The New Internal Medicine Subinternship Curriculum Guide: a Report from the Alliance for Academic Internal Medicine

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The internal medicine (IM) subinternship has been a long-established clinical experience in the final phase of medical school deemed by key stakeholders as a crucial rotation to prepare senior medical students for internship. Medical education has changed greatly since the first national curriculum for this course was developed in 2002 by the Clerkship Directors in Internal Medicine (CDIM). Most notably, competency-based medical education (CBME) has become a fixture in graduate medical education and has gradually expanded into medical school curricula. Still, residency program directors and empirical studies have identified gaps and inconsistencies in knowledge and skills among new interns. Recognizing these gaps, the Association of Program Directors in Internal Medicine (APDIM) surveyed its members in 2010 and identified four core skills essential for intern readiness. The Association of American Medical Colleges (AAMC) also published 13 core entrustable professional activities (EPAs) for entering residency to be expected of all medical school graduates. Results from the APDIM survey along with the widespread adoption of CBME informed this redesign of the IM subinternship curriculum. The authors provide an overview of this new guide developed by the Alliance for Academic Internal Medicine (AAIM) Medical Student-to-Resident Interface Committee (MSRIC).

KEY WORDS: subinternship; acting internship; undergraduate medical education; curriculum.

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INTRODUCTION

The transition from medical student to intern is a significant event along the educational continuum. Interns are expected to assume higher levels of responsibility and increased workloads in challenging clinical, social, and emotional contexts. Yet, gaps and variability in knowledge and skills among new interns have been identified by residency program directors[1–3] and empirical studies.[4–7] These gaps have prompted medical educators to focus on the fourth year of medical school as an opportunity to strengthen students' preparedness for internship.[2, 8–12] Among the wide array of fourth-year courses, the subinternship, or acting internship, is commonly viewed by faculty[2, 12] and residents[13] as one of the most important clinical experiences in helping senior students prepare for internship.

The subinternship's origin dates back to World War II when a national shortage of interns necessitated the creation of "acting internships" for senior medical students. This new rotation subsequently became widely adopted[14] and is now required at 90% of US allopathic medical schools.[10] Despite its longstanding tenure, medical educators only started to standardize structure and content for the subinternship over the past two decades. In 1998, Fagan and colleagues began this process by outlining specific recommendations for the internal medicine (IM) subinternship's structure and experience.[15] In 2002, the Clerkship Directors in Internal Medicine (CDIM) Subinternship Task Force developed a core curriculum for the IM subinternship[16, 17] derived from a needs assessment survey of IM residency program directors, subinternship directors, and interns.[18]

Since the turn of this century, the landscape of graduate medical education (GME) has shifted significantly with changes in duty hour regulations, increased patient handoffs, adoption of competency-based medical education, and implementation of electronic health records, among others, resulting in a national call for medical school curriculum reform to better equip medical students for post-graduate training. In 2010, the Association of Program Directors in Internal Medicine (APDIM) surveyed its members and proposed four core skills all IM interns should possess at the start of residency.[19] Soon thereafter, the Alliance for Academic Internal Medicine (AAIM) formed a joint CDIM-APDIM committee to examine the fourth year of medical school with the aim of developing evidence-based recommendations to help students optimize their preparation for internship.[10–13, 20] The Association of American Medical Colleges (AAMC) also established 13 core entrustable professional activities (EPAs) for entering residency, defining a set of foundational skills and behaviors expected of all medical school graduates (Table 1).[21, 22] The core EPAs

Prior Presentations *An overview of this new subinternship curriculum was presented in two workshops at the national CDIM conference in San Antonio, Texas, March 20th and 21st, 2018.*

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were created as a practical approach to assess the Accreditation Council for Graduate Medical Education (ACGME) six core competencies in workplace settings. Concurrently, the medical education community became increasingly aware of the high degree of distress and burnout among trainees,[23–25] and made an urgent appeal for interventions to improve medical students' well-being and resilience in hopes of enhancing their preparedness for the next phase of training.[26, 27]

In response to the vastly changed GME landscape and calls[8–12, 19] for better preparation of medical graduates, the AAIM Medical Student-to-Resident Interface Committee (MSRIC) created an updated IM subinternship curricular guide for subinternship directors and core teaching faculty. In a parallel process, the AAIM Undergraduate Medical Education (UME) Task Force highlighted the most vital EPAs and foundational skills during the core IM clerkship, which function as important prerequisites to the subinternship.[28] Redesign of the subinternship curriculum was intended to include developmentally appropriate competencies that could be assessed during this important rotation to ensure readiness for internship. This paper provides an overview of this new curricular guide and describes how it was developed.

