Since the development and propagation of the six-competency framework, there has been a lack of understanding among both residents and teaching faculty of what systems-based practice (SBP) and practice-based learning and improvement (PBLI) entail [1–3]. In our anecdotal experience, these have been viewed as “soft” competencies, acquired incidentally as part of rigorous clinical training. This reflects cumbersome titles whose meanings are not intuitive to many physicians, few established teaching methods in either competency, and a lack of metrics for many of the corresponding program requirements. However, even as those metrics and training practices have emerged in other medical and surgical disciplines, psychiatry has been slow to adopt and disseminate them [4, 5]. As the Psychiatry Milestone Project began, multiple converging trends compelled our Working Group to pay particular attention to PBLI and SBP and to establish Milestones that will more closely align psychiatry with other specialties.

First, the nature of medical practice is changing in ways that will impact psychiatry. New physicians in all specialties are increasingly choosing employment in large groups/systems [6], and in these environments, they will be expected to join formal quality improvement (QI) processes. As large practices transform into Accountable Care Organizations (ACOs) under the Patient Protection and Affordable Care Act, that trend is expected to accelerate [4]. Psychiatry and allied behavioral specialties have outstanding potential for controlling costs and improving outcomes if we can appropriately prepare our trainees for that work [7–9]. Impending reforms in health care financing have also spurred interest in integrated and collaborative care as a specific practice model [10–12]. These modes of practice will demand skills that, in our experience, only a handful of departments currently teach well [13]. Atopt this, the continuing presence of suicide reduction as a National Patient Safety Goal [14] highlights the need for psychiatry and psychiatric training to join the work started by our general medical colleagues.

Second, an emphasis on quality and safety is woven throughout the Accreditation Council for Graduate Medical Education (ACGME)’s Next Accreditation System (NAS). The Psychiatry Milestone Project itself is an attempt to implement QI philosophies through continuous outcomes tracking in medical education [15]. Within NAS, the Clinical Learning Environment Review (CLER) replaces institutional site visits and specifically assesses “opportunities for residents to report errors, unsafe conditions, and near misses” and “how sponsoring institutions engage residents in the use of data to improve systems of care, reduce health care disparities and improve patient outcomes” [16]. Our experiences as CLER “alpha test” sites showed that ACGME site visitors are seeking evidence of resident engagement in systems-level improvement throughout the institution and that no department or service line will be exempted.

Third, PBLI is increasingly important to board certification and licensure. The American Board of Psychiatry and Neurology (ABPN) Maintenance of Certification (MOC) process requires annual self-assessment, lifelong learning, and documented practice modification based on patient/peer feedback [17]. With certification potentially tied to Maintenance of Licensure (MOL) in the coming years [18], new graduates must be prepared for a career of rigorous self-assessment and improvement.
Despite the emerging need, there is evidence from both the literature and our own experiences that psychiatry residencies in general are not yet able to provide rigorous education in PBLI or SBP. A critical barrier is faculty preparedness; since these competencies have not been emphasized in training, faculty members do not have the comfort or skill level to teach them in depth [19]. Therefore, in designing the Milestones for these competencies, we sought to provide concrete and achievable anchors for faculty and resident preparation. In this article, we outline how we proceeded from identified needs to practical Milestones and offer curricular resources to assist programs in preparing for the transition to NAS.

Development Process

Given that training directors already feel burdened by training and accreditation demands [20, 21], the Working Group explicitly sought to avoid creating new expectations or requirements. Instead, we focused on the existing program requirements and asked “what systems skills will a newly minted psychiatrist require to successfully navigate the next 10 to 20 years, and what activities would give evidence of those skills?” We were greatly aided by ACGME’s prior convening of an expert panel of bioethicists, practitioners, and scholars, who attempted to identify answers that cut across specialties [22]. Similarly, psychiatry’s position as a second-wave specialty within the Next Accreditation System allowed us to consider other specialties’ frameworks as starting points.

In PBLI, qualitative review of the prior work identified two general threads of relevance to psychiatry: continuing knowledge acquisition for evidence-based medicine (EBM, learning within one’s individual practice and patients) and formal QI techniques (learning by and within a system or team). Additionally, although it is more commonly considered under interpersonal/communications skills, our Working Group felt that teaching was a critical third competency within PBLI. Teaching a skill or concept is often a key step in consolidating learning. Furthermore, psychiatrists’ role as educators of other clinicians (whether in consultation-liaison or integrated care) demands particular attention to teaching skills throughout the practice lifecycle.

