaps and needs, such as quality improvement and milestone assessment.
2. Meet with individual faculty members to develop a plan.
3. Utilize existing programs or develop new ones that can be shared among departments or institutions.
4. Determine what is needed by residents and the educational paradigm to create and meet the programs' educational needs.
5. Annually review faculty, program, and institutional plans for effectiveness.

meet the requirement for faculty development and to enhance the educational skills of faculty (**Figure 1**).

An ideal approach to faculty development is to achieve the greatest outcome while minimizing the use of resources, including faculty time. The goal should be to maximize faculty's exposure to developmental activities that are common to all faculty members and customize as needed.

Institutions can develop comprehensive faculty development programs on subjects common to all teaching faculty, including but not limited to bedside teaching, instruction on ACGME core competencies, introduction to milestones, and providing resident feedback and evaluation.

FIGURE 2. Sample Individual Faculty Development Plan

Name:

Academic Year:

Date:

Date of Evaluation:

Education

1. Attend at least three institutional faculty development sessions.
2. Earn at least 4.0 continuing medical education credits in faculty development.
3. Attend 50% of departmental faculty meetings.
4. Attend 33% of resident didactic conferences.

Clinical Skills

1. Attend at least one simulation center training exercise.
2. Attend a 6.0 hour ultrasound training session.
3. Earn at least 80% resident evaluations of "excellent" or "outstanding."

Research

1. Submit one project for institutional review board approval. Work with a resident, if possible.
2. Submit one completed project for publication.

Administration

1. Participate in one departmental performance improvement project.
2. Complete all resident evaluations within 30 days of completion of the rotation.

Mentorship

1. Assist one resident with a didactic lecture.
2. Mentor a resident undergoing remediation, at the discretion of the program director.
3. Give one lecture to the emergency medicine interest group.

It is important for faculty to focus personal academic development on an idea that they are passionate about and that is aligned with the mission of the funding organization.

These programs need to be repeated and recorded to ensure all faculty have access. These activities may be developed by one department and shared or adapted by other departments and divisions.

Beyond institutional and departmental activities, individualized faculty plans are needed. There are two aspects to individual faculty development: based on the individual's personal interests, such as education, research, or administration and directed by learner evaluations and peer evaluations (9). The chair or program director meets with the individual faculty at least annually to review performance, including learner evaluation and didactic evaluations, and to address future goals. Together they develop an individualized faculty development plan that includes enrollment in educational faculty development programs, self-directed learning, academic projects, quality improvement projects, or other topics. Learning plans help ensure faculty members are engaged in the process. It is important to review faculty development activities regularly with department leadership to ensure faculty growth (**Figure 2**) (10).

Obtaining funding to support faculty development can be challenging. It is important for faculty to focus personal academic development on an idea that they are passionate about and that is aligned with the mission of the funding organization. Funding sources include the federal government, foundations, and specialty societies (11).

How You Can Start Today

1. Review learner evaluations to identify gaps where individual faculty members can focus faculty development.
2. Investigate which institutional or professional organizations or societies provide faculty development programs.
3. Survey faculty for common faculty development needs and themes.
4. Meet with individual faculty members at regular intervals (at least annually) to review identified gaps and individual goals.

continued on page 12

continued from page 11

The underlying goal is for programs to facilitate faculty development skills such as assessment, feedback, and curriculum improvement

5. Direct faculty toward existing faculty development programs that address their gaps and interests.
6. Review program and institutional requirements as they relate to CLER.

What You Can Do in the Long Term

1. Work with your institution, or partner with others, to develop faculty development programs that are common to all teaching faculty, such as bedside teaching skills, feedback, and evaluation skills.
2. Develop programs that improve patient safety and quality as they relate to the residency training environment.
3. Customize activities that are specialty specific.
4. Develop mechanisms (funding, protected time) to enroll faculty in these development programs.
5. Work with institutional and departmental leadership to build a culture where faculty development is valued.

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Medical Grand Rounds: Cornerstone or Fossil?