CURRICULUM DEVELOPMENT PROCESS

Building on the previously published IM subinternship curriculum[16, 17] and primer,[29] key domains from these documents were used to develop survey items for the 2010 APDIM survey. Results from this survey,[19] recommendations from the joint CDIM-APDIM position paper about the IM subinternship,[12] and increasing recognition of medical trainee burnout informed MSRIC's work on this project. From the APDIM survey, IM residency program directors identified four core skills expected of new interns: patient evaluation skills to recognize sick vs. non-sick patients, knowing when to ask for assistance, managing time wisely, and communicating effectively within healthcare teams.[19] While two of the four core skills map directly to similar core EPAs for entering residency, all directly relate to the core tenet of entrustment, or trustworthiness, central to the EPA concept: trainees must consistently demonstrate conscientiousness, truthfulness, and discernment (knowing their own limits and seeking help). As previously noted, some of the core EPAs for entering residency were regarded as important to assess during the core IM clerkship.[28] These EPAs, in turn, serve as prerequisites for other core EPAs. For example, the ability to gather a history and perform a physical examination (EPA-1), prioritize a differential diagnosis following a clinical encounter (EPA-2), recommend and interpret common diagnostic/screening tests (EPA-3), and enter and discuss orders/prescriptions (EPA-4) are a group of prerequisite skills needed at a basic level of entrustment before a trainee can recognize a patient requiring urgent/emergent care and initiate appropriate evaluation and management (EPA-10).

Table 1 The Association of American Medical Colleges (AAMC) 13 Core EPAs

EPA 1	Gather a history and perform a physical examination
EPA 2	Prioritize a differential diagnosis following a clinical encounter
EPA 3	Recommend and interpret common diagnostic and screening tests
EPA 4	Enter and discuss orders and prescriptions
EPA 5	Document a clinical encounter in the patient record
EPA 6	Provide an oral presentation of a clinical encounter
EPA 7	Form clinical questions and retrieve evidence to advance patient care
EPA 8	Give or receive a patient handover to transition care responsibility
EPA 9	Collaborate as a member of an interprofessional team
EPA 10	Recognize a patient requiring urgent or emergent care and initiate evaluation and management
EPA 11	Obtain informed consent for tests and/or procedures
EPA 12	Perform general procedures of a physician
EPA 13	Identify system failures and contribute to a culture of safety and improvement

Source: https://members.aamc.org/eweb/upload/core%20EPA%20Curriculum%20Dev%20Guide.pdf. Accessed 29 October 2018

To focus on intern readiness, MSRIC chose to use the four core skills outlined by the IM residency program directors along with medical student wellness as the central framework for development of this guide. These five domains have a natural and logically linked relationship with one another especially when viewed in the healthcare workplace context (Fig. 1). In addition to mapping these core skills to the EPAs, we also utilized the RIME (Reporter-Interpreter-Manager-Educator) framework[30] for its practical linkage to patient care responsibilities and core EPAs,[31] its developmental nature,[32] and its predictive validity of future performance during internship.[33] Table 2 outlines the link between the supporting core EPAs, ACGME competencies, and RIME model to the four core skills recommended by IM program directors.

This guide's learning objectives are written using EPA language to parallel the AAMC's core EPAs. Table 3 summarizes the learning objectives for each of the five core skills of this curriculum. A thorough review of the medical education literature was conducted to provide the most updated and relevant curricular content to support the learning objectives. Users of this guide will note that the core skill of "Knowing When to Ask for Help" also serves as a learning objective under other core skills, while some other learning objectives repeat themselves under different core skills. This redundancy is meant to emphasize the tight interrelationships between these content areas in how one domain enables the other. For example, prioritizing patients' clinical problems according to degree of clinical importance/urgency, a core "Patient Evaluation" skill, is also required to improve one's efficiency and time management.