The Working Group’s development of SBP Milestones was greatly aided by Ranz and colleagues’ model [23]. That team field-tested an instrument of 60 observable resident behaviors and then subjected those data to factor analysis. Their analysis suggested four dimensions to SBP in psychiatry, conceptualized as a set of roles performed by psychiatrists to meet the comprehensive needs of the patient within and beyond the health care system. The four roles defined were (1) team member, (2) information integrator, (3) resource manager, and (4) patient care advocate. These roles, while not directly translated into the final version of the SBP Milestones, heavily influenced the content. For example, the sub-competency SBP-3 (community-based care) includes the roles of patient care advocate, team member, and information integrator. Beyond the Ranz model, the Working Group identified consultation as a separate SBP competency that may be uniquely important in psychiatry. That role is certain to grow in prominence with the rise of integrated and collaborative care models in mental health care delivery [11].

Curricular Expectations and Tools

To further familiarize psychiatric educators with the Milestones in these two competencies, we briefly review here the intent and core resident behaviors of each sub-competency. We also provide some suggestions for assessment settings and instruments that have been validated or otherwise demonstrated to be helpful. These methods are not specifically prescribed by ACGME or the authors, but they are the ones we have found to be helpful or that we intend to use ourselves.

PBLI-1: Evidence-Based Medicine and Individual Learning

The core skill of evidence-based practice is the formulation and answering of a searchable question [24], and this is often taught through journal clubs or EBM seminars. However, to implement EBM in practice, one must also recognize the limits of one’s existing knowledge (self-assessment).

A proactive approach, as required by the MOC/MOL process, goes further and requires that the learner anticipate future needs and seek out that information in advance (self-directed learning). Thus, by level 4 of this sub-competency, a resident would be expected to demonstrate self-assessment and self-improvement skills across the course of professional activities. The core underlying skills, including basic biostatistical proficiency and understanding of levels of evidence, are now taught in medical school and tested on the Psychiatry Resident-In-Training Examination (PRITE). Proficiency in self-assessment is often demonstrated through clinical supervision and the semiannual review, particularly when considering how the resident has responded to previous feedback. Critical appraisal of the literature can be assessed by a faculty discussant/evaluator during a journal club. Self-directed learning is likely best measured during outpatient rotations, where residents generally have more clinical autonomy and a greater sense of ownership over their cases. We would encourage, as part of regular caseload supervision, asking residents to identify their personal learning goals for an appropriate time unit (week, month, quarter) and then assessing progress on those self-directed goals. This simple
and low-effort intervention reinforces a habit that can then be carried into independent practice [25].

PBLI-2: Practice-Based Quality Improvement

Milestones for this sub-competency focus on the minimum essential quality improvement (QI) skills required to practice amidst anticipated health system changes. The best-studied QI curricula in psychiatry divide this into two parts: didactic knowledge and experiential learning [26, 27]; we replicated those threads in the sub-competency.

The didactic component should teach a resident the basics of the Plan-Do-Study-Act (PDSA) method, why this approach has garnered so much attention, and some of the common difficulties encountered in application. While such activities are almost universal in academic medical centers, our experience and the perception of ACGME leadership is that most faculty are neither familiar with such efforts nor comfortable teaching the topics [15]. Two model curricula exist specifically for psychiatry and could be used as a basis [26, 27]; the modules developed by Arbuckle et al. are specifically designed to be taught by faculty with enthusiasm but no prior experience in QI. More general didactic curricula, in some cases with multiple online modules, are available from the Institute for Healthcare Improvement [28], the World Health Organization [29], and the Department of Veterans Affairs [30]. Prospective users are cautioned that the material in these latter is mostly written from a general medical/surgical perspective. Residents may not immediately see the relevance unless it is augmented with psychiatry-specific examples and discussions, ideally customized to their local practice environment. Regardless of the didactic method, there is also a validated assessment, the Quality Improvement Knowledge Assessment Tool (QIKAT) [31], including psychiatry-specific QIKAT scenarios [26, 27].

As with most resident experiences, knowledge does not substitute for experiential learning, and thus, the second thread of Milestones calls for “active participation” in a QI project. Anecdotally, this has been an experience limited to motivated chief residents, and some programs have trepidation about universalizing it. However, we stress that the expectation for any individual resident is participation, not independence; we anticipate that a common model will be PGY-3s or PGY-4s designing and executing a project in teams through their continuity clinics. In published studies, residents have readily claimed ownership of such a project, and two PDSA cycles have been achievable over an academic year. A key component will be giving residents the opportunity to track their own performance data and compare it to group means. Aside from being an essential skill for future QI participation, this directly prepares them for the Performance-In-Practice component of MOC.