With ever-growing demands on faculty time and effort, increasing regulatory and documentation requirements, and continually shrinking assets available to meet the missions of academic departments of internal medicine, virtually every activity that consumes precious resources has come under scrutiny to assess its value and determine whether continuation or modification is justified. One such activity is the traditional medical grand rounds (MGR), most often a one-hour weekly conference that all faculty and learners are expected to attend. Is MGR such a critical component of departmental function that it must be continued regardless of cost (cornerstone) or has it outlived its usefulness to modern departments (fossil)?

Virtually every activity that consumes precious resources has come under scrutiny to assess its value and determine whether continuation or modification is justified.

Cornerstone

Proponents of the traditional weekly MGR identify a number of factors to support its continuation.

- MGR brings the entire department together, fostering camaraderie, collaboration, and socialization that promotes departmental cohesion.
- MGR lectures typically present cutting-edge science to which the average faculty member may not otherwise be exposed.
- Faculty attendance sets an example of both lifelong learning and organizational responsibility to residents and students.
- MGR typically provides continuing medical education (CME) credits to staff attendees.
- As an hour-long conference, MGR consumes less than 2% of a typical faculty workweek.
- When scheduled at the beginning or end of the work day, MGR causes little disruption to the faculty workday.
- While many other required activities already exist, such as departmental, divisional, and medical school meetings; hospital medical staff meetings; accountable care organization and clinical practice meetings; and mandatory training in a host of areas, MGR may be the only required meeting that provides bona fide medical education to faculty physicians on a regular basis.

Fossil

Proponents of changing or completely eliminating MGR cite contrary views.

- Practicing at multiple outpatient sites and hospitals, often a considerable distance from the lecture hall, can preclude attendance of clinicians with patient obligations that cannot be reasonably delayed.
- Aside from faculty within the same subspecialty (or sub-subspecialty) as the speaker, most faculty practice as general internists, with subspecialists at best maintaining a general internist's level of expertise outside his or her own discipline. As a result, information on a highly specialized treatment or procedure, such as the latest coronary revascularization technique or newest chemotherapeutic regimen, is rarely applicable to most of the audience, since they obtain consultation for decisions involving such highly specialized decisions. Presentations beyond their scope of practice are usually perceived as minimally relevant. Smartphones have provided a simple way for disinterested attendees to be physically present while performing other work deemed more important than the content of the conference.
- MGR is usually presented at a knowledge level well above that of medical students, some residents, and most fellows from other disciplines. The presence of faculty attendees spending most of the hour texting or answering emails may not be a good example to set for those early in their careers. Duty hours limitations can make it even more difficult for learners to attend MGR.
- CME credits have become progressively easier to obtain. Many credit-earning activities can be performed online or submitted in hard copy to sponsoring organizations and are time-flexible. Full-time faculty in particular have more than ample alternative opportunities to gain credits and can pick and choose topics more relevant to their practices. Many of these opportunities are free or available at a nominal fee.
- As departments have evolved to increase clinical revenues and meet greater educational requirements, most programs have growing numbers of faculty practicing at multiple hospitals across a metropolitan area, perform outreach care at remote sites, and provide outpatient care at geographically separate sites. These sites can be located a considerable distance from the lecture hall, adding commuting (and perhaps parking) time to the faculty task. As such, a one-hour conference can easily become a two or 2.5 hour commitment.
- Practical logistics can greatly increase the time requirement for attendance. Beginning- or end-of-day conferences may detract from pre-rounding or pre-clinic preparatory time or necessitate returning to a remote practice site to finish the day's work after the conference.

continued on page 14

continued from page 13

- The number of time-consuming required activities continues to grow; billing privileges, medical staff privileges, and even faculty status could be lost if such requirements are not met. When faculty need to triage their time, these activities supersede educational conferences, which they may often find of little personal benefit. Departmental and divisional leaders rarely have the authority to excuse their faculty members from these other commitments.