CURRICULUM CONTENT OVERVIEW

Although not specifically included in the 13 core EPAs, "time management" is a core skill that may serve as a framework to help subinterns organize and prioritize their professional

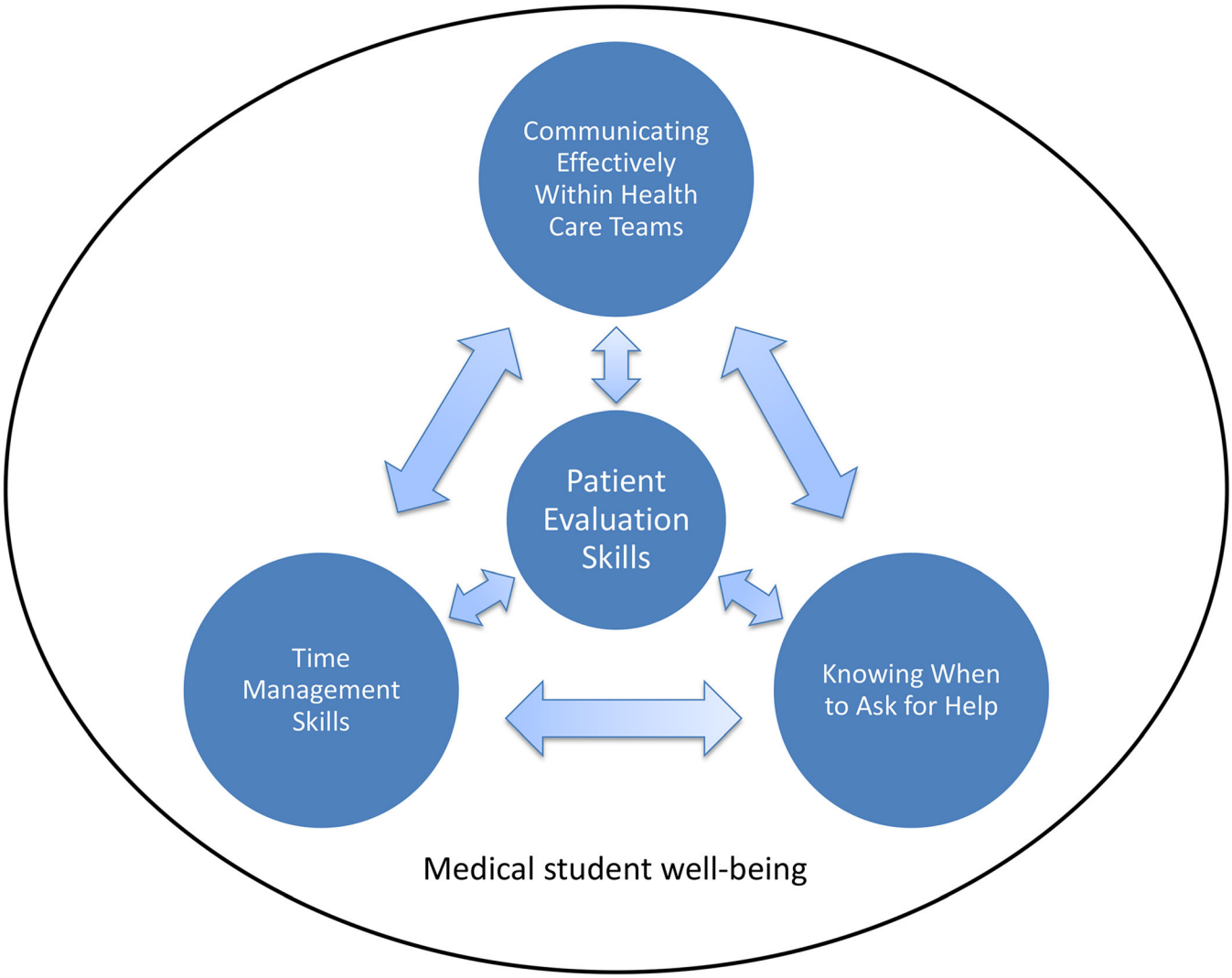

Figure 1 Interrelationships of the five core skills for subinterns.

activities. While third-year clerkships allow trainees to practice and develop clinical skills at a forgiving pace, the subinternship is a more challenging rotation that requires learners to apply these skills in a more timely and practical manner. Subinterns must not only learn how to prioritize different activities throughout the day (e.g., entering orders and calling

Table 2 Relationship Between Core Skills from APDIM Survey, Core EPAs for Entering Residency and Their Prerequisites, Core ACGME Competencies, and RIME Model

Core skills from APDIM survey	Corresponding core EPA for entering residency	Prerequisite/ enabling, or related core EPAs	Corresponding ACGME competencies	RIME model
Time management skills	N/A	N/A	PROF, ICS, SBP, PC	Consistent reporter and interpreter with some initial manager skills
Communicating effectively within healthcare teams	EPA-9	EPA-5, EPA-6, EPA-8	ICS, SBP, PROF, PC	Consistent reporter and interpreter with some initial manager and educator skills
Patient evaluation skills—recognizing sick vs. non-sick patients	EPA-10	EPA-1, EPA-2, EPA-3, EPA-4	PC, MK, ICS, SBP	Consistent reporter and interpreter with some initial manager skills
Knowing when to ask for assistance	N/A	EPA-7, EPA-9, EPA-10	PBLI, ICS, SBP, PC	Consistent reporter and interpreter with some initial manager and educator skills

