General Internists as Change Agents: Opportunities and Barriers to Leadership in Health Systems and Medical Education Transformation

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Health systems are increasingly engaging in mission development around the quadruple aim of patient experience of care, population health, cost of care, and work-life balance of clinicians. This integrated approach is closely aligned with the education principles and competencies of health systems science (HSS), which includes population health, high-value care, leadership, teamwork, collaboration, and systems thinking. Influenced by health outcomes research, the systems-based practice competency, and the Clinical Learning Environment Review, many medical schools and residency programs are taking on the challenge of comprehensively incorporating these HSS competencies into the education agenda. General internal medicine physicians, inclusive of hospitalists, geriatricians, and palliative and primary care physicians, are at the frontlines of this transformation and uniquely positioned to contribute to and lead health system transformation, role model HSS competencies for trainees, and facilitate the education of a new workforce equipped with HSS skills to accelerate change in healthcare. Although GIM faculty are positioned to be early adopters and leaders in evolving systems of care and education, professional development and changes with academic health systems are required. This Perspective article explores the conceptualization and opportunities to effectively link GIM with healthcare and medical education transformation.

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BACKGROUND

With the goal of improving patient outcomes, US healthcare systems are transforming care processes to achieve the quadruple aim of patient experience, population health, cost of care, and the work-life balance of clinicians.^{1, 2} This trend has resulted in an increased focus on health systems science

(HSS), defined as “the principles, methods, and practice of improving quality, outcomes, and costs of healthcare delivery for patients and populations within systems of medical care.”³ The HSS framework includes competencies such as population health improvement, value-based care, leadership, collaboration, and systems thinking.^{4–7} This emerging health system perspective, coupled with the need for dedicated expertise in the care of increasingly sick hospitalized patient populations, has spurred the growth of general internal medicine (GIM).^{8, 9} In our working definition of GIM, we include faculty in outpatient internal medicine clinics, hospitalists, geriatricians, and palliative care physicians. GIM physicians practice at the nexus of various aspects of health systems and change, confronting widening disparity gaps and care fragmentation across inpatient, subacute, and outpatient settings. GIM faculty educators often address discontinuities of care that result from increasingly specialized professions, providing expertise in consultation and outcomes research, and innovating in interprofessional collaborative care. All of these activities contribute to the development of a learning health system, one that leverages technology and data to inform care in real time while simultaneously drawing knowledge from care delivery to promote innovation.¹⁰

Along with their generalist colleagues, GIM physicians commonly navigate their patients through complex and often dysfunctional health systems, requiring development of working knowledge in HSS areas. As a result, GIM physicians are well positioned to find solutions to make the system work better for patients and clinicians and committed to helping junior colleagues learn. One key challenge in this process is that most physicians, including GIM physicians, have not been formally trained to think beyond helping individual patients.^{11, 12} Although there has been increasing attention in recent years to systems-based practice (SBP) competency areas, including quality and patient safety, traction to teach HSS in residencies has been slow and variable.^{13–17} Many care settings are not designed to engage physician leaders in these areas, much less other critical areas of HSS. In this Perspective article, we explore the unique positioning of GIM within systems of healthcare and medical education, the accompanying need for faculty development and

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leadership support, and potential opportunities for these goals to be realized.