Certainly, additional arguments can be made on both sides of this sensitive issue. Similar to other decisions to be made by academic departments of medicine, there is no clear right or wrong answer to this question. As in other situations, where disagreeing parties each have substance to their arguments, an approach to compromise may be the best solution. As department leaders, we are obligated to respect the value of our most precious resource: the time and effort of our faculty. We should maximize the return on the time we ask them to invest in any activity and be sure we have exercised our due diligence to ensure justifiable value.

Efforts to optimally schedule MGR for the greatest number of faculty members are a good start. Ensuring that scientific topics are pertinent to the practices of all faculty members will also add value. Incorporating other required meetings (quality and safety; high value care; departmental staff meetings; mandatory training courses for HIPAA, risk management, new departmental technologies, and residency issues; discussions of maintenance of certification modules) into the MGR schedule would save time and effort from faculty's overall schedule. Reducing the frequency of MGR to monthly or quarterly events is another consideration. Other options will likely be considered with more in-depth discussion of this question.

As our resources shrink and workloads grow, everything we do must be "on the table" and subject to critical review for its value. An open, frank discussion within departments about issues such as MGR is likely the best first step to maximizing the value of the time and effort of our faculty.

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The *Insight* Editorial Board encourages AAIM members to submit manuscripts of "Opinions and Commentaries" on topics related to issues facing departments and programs of internal medicine. Note that the content of this section represents the opinion of the author and not the leadership or membership of AAIM.

Struggles in Infectious Disease

Infectious disease (ID) fellowship applications have diminished considerably. More than one-third of fellowship positions for the 2016 match went unfilled (1). This trend is alarming for such an essential specialty. Several other specialties are also suffering from a decrease in applications, which is likely a result of compensation. Our ID division at Creighton University Medical Center has been trying many different approaches to showcase the importance of our specialty in an attempt to foster interest within our medical students and to hopefully increase future application rates.

One approach that our ID division has taken to halt the decline in the number of medical residents entering the ID field has been further engagement with medical students, residents, and fellows in rich mentoring opportunities. Stephen B. Calderwood, MD, former president of the Infectious Diseases Society of America, suggested increasing mentoring opportunities to increase recruitment. We are actively involved in teaching second-year medical students and more than 75% of their lectures are presented by ID faculty. We also have addressed this engagement with microbiology teaching in our medical school by increasing the involvement of our ID physicians to expose the specialty to medical students early in their careers.

As a division, we have also participated in medical specialty interest groups to speak to medical students about the field and answer questions. These informal meetings make ID physicians available for conversations with medical students regarding their careers and interesting topics in their specialty. At these events, we elaborate on the many career choices available within the specialty, such as global health, various federal health departments, state epidemiology, hospital epidemiology, and the new field of antibiotic stewardship. These meetings lead to medical students shadowing in our clinics and increasing their involvement with our research projects. The ID specialty does not appear to have a major presence in medical school education as compared with other specialties such as cardiology or pulmonology. Our hope is that earlier exposure to and increased familiarity with the ID specialty will factor into students' future career choices.

We believe it is important to encourage participation with research early in medical careers. At Creighton University Medical Center, the department of internal medicine recently formed a dedicated internal medicine research chief resident position. This position has proven to be very effective at engaging not only our residents but also our medical students. We were able to formally create a research group that included medical students and internal medicine residents to increase their research activity. Our research group meets twice a month to discuss research in progress and to brainstorm possible new projects. Since implementing this research group, we have seen many residents and medical students work together to publish and attended national conferences to present their cases. These collaborations have resulted in multiple abstracts and published journal articles. Our goal is to increase exposure to research to early medical professionals as well as increase interest in our specialty.

Since implementing this research group, we have seen many residents and medical students work together to publish and attended national conferences to present their cases.

The ID fellowship at Creighton University Medical Center has been in place for more than 30 years. We have made the education experience for our ID fellows our top priority and have implemented the suggested changes to stimulate interest beginning in medical school and continuing throughout residency. Yet in the 2016 academic year, we were unable to recruit an ID fellow. This is not a rare occurrence; in 2015 approximately 51% of 138 certified ID programs were unable to fill their fellowship positions, which is a sharp contrast to other fields such as cardiology or gastroenterology (2).