PBLI-3: Teaching

Education of patients and families is covered under other competencies, but psychiatrists are frequently called upon to educate other physicians and providers. Therefore, this sub-competency captures residents’ development as teachers, progressing from informal medical student mentoring towards formal curricula and presentations. The Working Group sought to emphasize the importance of teaching for all trainees without introducing undue demands on programs. The first step, teaching of early learners (primarily medical students), is nearly universal during inpatient and consult rotations. In programs that do not have rotating medical students, similar teaching could occur with other health professional students, nursing colleagues, or junior co-residents. The key is that as the resident progresses as a teacher, he/she moves from ad-hoc delivery of individual factoids towards an organized and intentional approach. This would likely include some readings or didactics in “the art of teaching”; shared curricula are available through AAMC’s MedEd Portal, AADPRT, and APA. Ultimately, this should culminate in an ability to teach peers and senior colleagues; we have envisioned this as a seminar or residency didactics presentation (common in many residency programs), but an observed and evaluated presentation at a national or regional conference would also be reasonable.

SBP-1: Patient Safety and the Healthcare Team

The framework of this sub-competency arises from two landmark Institute of Medicine (IOM) reports that focused on patient safety and identified critical skills for all physicians. The first IOM report, To Err is Human: Building a Safer Health System, focused attention on the specific issue of medical errors in the hospital setting [32]. Anchors in the first and third threads focus on engaging residents in hospital-based safety programs, a specific expectation of CLER visits. Almost every teaching hospital has such a program, but our experience is that residents are often not engaged with it, as reporting of errors and sentinel events is largely left to nursing staff. Breaking down that barrier is the single change needed to accomplish the majority of this sub-competency. Competency in this domain begins with simply learning the habit of noticing and reporting near misses that could harm patients. As a resident becomes practiced in the art of tracking and considering errors, he/she learns to ask “why?” Further progression includes regular attendance and eventual presentation at morbidity and mortality conferences. This culminates, at level 4, in the ability to contribute to a root cause analysis of an adverse event. This need not correspond to PGY-4; it could readily be achieved by the end of PGY-2, since many of those analyses occur in inpatient settings.
The second IOM report, *Crossing the Quality Chasm: A New Health System for the 21st Century*, focuses on the importance of communication in functional teams as the leading cause of preventable patient harm [33]. Correspondingly, the second thread of this sub-competency focuses on teaching residents to use structured communication tools such as checklists and handoffs for transitions of care. ACGME’s accreditation reviews suggest that many programs and hospitals have already implemented standard “sign out” forms, and assessment of these competencies could be provided by peer or faculty supervision of nightly hand-off conversations. Best practices against which to measure residents have been developed for medical specialties and transfer naturally to inpatient and consultation-liaison psychiatry [34, 35].

**SBP-2: Resource Management**

This second SBP sub-competency assesses residents’ ability to deliver “the right care, in the right place, at the right time”. Effective utilization of resources is conceptually simple but challenging to implement and assess in the current psychiatric delivery system. Cost containment and coordinating resources for patients are neglected elements of teaching and supervision of residents but important cornerstones of future medical practice [36]. However, as the Affordable Care Act is implemented, hospitals will face growing pressure to help physicians control costs. We anticipate the introduction of decision support tools and greater transparency for physicians (and patients) in the pricing of diagnostic and therapeutic services. In the coming decade, it will become reasonable to expect a resident to understand the cost of the interventions he/she has ordered and his/her utilization relative to peers. Before that point, while granular data may not be available, it is well understood that some choices (CT scans, generic medications) are more cost-effective than others (MRI scans, newer brand-name drugs) in the general case. Supervisors who are already rating residents’ decision-making are well positioned to factor the value of care into those evaluations; this is effectively a single question added to existing instruments. As residents recognize that a value-oriented attitude is favored, they should naturally begin to seek out cost-effective interventions. There is no specific framework for teaching high-value methods in psychiatry, but frameworks created for internal medicine are readily generalized [37].

