

Pediatric Hospital Medicine: A Proposed New Subspecialty

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Over the past 20 years, hospitalists have emerged as a distinct group of pediatric practitioners. In August of 2014, the American Board of Pediatrics (ABP) received a petition to consider recommending that pediatric hospital medicine (PHM) be recognized as a distinct new subspecialty. PHM as a formal subspecialty raises important considerations related to: (1) quality, cost, and access to pediatric health care; (2) current pediatric residency training; (3) the evolving body of knowledge in pediatrics; and (4) the impact on both primary care generalists and existing subspecialists. After a comprehensive and iterative review process, the ABP recommended that the American Board of Medical Specialties approve PHM as a new subspecialty. This article describes the broad array of challenges and certain unique opportunities that were considered by the ABP in supporting PHM as a new pediatric subspecialty.

Hospitalists have emerged as a distinct group of practitioners in the 20 years since they were initially described.^{1,2} Today, the American Academy of Pediatrics (AAP) defines a pediatric hospitalist as a “pediatrician who works primarily in hospitals. They care for children in many hospital areas, including the pediatric ward, labor and delivery, the newborn nursery, the emergency department, the neonatal intensive care unit, and the pediatric intensive care unit.”³ Their roles include patient care, teaching, research, and leadership related to hospital systems and practices.^{4–6}

In December 2015, the American Board of Pediatrics (ABP) voted to recommend that the American Board of Medical Specialties (ABMS) recognize pediatric hospital medicine (PHM) as a new subspecialty. This recommendation followed an 18-month iterative review process involving input from the petitioners representing the Joint Council

of Pediatric Hospital Medicine, several ABP committees (the New Subspecialties Committee, the Education and Training Committee, and each of the 14 subspecialty subboards), the Association of Medical School Pediatric Department Chairs, the Association of Pediatric Program Directors, leading pediatric professional organizations, and other stakeholders. The PHM proposal now goes before the American Board of Medical Specialties for review and final decision on adoption.

When deciding whether to recommend recognition of a new subspecialty through certification, the ABP is guided by the overarching question of whether children will be better served by establishing the proposed subspecialty. Any new subspecialty, and particularly PHM as a new subspecialty, also raises important considerations related to: (1) quality, cost, and access to pediatric health care; (2) current pediatric residency

abstract

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training; (3) the evolving body of knowledge in pediatrics; and (4) the impact on both primary care generalists and existing subspecialists. The purpose of this article is to describe the broad array of challenges and certain unique opportunities that were considered by the ABP in recommending that the ABMS recognize PHM as a new pediatric subspecialty.

PEDIATRIC PRACTICE AND WORKFORCE TRENDS

The Changing Population of Hospitalized Children

Children who are hospitalized today have higher acuity illnesses than ever before.⁷ Many common acute pediatric conditions that traditionally required hospitalization are now both effectively and safely managed by the general pediatrician in the outpatient setting or have become rare because of widespread use of contemporary vaccines. Thus, the population of hospitalized children today is primarily composed of patients with acute and/or serious complications of common problems, multiple comorbidities and/or injuries, complex chronic diseases, acute mental health problems, special health care needs, technology-dependent conditions, and those needing palliative care.⁸ Optimal hospital care is often a team effort requiring physician-led care coordination and communication involving a pediatrician, pediatric subspecialists, surgeons, mental health professionals, and other care providers.

Evolution of Office-based General Pediatrics Practices

Paralleling these changes in inpatient medicine, the spectrum of child health problems encountered in primary care practices has changed considerably over the last 20 years.⁹ Today's vaccines have markedly reduced the incidence of many

bacterial and viral diseases. Driven by new technologies, much health care has moved out of acute care hospitals and into community-based practices, and even the home (including care for pneumonia, asthma, seizures, urinary tract infection, osteomyelitis, and others). The evolution of previously life-threatening diseases into manageable chronic conditions has additionally complicated office-based primary care practice.

Perhaps an even more dramatic impact on pediatric primary care practice is the increasing proportion of outpatient visits for time-intensive developmental, behavioral, and mental health problems.¹⁰ In the last decade, the number of young people 6 to 17 years of age who require mental health care has risen from 9% to >14%.¹¹ Ten years ago, nearly one-fourth of office visits involved mental or behavioral health issues, and today many pediatricians report that half or more of their practice visits are for these time-demanding problems.¹²

Evolution of the Pediatric Workforce

Increasing clinical time demands in the office and more complex acutely ill patients in the hospital make it more difficult for the office-based pediatrician to interrupt a busy clinic to attend to the care of the occasional patient who might require hospitalization. A 2012 survey by the AAP found that primary care physicians were the attending of record for less than one-third of inpatients from their practices. Instead, most report that compared with 5 years ago, they now refer an increasing number of their inpatients to hospitalists.¹³

Almost three-fourths (72%) of today's graduating pediatric residents who are starting careers in community-based primary care practices report that they intend to provide little or no hospital care.¹⁴ This choice may be motivated by

many factors, but the implications for the care of hospitalized children are evident.¹⁵