As ID physicians, we are very approachable and foster an environment for learning, but the elephant in the room is an inability to translate it into more residents entering the ID field. The problem remains that our value to the hospital is not well defined and our compensation is lower than other medical disciplines. For example, the Association of American Medical Colleges physician salary data show 75th percentile compensation for an assistant professor in ID is $168,000 versus $252,000 for an assistant professor in internal medicine as reported in survey year 2012–2013 (3). We often hear from residents who are graduating with large student loans that they prefer higher compensation as a general internist as opposed to lower compensation and the additional two to three years of training needed to become an ID physician.

continued on page 16

continued from page 15

Our hope is that earlier exposure to and increased familiarity with the ID specialty will factor into students' future career choices.

We have taken the approach of teaching learners earlier in their career, stimulating interests by exposing and speaking about the field of infectious disease, and promoting scholarly activity by engaging students and residents in research projects. However, we are still faced with decreased interest in ID. This trend is a national crisis for ID programs and we need to address this problem as a whole medical community.

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Strategies for Teaching Physical Diagnosis at the Bedside

A physician's physical diagnosis skills are essential in the practice of humanistic, cost-conscious, evidence-based medical care (1-3). Many topics learned in medical school may become obsolete, but physical examination skills will never expire, and yet instruction on the physical exam remains an undervalued component of medical education (4). Physicians at all levels lack training and confidence in their exam skills, and they undervalue reliable physical exam findings (3) and rely too much on diagnostic imaging. Such overreliance has been shown to contribute to numerous incidental findings. Further, the imaging may lack specificity, exposes patients to the cumulative risks of radiation, and contributes to excess health care spending (5-10). Medical learners often find it easier to order a test than to develop their examination skills (11). Teaching faculty may neglect to observe the key components of the exam, assuming that their students have already learned these skills. Current faculty may have reservations about teaching at the bedside if they lack confidence in their own examination skills (4).

Prior research has demonstrated that the physical exam is best learned through "deliberate practice" with real patients. "Deliberate practice" is an educational approach whereby learners repeatedly practice a skill and get immediate feedback on their performance of that skill. Mookherjee et al write, "A single teaching session that is anchored in deliberate practice may be more effective than multiple classroom sessions where deliberate practice is not used" (12). Prior research has shown that trainees best learn the exam when practicing on humans, rather than via lectures, videos, or simulations (13).

Proficiency at physical diagnosis is essential to the practice of medicine and is best taught via repeated, deliberate practice at the bedside. In this article, we outline key strategies for successfully teaching the physical exam at the bedside

Effective bedside teaching often requires the clinician to simultaneously be both clinician and educator, and it can be quite difficult to attend to diagnosing the patient while also diagnosing the learners.

(Figure 1). It is our goal to rejuvenate bedside teaching at all levels of medical education.

Learner-Centeredness

Effective bedside teaching often requires the clinician to simultaneously be both clinician and educator, and it can be quite difficult to attend to diagnosing the patient while also diagnosing the learners. Effective bedside teaching is easier to do when the clinician is conducting dedicated physical diagnosis rounds, as distinct from direct patient care, but is more challenging when doing work rounds with a team. Diagnosing the learner requires asking questions more than giving information, and it is necessary to use open-ended questions, which push learners to provide supporting evidence for their answers (14). To create a safe learning environment, one should ideally start lines of questioning at "the bottom"

FIGURE 1. 12 Tips for the Aspiring Bedside Teacher

1.	Ask patient for permission to teach at the bedside, after explaining purpose and anticipated duration of encounter.
2.	Introduce yourself and all others in the room.
3.	Encourage questions from patient at any time during encounter.
4.	Respect patient privacy, modesty, and comfort throughout the exam.
5.	Avoid use of medical jargon wherever possible.
6.	Assign learner roles; ensure that all learners are engaged.
7.	Always begin a line of questioning at the "bottom" of the learner hierarchy.
8.	Ask higher-order, reflective, "I wonder…" questions rather than closed-ended, knowledge-based, lower-order questions.
9.	Encourage learners to consider the role of the maneuver in question ("How will this exam finding change management?").
10.	Model humility: admit to ignorance (Be willing to say "I don't know") and model self-directed learning.
11.	Remain flexible and be willing to let learners take discussion where it may.
12.	Give immediate, balanced, useful feedback to learners without embarrassing them.