**SBP-3: Community-Based Care**

Psychiatry has a strong tradition in community-based mental health care, tracing back to the 1960s transition of the chronically and persistently mentally ill from state hospitals to community mental health centers. The threads in this sub-competency highlight the key elements of community-based care, including the following: (1) working effectively in a community mental health care system—a required experience in psychiatry residency programs; (2) knowing and using self-help and community resource groups including AA, NA, and support and advocacy groups—a practice component of community mental health care, VA clinical rotations, and most outpatient experiences; (3) describing and employing prevention and risk reduction strategies in caring for patients and patient populations—common in child/adolescent psychiatry and likely translatable to work with chronically ill adults; and (4) recovery and rehabilitation programs—exemplified by the Recovery Model for mental health and addictions. This last thread has been slow to enter residency training and academic psychiatry [38, 39] but has been vigorously adopted in city, county, and state systems for addressing mental health needs and disparities.

Most of these skills could be taught and used in the outpatient setting, and the required institutions exist in every community, large or small. For most residency programs, teaching and assessing community-based care is likely not a matter of adding new curricula, but a way of emphasizing and rating residents’ ability to use what is already there instead. The Working Group has developed specific assessment instruments that target aspects of this sub-competency and may be useful starting points. If a specific curriculum in the Recovery Model is required, one has been developed that is grounded in Ranz’s original four factors [40].

**SBP-4: Consultation to Non-psychiatric Medical Providers and Non-medical Systems**

The consultant role is steadily increasing in importance as new systems of care take hold. Behavioral comorbidity is more the exception than the rule for today’s severely ill, hospitalized patient. Primary care practitioners have become the de facto frontline providers of mental health care, with psychiatrists working in integrated or collaborative care models. Residents preparing for the twenty-first century practice must have a deep appreciation for the role and boundaries of the consultant and the distinctions between consulting to the team or system (more frequent in military, school, business, and forensic settings) and consulting to the patient. Core consultation skills that constitute individual Milestones include clarifying the consultation question, assessing patient decisional capacity or competency, identifying and communicating clinical issues unrecognized by the treating provider or team, recognizing systems issues impacting the patient, developing appropriate recommendations for intervention, and integrating the mental health treatment into the patient’s medical care. The required 2-month experience in consultation-liaison psychiatry will usually provide the setting to both teach and assess these Milestones in a structured fashion.

Graduation-level Milestones in this sub-competency expect the resident to manage complex consultation results and
work efficiently as part of an integrated care team. The most common and anecdotal well-accepted learning experience would be a rotation in integration with primary care [41]. However, other models could also work, including traditional outpatient consultation. A key is that ratings of residents’ performance in consultation should not be exclusively by psychiatrists. Feedback from referring providers on the resident’s consultative value is critical for ensuring that, by graduation, every resident can be effective as a consultant.

Conclusion

We have presented the Milestones and sub-competencies for systems-based practice and practice-based learning and improvement, with an overview of the Working Group’s theoretical and empirical rationales, thought processes, and general expectations for assessment. Wherever possible, we have highlighted available curricula and tools to minimize burden on residencies that may need to improve instruction in these competencies. Most importantly, we have presented the growing relevance of both competencies to the core practice of clinical psychiatry. The increased emphasis on safety, quality, and reliable processes throughout ACGME is no accident or whim. It is a reflection of trends in the broader health care system and education financing, in which a public increasingly concerned about costs is demanding accountability and value in all sectors [15, 42]. Psychiatry must rise to meet those demands, and our Milestones now reflect what our graduates must know and do to thrive in the next iteration of the American medical financing and delivery system.

Implications for Educators

- There is an increasing emphasis on systems competency across medicine, driven by multiple economic factors. Psychiatrists in training must be aware of these factors and how they will shape the future of practice.
- Curricula exist for teaching the formal quality improvement methods that are expected and required under the Next Accreditation System and its CLER initiative. Adoption of those curricula may be a relatively low-burden method of maintaining compliance.
- In general, adequate measurement of resident progress in SBP and PBLI Milestones can mostly be documented via existing rotations and tools, using standardized assessments that ACGME has developed.

Implications for Academic Leaders

- Clinical faculty may not be aware of institutional reporting systems for “near miss” events or formal methods for tracking process and outcome measures. Valuing, publicly recognizing, and teaching these methods will be essential if faculty are to pass these skills on to trainees.
- The Next Accreditation System involves hospital-wide assessment of residents’ engagement with systematic care improvement. This is likely to expand to fellowship in the near future. Cross-departmental outreach and collaboration, particularly via the institutional GME office, is likely to be important for success.

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