PC patient care, MK medical knowledge, ICS interpersonal and communication skills, SBP systems-based practice, PBLI practice-based learning and improvement, PROF professionalism

Table 3 Subinternship Core Skills and Their Learning Objectives

Subinternship core skill	Learning objectives
I. Time management skills	1. Organize a daily patient care task list for each patient in a structured and systematic way so that required tasks (e.g., daily notes, orders, etc) are not overlooked. 2. Prioritize daily patient care task list according to degree of importance/urgency. 3. Prioritize patients' clinical problems according to degree of clinical importance/urgency. 4. Recognize one's own limitations and call on other team members to help.
II. Communicating effectively within healthcare teams	1. Write accurate, concise, and well-organized transfer/accept notes, discharge summaries, and cross-cover notes 2. Provide an oral presentation of a clinical encounter, tailoring length and content according to context 3. Give and receive patient handoffs (both in writing and verbally) to transition care responsibility 4. Speak with specialist/subspecialist colleagues to request consultation 5. Communicate collaboratively with nursing and pharmacy staff to enhance patient care 6. Communicate effectively with team case manager, social worker, and outpatient care providers to facilitate discharge planning
III. Patient evaluation skills—recognizing sick vs. non-sick patients	1. Gather appropriate clinical data from all appropriate sources (e.g., patient, family, nurse, medical records) in hypothesis-driven fashion to address the main clinical problems (Reporter function of RIME) 2. Analyze and synthesize the collected clinical data set to formulate a prioritized differential diagnosis for the main undifferentiated problems (Interpreter function of RIME) 3. Recognize which clinical situations require additional assistance from upper level resident, faculty attending, and/or specialty consultants 4. Develop initial diagnostic and/or therapeutic management plans for the main clinical problems (Manager function of RIME) 5. Prioritize problem list according to degree of clinical importance (Interpreter function of RIME)
IV. Knowing when to ask for assistance	1. Recognize various techniques that can enhance and develop metacognitive skills 2. Generate clinical questions and retrieve evidence to advance patient care 3. Identify clinical and contextual situations that require assistance from clinical supervisors 4. Utilize a communication framework when calling for clinical support
V. Medical student wellness	1. Utilize a validated tool to assess one's personal risk of burnout 2. Recall multiple evidence-based interventions that may aid in wellness 3. Reflect on identified "at-risk" domains and experiment with suggested interventions to improve wellness 4. Incorporate helpful techniques into daily practice by creating a behavior change plan (BCP)

consultations prior to documentation on a sick patient) but also develop a comprehensive method to track incoming data and execute patient-care tasks. This curricular guide includes a sample organizational schema called "the one-page system" (Fig. 2) that subinterns can use to develop their own personalized approach.

The second core skill of "communicating effectively within healthcare teams" stresses the importance of subinterns honing their written and verbal communication skills to cohesively summarize and convey important issues at critical transition points of care. More fundamental documentation skills, such as admission history and physical exams and daily progress notes, are typically acquired during core third-year clerkships. The subinternship curriculum instead focuses on more developmentally appropriate documentation dealing with transitions of care, important junctures that can leave patients particularly vulnerable. Accordingly, transfer/accept notes, discharge summaries, cross-cover notes, and handoffs are the main focus of this guide. Details of interdisciplinary teamwork and communication—including communicating with consultants—to facilitate patient care are also described.

For the "patient evaluation" core skill, a representative list of common medical emergencies was chosen to serve as a guide and not intended to be an exhaustive list. MSRIC chose not to develop actual cases for these problems but rather provide a structured guide that subinternship directors and teaching faculty can use to tailor their own teaching cases according to their institution's individualized needs. The format for each problem was adapted from Lange's *Internal Medicine On Call* (with permission from the authors) for its undifferentiated problem-based approach and stepwise thought process that occurs during the cross-coverage experience to help subinterns develop their patient evaluation skills.[34]