continued on page 18

continued from page 17

All learners should respect the patient's privacy and modesty while attending to the patient's comfort throughout the exam.

of the learner hierarchy—that is, with the most junior members of the team (15).

Engaging all learners on the team is vital. How often have you witnessed four or more learners idly watching as they wait their turn to auscultate a murmur? Instead, assign each learner a specific role in advance. For example, one could pay particular attention to the patient's nonverbal cues. Another could be tasked with actively observing the room itself, taking in all clues that might provide information about the patient (for example, the wheeled walker in the corner, the crayon drawings on the windowsill for "Grandpa"). While the first learner is still performing the cardiac exam, you might ask the remaining learners to silently consider the next step in the workup if a new murmur is heard. Encourage learners to teach each other. The bedside teacher should encourage questions that direct further teaching and shared learning.

Deliberate Practice

Establishing competence at performing an exam requires directly observing learners and providing immediate feedback. When teaching how to assess deep tendon reflexes in a bedbound patient, be sure to have your learners replicate the exam after you have demonstrated it. Anticipate some of the common pitfalls with each maneuver and gently correct your learners when needed. If you are worried about the patient's willingness to be examined multiple times, have the learners first practice the maneuvers on each other.

Facilitated Learning

Instructors should decide upon a clearly defined learning objective(s) when initiating a bedside teaching encounter. Learners should be given the opportunity to demonstrate what they do know before you leave them with a clinical pearl. For example, ask, "How might we best assess this patient's volume status?" or remark, "I'm wondering if there might be some clues from the patient's cardiac exam that could help us to assess his volume" (16). When possible, teach learners about the relative value of individual diagnostic tests—that is, the likelihood ratios and other performance characteristics (17). Emphasize the tests that have the highest clinical utility first (for example, pulsus paradoxus, chest percussion, the straight leg raise) before moving on to those parts of the exam that promote better understanding of pathophysiology (for example, Hoover's sign, Derozier's sign), or that may simply be historically interesting (for example, Frank's sign). There are many excellent resources for this content (18,19). Of equal importance, teachers must be willing to say "I don't know" and model lifelong learning by looking up the answers to questions that arise. When wrapping up the session, have each learner teach back one thing that he or she learned or observed. Repetition promotes learning and also serves as feedback to the instructor.

Patient-Centeredness

Always ask permission to teach at the bedside, both in advance and immediately prior to the teaching encounter. Introduce everyone in the room and explain the purpose and expected duration of the encounter. Encourage learners to limit their use of jargon and to reassure patients that topics discussed during the session do not necessarily pertain to the immediate situations. All learners should respect the patient's privacy and modesty while attending to the patient's comfort throughout the exam. At the end of the encounter, ask the patient if he or she has any questions and thank him or her for participating in medical education.

Conclusion

Teaching at the bedside has been referred to as "perhaps the most difficult sort of teaching of all" (19). Unlike in the classroom setting, there are mostly unpredictable variables at every bedside teaching encounter. Nonetheless, we believe that aspiring teachers at any level of training can conduct effective, clinically relevant, learner-centered bedside rounds while also attending to the comfort and care of our patients. When it comes to learning the physical diagnostic skills, the physical exam, and clinical medicine, Louis Martinet perhaps said it best, in 1827: "It is at the bedside of the patient that the observer must study disease; there he will see it in its true character, stripped of those false shades by which it is so frequently disguised in books" (20).