“NEW” COMPETENCIES IN HEALTH SYSTEMS SCIENCE

Over the past 20 years, the Accreditation Council for Graduate Medical Education SBP and practice-based learning and improvement (PBLI) competency areas, Clinical Learning Environment Review, and Association of American Medical Colleges (AAMC) have accelerated medical education’s focus on systems-related competencies.^{18–22} Specifically, efforts have been made to incorporate patient safety, quality improvement, social determinants of health, and care transitions as integrated components of student and resident education.^{13, 19} However, these learning areas reflect a narrow view of systems competencies and often occupy aspirational rather than required competence domains.²³ To address these gaps, undergraduate (UME), graduate (GME), and continuing medical education (CME) have begun to adopt HSS as a third education pillar, complementing the basic and clinical sciences, which provides a more comprehensive framework than the SBP competency area.^{5, 7, 24, 25} The HSS pillar coalesces previously disconnected competencies to better align trainees’ education with the needs of the patients whom they will serve, including population health, social determinants of health, high-value care, leadership, teamwork, and collaboration.^{4, 7, 26–29} These competency areas are all connected by systems thinking, or the body of knowledge, theory, and tools that allows for the seeing of interrelationships amongst elements, patterns of change, and structures underlying complex situations to produce desired outcomes (Table 1).^{7, 32, 33} Similar to several other US medical schools, the Penn State College of Medicine has addressed this curricular challenge at every level from UME through CME, with authentic early experiences, classroom learning, practical application in patient care, and mentored projects.^{4, 23, 34, 35} For example, in both the internal medicine (IM) clerkship and residency program, learners are prompted to present cases in a “SOAP-V” format (subjective-objective-assessment-plan-value), reflect on HSS implications in patient cases, and pursue system improvement projects.³⁶ At the faculty level, our HSS academy brings together frontline providers from all disciplines in a year-long curriculum to explore the field and work on HSS-related projects.²⁶

This synthesis of newly appreciated, reprioritized, and system-aligned foundational competencies is quickly becoming central to how we care for patients and populations and is in the process of disrupting and reshaping traditional approaches to medical education and patient care.^{27, 37} This movement is gathering steam, and the groundwork is being laid for substantive integration of HSS knowledge into National Board of Medical Examiners board examinations and other high-stakes assessments. The emergence of HSS as a critical link in how we learn and practice is one of the major

stories in healthcare, and GIM physicians are ideally positioned to create, support, and lead from UME through CME.³⁸

GENERAL INTERNAL MEDICINE AS THE “CONTROL CENTER” FOR SYSTEMS LEARNING

For medical students and residents to develop as “systems thinkers” and “change agents,” they must have the opportunity to work and learn from faculty role models who enact HSS principles in their work and teaching.^{39, 40} These role models are often GIM faculty who have become “go-to” individuals to not only manage disease, but also to manage teams of caregivers, facilitate care transitions and information flow, and “quarterback” patient care amongst the continuum of hospital care, post-acute care, palliative care, and home care.⁴¹ We view GIM as the “control center” in the health system for acute and chronic illness for many patients who may or may not be concurrently managed by subspecialty colleagues. And as a result, GIM is in the control center for both facilitating and accelerating HSS education with students, residents, and interprofessional faculty (Table 1 which includes examples of clinical-education roles for GIM faculty across HSS areas).

Since GIM faculty educators are well suited to operationalize the work of HSS principles, in the end, they are key role models for the next generation of caregivers. While trainees may eventually choose to practice IM in any number of settings, their educational experience should include an explicit emphasis on systems thinking and HSS, making it possible for core competencies to be employed across health systems. We envision a GIM that is the primary driver of a learning health system and home to physicians who exemplify the importance of HSS for patients and caregivers—doctors for adults, doctors for systems of care, and doctors for the next generation of doctors. But what is currently happening in GIM? What kind of care are GIM faculty modeling? The care that they “grew up” with, or the care that we need our students to grow into? We believe health systems need GIM physicians to facilitate transformation and improve patient outcomes and therefore need to invest in GIM as exemplars of HSS in the workplace, as systems thinkers, and as collaborative, empowered leaders and educators.^{6, 7}

A CALL TO ACTION FOR GENERAL INTERNAL MEDICINE AND HEALTH SYSTEMS

GIM faculty are in a pivotal role within academic health systems. Health systems need highly engaged, systems-based physicians to champion care for patients and health systems with complex issues. Medical students and residents need role models who will not only apply HSS to the care of patients and populations but will also support and lead educational efforts in these areas. GIM faculty who are able to fulfill these roles will help catalyze and accelerate a cycle of change in medical education and systems improvement (Appendix 1).