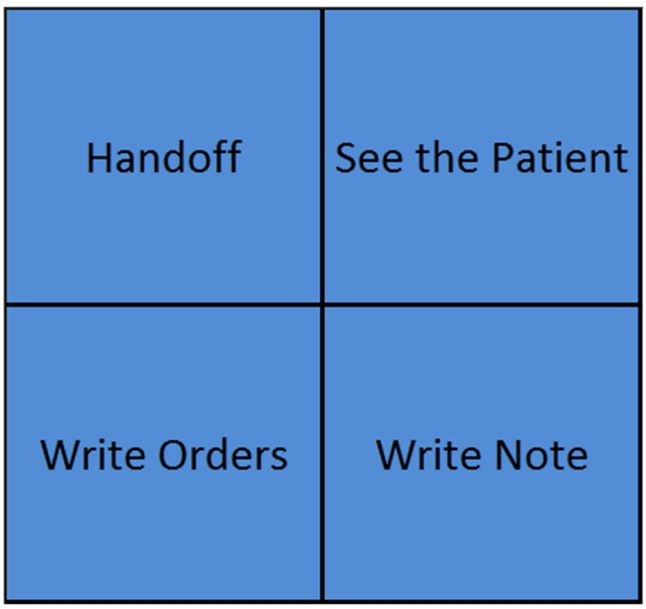

Figure 2 The one-page box system: a visual aid developed to guide daily workflow and assist with student organizational skills. The complete description of this system can be found in the full curricular guide.

As a trainee, the core skill of "asking for help" can be challenging when navigating the tension between preserving autonomy and professional credibility while maintaining patient safety. Recognizing that the process of requesting assistance is multi-faceted and complex,[35] MSRIC chose to focus on factors related to trainee development. Specifically, the curriculum describes various metacognitive techniques that can improve clinical reasoning and stresses the importance of self-assessment for the purpose of practice improvement.[36] It also introduces the PICO model[37] (Patient/problem/population, Intervention, Comparison/control/comparator, Outcome) to build well-structured clinical questions. Lastly, a widely used and practical communication tool, SBAR[38] (Situation, Background, Assessment, Recommendation), is provided to help students structure their communication more effectively when asking for help or giving handoffs. Together, these resources can enable trainees to recognize what they do not know, develop a means to answer those questions in an evidence-based manner, and query their supervisors in a systematic fashion.

The final component of the curriculum is a focus on wellness and self-care. This section includes an overview of the existing literature on burnout pertaining to medical students, provides a validated tool to assist with self-assessment of burnout risk,[39] and reviews evidence-based interventions that can aid wellness, including development of a "behavioral change plan"[40] which can help learners implement self-care into their daily lives.

CHALLENGES AND FUTURE DIRECTIONS

The goal of this curriculum is to emphasize important, developmentally appropriate skills for the final phase of medical schools' curricula to help trainees' readiness for internship. However, barriers exist to prevent a cohesive implementation plan that would allow a single fit for all institutions. Each medical school will need to work within the limits of their existing curriculum and assessment methods, which will undoubtedly cause wide variations in implementation of content as well as methodology.

Additionally, it may be ambitious to implement this entire curriculum within the confines of a traditional four-week IM subinternship. Although derived from a survey of IM program directors, one could argue that this curriculum's proposed skills are broadly applicable to all graduating students. Many topics in this curriculum can be adopted by other fourth-year courses of medical school to reinforce important concepts and may especially be relevant for a capstone or "boot camp" preparatory course prior to internship.

Although this curriculum is linked with the AAMC EPAs, not all medical schools have fully adopted EPAs. Schools that have adopted EPA-based curricula are still piloting different assessment methods for the EPAs (i.e., levels of entrustability) at the UME level,[41, 42] so validated tools for any EPA-based assessment are not yet available. However, some sample evaluation tools are included in the Appendix section of this curricular guide.

Finally, some of the core skills of this new curriculum are considered "life skills." In particular, time management, self-awareness to know one's limits, and stress/burnout management are challenging topics to incorporate into any curricula. These topics are ideal for self-assessment, but all three, especially wellness, may prove to be challenging to incorporate into traditional faculty-driven assessment models. Additionally, these topics may not be adequately incorporated or assessed if condensed into a finite block of time.

Further work is needed to develop validated EPA-based assessment tools for this new curriculum and to gather empirical data on its effectiveness in preparing students for internship. Pilot testing at several institutions is underway to focus on these two goals.

CONCLUSION

The IM subinternship remains a critically important clinical experience for medical students to help their transition into post-graduate training. This new subinternship curricular guide is a practical, evidence-based toolkit to enhance intern readiness, integrating IM program directors' perspectives to emphasize core skills and EPAs most relevant to IM residency.[43]

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Compliance with Ethical Standards:

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