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APPENDIX 1

Panel Management Project Worksheet

Name: _____

Date: _____

Continuity Clinic Attending: _____

1. Based on the data available in i2iTracks, what is the standard of care you want to achieve for your panel or a subgroup within it? (i.e., HbA1c < 7.0% for diabetic patients. Please include a reference.)

2. What is the current status of your panel with respect to this standard of care? (i.e., calculate the proportion of diabetics in your panel whose HbA1C is > 7.0%).

3. Set a goal and propose an intervention to improve care gap. Example: if goal is > 70% of diabetics will have HgA1C < 8%, then intervention might be:
   a) Make telephone contact with all patients whose HgA1C is > 8%
   b) Using Motivational Interviewing communication techniques, investigate key barriers to control for each patient (i.e., access, medication adherence, understanding of disease, competing priorities, etc.)
   c) Intervene as appropriate utilizing health system, community resources and inter-professional team (i.e., refer to self-management support resources, send lab slips, rebook patient, etc.)

4. What is the timeline for assessing the outcome of your intervention?

5. Analyze follow-up panel report.

6. Describe your results. What was successful and what didn't work? How might you approach your goal differently next time? Next steps?

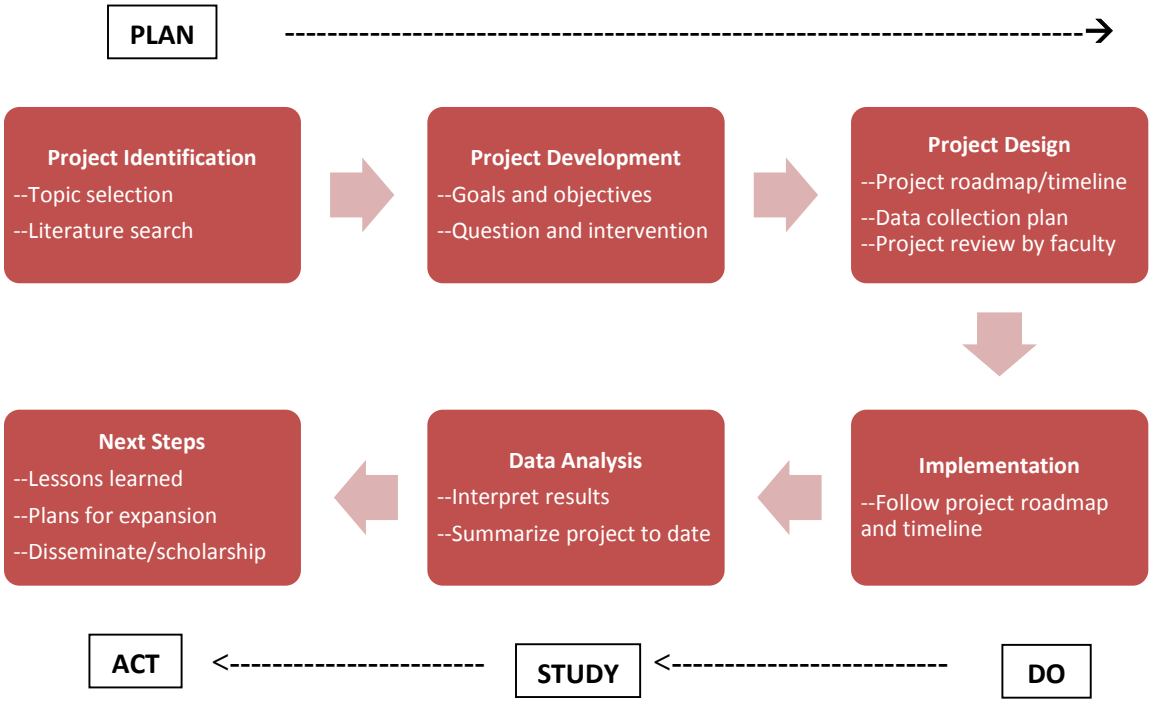
Run Date: 9/18/2015 10:08:48 AM
Location: All
Provider: All
Patient Count: 20