Table 1 Health Systems Science Concepts and Representative Examples in General Internal Medicine

Health systems science ^a	Representative examples of GIM physicians leading clinical and education initiatives
Patient experience and context <ul style="list-style-type: none"> ▪ Patient experience and values ▪ Patient behaviors and motivations 	Clinical: Outpatient physician and addiction specialist leads the development and implementation of the health system's initiative to improve outcomes of care for opioid addiction treatment. Education: For the 4th-year medical student course, the physician co-creates (1) a workshop on the challenges and facilitators of improving care delivery for patients with opioid addiction and (2) opioid use disorder competencies for the medical school.
Healthcare delivery <ul style="list-style-type: none"> ▪ Structures of delivery ▪ Processes of delivery 	Clinical: Hospitalist physician co-leads an interprofessional, unit-based quality team that seeks to identify gaps in quality of care outcomes and develops improved processes for IM patients. Education: For the internal medicine residency core curriculum, the physician provides consultant expertise within resident reports focused on the concepts structures and processes of healthcare delivery.
Healthcare policy and economics <ul style="list-style-type: none"> ▪ Policy ▪ Economics and payment 	Clinical: Outpatient physician leads the health system's Clinical Documentation and Improvement committee to improve documentation, billing, and revenue for both the division and system. Education: For the 1st-year medical student course, the physician participates in a large-group debate on the implications of healthcare policy and payment on patients in primary care.
Population, public, and social determinants of health <ul style="list-style-type: none"> ▪ Social determinants of health ▪ Public health ▪ Population health and improvement 	Clinical: Outpatient physician leads a Transitions Program at the health system level, which aims to proactively identify the social determinants of health they may be associated with poor health outcomes (e.g., readmissions to the hospital, mortality) for a population of "super utilizers." Education: For the faculty-level HSS academy (professional development program), the physician co-creates and leads a session on transitions of care and the implications for social determinants of health on readmissions and outcomes.
Clinical informatics and health technology <ul style="list-style-type: none"> ▪ Informatics/data analytics ▪ Decision support/evidence-based medicine ▪ Technology and tools 	Clinical: Hospitalist physician becomes the "champion" for the hospitalist group for EHR and billing challenges occurring within hospital-based care. With the physician's integration on the systems-level team, several improvements are made to the EHR and billing processes. Education: For the 4th-year medical student course, the physician serves as the coach for a student group applying to internal medicine residencies on a health system improvement project focused on improving a facet of the EHR related to evidence-based algorithms.
High-value care <ul style="list-style-type: none"> ▪ Quality principles and dimensions ▪ Cost and waste ▪ Evaluation/metrics 	Clinical: Palliative care physician identifies high-cost utilization of healthcare services for patients in the health system during end-of-life care and develops a process for referral to end-of-life care planning and proactive utilization of healthcare services. Education: For the 4th-year medical school course, the physician develops and teaches a career exploration elective on end-of-life planning, costs of end-of-life care, and how to improve quality.
Health system improvement <ul style="list-style-type: none"> ▪ Improvement principles, processes, and tools ▪ Data and measurement ▪ Innovation and scholarship 	Clinical: Geriatrician physician collaborates with members of the Operational Excellence team to facilitate a root-cause-analysis of low adherence of GIM providers with geriatrics assessment instruments, which results in a new process for the GIM clinic to improve outcomes for patients. Education: For the internal medicine residency, the physician co-leads several sessions in the core curriculum focused on health system improvement principles and change management.

EHR electronic health record, HSS health systems science, GIM general internal medicine

^aFramework derived, in part, from several prior publications; additional domains include systems thinking, change management and advocacy, ethics and legal, leadership, and teaming/teamwork^{3, 7, 24, 30, 31}

There are multiple challenges that exist in fulfilling this agenda, and here, we highlight several challenges and potential strategies that GIM can use to accelerate change (Box 1).

Box 1 Potential Strategies for General Internal Medicine to Advance Health Systems Science Education

- Assess GIM faculty awareness of and engagement in HSS concepts (e.g., surveys, division meeting discussions).
- Review the medical school's core competency framework and HSS-related competencies.
- Identify local HSS champion (e.g., director of HSS, bridging leader) and provide support for time/skill development.
- Seek to build partnerships with system leaders to articulate potential return on investment of new HSS champions.
- Develop new educational and professional development opportunities for students, residents, and faculty in HSS.
- Identify similarities and differences in student and resident HSS milestones and competencies.
- Develop and employ assessments across the UME-GME continuum.
- Support and incentivize faculty efforts to develop HSS curricula at the point of care.