Appendix 2: Sample Panel Report

ID	DOB	NextApptDate	LastVisitDOS	HbA1c (Last Value)	HbA1c (Last Date)	Microalbumin / Creatinine Ratio (Last Value)	Microalbumin / Creatinine Ratio (Last Date)	BMI (Last Value)	Pneumovax (Last Date)
	12/16/1960	10/19/2015	7/29/2015	14.5	9/16/2015			32.66	
	3/31/1941	10/8/2015	9/2/2015	13.2	9/2/2015	984.1	9/19/2013	32.61	12/2/2014
	3/18/1974		3/20/2015	11.5	2/18/2015	293.6	2/4/2015	28.08	3/3/2015
	6/23/1945	9/22/2015	6/23/2015	8.7	6/23/2015	17	1/5/2015	40.89	2/18/2014
	8/22/1956		4/7/2015	6.8	1/4/2015			30.64	
	6/28/1955		9/8/2015	6.7	9/3/2015	3824.1	7/8/2013	38.78	2/27/2014
	12/21/1941	10/7/2015	7/21/2015	6.7	8/6/2014	< 3.9	7/10/2013	25.92	2/20/2014
	2/27/1964	11/10/2015	6/16/2015	6.6	6/9/2015			28.44	10/21/2014
	8/14/1948		5/1/2014	6.3	5/1/2014	1778.6	5/1/2014	34.14	5/1/2014
	4/26/1963	9/22/2015	9/3/2015	6.2	2/17/2015	4.5	3/19/2014	53.16	1/23/2014
	1/24/1952	9/25/2015	8/18/2015	6.1	11/24/2014			26.00	
	2/16/1973	12/15/2015	8/21/2015	5.8	2/27/2014			26.83	
	2/11/1956	9/29/2015	9/1/2015	5.6	9/16/2014			31.88	
	8/9/1955	9/24/2015	9/8/2015	4.8	8/20/2015			28.48	
	2/27/1960	9/28/2015	9/9/2015	4	8/12/2015			34.72	11/14/2013
	10/12/1987		2/3/2015						
	7/30/1962	10/1/2015	9/2/2015						12/18/2014
	6/26/1971		9/8/2014						
	10/4/1950		1/1/2015			378.4	10/27/2014	24.36	8/22/2013
	7/11/1979		3/17/2015					34.64	

APPENDIX 3

Resident Instructions: Advanced Panel Management



APPENDIX 4

Panel Management Didactic Curriculum

Structure of didactic curriculum in two scheduling formats

Topic	Traditional Block Schedule	X+Y Schedule
• Population-based care • Communication skills for health promotion • Guidelines for chronic disease care and preventive care • Approach to chronic opiate therapy in primary care • Approach to substance use disorders in primary care • Psychosocial dimensions in primary care	• 1 faculty member • 4 housestaff • 1 hour small group interactive session based on assigned reading	• Independent study of assigned reading with brief written reflection describing key points sent to primary continuity clinic preceptor at the end of each session
Motivational Interviewing (MI)	Same format as above but taught by behavioral health faculty or primary care faculty trained in MI	Taught by behavioral health faculty during protected teaching time distinct from panel management session (our "academic half-day")
Quality Improvement (QI)	Noon conference lectures Institute for Healthcare Improvement Open School electronic modules (1)	Academic half-day sessions Institute for Healthcare Improvement Open School electronic modules (1)

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APPENDIX 5

Continuity Clinic Evaluation: Panel Management

1. Resident proficiently utilizes population management database to identify care gap in patient panel. (PBLI 2)
2. Resident supports performance improvement cycles with appropriate medical literature. (PBLI 4)
3. Resident works effectively within an inter-professional team. (SBP 1)

The resident accomplished this to the level of:

[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Done with critical deficiencies or not done.	Learner/Beginner requires consistent assistance.	Manager requires occasional assistance.	Teacher/Leader Competent. Seeks feedback.	Expert/Attending level. Role model.	Not applicable

Self Assessment: Before giving feedback, ask resident what went well and what they could improve upon.

Comments:

a. What specifically did this resident do well?

b. How could this resident further improve?