In our experience and as identified in the literature, many faculty have not been formally educated in HSS and express concerns about learning these new skills, often believing they have already acquired these skills from years of everyday practice and/or do not embrace these evolving concepts.^{2, 12,}

⁴² While GIM faculty educators might quickly learn the nuances of a particular system and broader functioning of the healthcare system over time, experience is necessary but insufficient to match learner demands, especially learners who have received foundational training through evolving medical education curricula. Faculty experience does not necessarily predict his/her ability to effectively teach or role model HSS in clinical learning environments.⁴³ Failure to provide faculty with educational tools along with the HSS knowledge, skills, and attitudes that they did not encounter in medical school or residency risks creating a hidden curriculum that undercuts our best efforts to align education with system needs. When learners arrive in their clerkships or intern rotations after experiencing robust UME HSS curricula, they need to be met by faculty willing to engage how social determinants of health impact a patient's readmission risk, explore the cost implications of medical decisions, discuss the inherent challenges of measuring quality data, or demonstrate the importance of interprofessional collaborative care.^{44, 45}

Health systems science must make its way into the toolkit and vernacular of any GIM faculty educator leading change or interfacing with learners. To that end, GIM groups can promote dialog within and amongst faculty targeting HSS

competencies.⁴⁶ At the microsystem level, this might start with widespread implementation of HSS skill-based workshops within the Division of GIM or medical school. More broadly, it is important to develop and cultivate programs that move beyond individual facets of HSS. Although there is a growing national effort to educate faculty to address gaps in skills, particularly those related to HSS, few evidence-based initiatives have surfaced.^{6, 7, 47} Several national GIM organizations have begun short, immersive faculty development programs occurring during meeting conferences (e.g., Society of Hospital Medicine Quality and Safety Educators Academy, Association of Chiefs and Leaders of General Internal Medicine LEAD Program). However, these programs are limited in who they can reach, require significant resources, are devoid of local context, and narrowly focus on quality improvement or leadership.^{48, 49} For broad-based and accelerated change, divisional strategic plans and aligned initiatives need to include HSS as a primary focus (e.g., hard-wired HSS perspective in all GIM conferences, templated annual review that includes HSS focus).

GIM faculty live professionally in divisions, departments, and academic health systems that shape motivation, behavior, and career paths through leadership and institutional priorities. Providing faculty development opportunities is a start, but not enough. Faculty must be supported in roles that recognize and promote their expertise and influence in both healthcare and educational systems.⁵⁰ Accountability on both sides is crucial. Health systems and organizations must allow for the creation of environments where these skills are allowed to flourish and contribute to clinicians' agency to improve the system rather than be viewed as an add-on to current activities that may further contribute to burnout.^{51, 52} While traditional medical education financing has always been reliant on benevolent leadership, faculty interest, profit margins, and alignment of financial resources with the stated academic mission, HSS education holds out the possibility of a truly collaborative commitment with current and future benefits to chief executive officers, department chairs, and frontline faculty.^{53, 54} With the goals, values, and desired outcomes of health systems and medical education systems in alignment, faculty can derive professional and personal fulfillment from their sense of contributing towards a shared mission, regardless of their role within the system.

CONCLUSION

General internal medicine—inclusive of hospitalist, geriatrician, and palliative and outpatient physician-educators—is uniquely poised to contribute to the healthcare and medical education transformation that is already underway. This transformation is occurring at multiple levels, from the way that we educate physicians to the way we care for patients and populations, and it depends significantly on the emerging field of health systems science. GIM faculty work in the “control center” of systems of care and have the potential to impact

learners at all levels. We believe that IM-trained faculty physician-educators are in a key position in health system and educational transformation. General internal medicine leaders are well positioned to align with health systems, departments, and medical schools to develop opportunities for faculty development and career enhancement in HSS.

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Compliance with Ethical Standards:

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