Slightly more than 3000 of the ~92 000 pediatricians in the United States self-identify as pediatric hospitalists.¹⁶ Of the 5001 residents who applied for the General Pediatrics Certifying Examination in 2012 and 2013 and completed the associated workforce survey, 8% (376) indicated that they planned to practice "hospital medicine" immediately on completion of their training. Of those 376, 43% reported that they intended to practice hospital medicine long-term.¹⁷ In addition, ~40 pediatric hospitalists graduate each year from the 34 nonaccredited PHM fellowships. Dedicated PHM services are now the norm in large children's hospitals, including 98% of hospitals associated with academic departments of pediatrics and in all hospitals listed in the 2015–2016 *US News & World Report* honor roll of children's hospitals.^{18–20}

Health Policy and Economic Trends Impacting the Future of Pediatric Inpatient Care

In addition to the above noted changes in office-based practice and workforce trends, health care economics and policy reforms are also converging to drive paradigm shifts in pediatric care. With a stated goal to ultimately improve the quality, access, and outcomes of health care while keeping costs in check, payers are transitioning away from traditional volume-based fee-for-service payment toward global payment mechanisms and value-based reimbursement.²¹ Decreasing payments for individual episodes of care may drive the office-based practitioner to see more and more outpatients each day to maintain stable practice revenues. Simultaneously, payment for services is increasingly being linked

to putative “quality metrics,” such as practitioners’ documentation of adherence to published care guidelines and disease management protocols.²¹ Thus, a primary care generalist in private practice encounters strong headwinds trying to maintain a viable business entity while still providing the full range of services across the spectrum from office-based to hospital care.^{7,22,23}

Evidence That Hospitalists Improve Inpatient Care

Single institution studies and systematic reviews have compared inpatient care delivered by generalists with that of pediatric hospitalists. Although not unanimous, the conclusions are generally consistent, showing that care by hospitalists decreases length of stay, per-patient costs, and resource use by at least 10% without adversely affecting 7-day readmission or mortality.^{24–29} Direct assessments of quality of care are limited, but surrogate measures of quality include physicians’ adherence to published clinical care guidelines and use of evidence-based therapies and tests.³⁰ Compared with generalists, pediatric hospitalists report adhering more rigorously to AAP practice guidelines for care of bronchiolitis, asthma, and urinary tract infections.^{31–35}

AAP Periodic Survey data and published studies reveal that primary care pediatricians who refer inpatients to hospitalists consistently report high levels of satisfaction with that care. Approximately two-thirds say that hospitalists increase the overall quality of care because they are more immediately available and work full-time with hospitalized children.¹³ Patient–parent surveys also report high levels of satisfaction with care provided by hospitalists after referral from their primary care provider.²⁶

RESIDENCY TRAINING FOR TODAY’S HOSPITALIZED PATIENTS

Overview of Current Pediatric Residency Training

The Pediatric Review Committee of the Accreditation Council for Graduate Medical Education states that the goal of residency is “to provide educational experiences emphasizing the competencies and skills needed to practice general pediatrics of high quality in the community. Education in the fields of subspecialty pediatrics enables graduates to participate as team members in the care of patients with chronic and complex disorders.”³⁶ An in-depth description of the general pediatrics residency program requirements is beyond the scope of this paper, however, what follows are some general observations regarding the focus, structure, and workforce output of current pediatric residencies as related to the issue of inpatient training and PHM as a discipline.

Training on a pediatrics inpatient service is considered a fundamental component of pediatric residency. The 36 months of pediatrics residency today includes a minimum of 9 months on inpatient services (including general, subspecialty, or mixed wards, the NICU, and the PICU). Training programs must also provide 6 months that are flexible for residents to tailor training experiences to best suit their chosen career path, whether that be in community-based primary care, hospital medicine, subspecialty care, or another pursuit. Thus, residents could have as little as 9 months or as much as 15 months or more of experience on in-patient services. Because many children who previously required hospitalization now receive safe and effective care in outpatient settings, and most residents who plan to enter community-based practice do not intend to care for hospitalized

children, it has been argued that a heavy concentration of inpatient rotations during residency is less relevant to the training of most general pediatricians.

Beyond the above curriculum issues, the 2011 Accreditation Council for Graduate Medical Education duty-hour regulations result in residents now spending fewer total hours during training managing hospitalized patients. The so-called “80-hour rule” was implemented to improve patient safety and residents’ education and well-being. But specific limitations on “time in hospital” results in residents’ inpatient experiences being discontinuous and fragmented. Studies of medical and surgical residents after implementation of the duty hour restrictions document that they have less longitudinal hands-on in-patient care responsibility, less uninterrupted experience managing the course of an individual patient’s illness through the critical aspects of his/her care, and may have less experience in independent decision-making.^{37–41} There are few comparable pediatric-specific studies; however, 1 survey of pediatric program directors found that three-fourths or more reported negative effects on resident education, preparation for more senior roles, resident ownership of patients, and continuity of care.⁴² In a survey of over 600 graduating pediatric residents, two-thirds reported continuity of care to be worse, although the quality of patient care was generally perceived as unchanged.⁴³

Graduating Residents and the Care of Today’s Complex Inpatients

Although the acuity and complexity of inpatient conditions is greater now than in years past, there are no systematic assessments of the readiness of today’s pediatric residents to deliver all aspects of contemporary hospital care.

However, there is consensus among pediatric residency program directors (Association of Pediatric Program Directors), pediatric department chairs (Association of Medical School Pediatric Department Chairs), and the PHM petitioners that, in general, graduating residents have adequate training to care for inpatients who have routine and uncomplicated problems. Examples include: bronchiolitis, pneumonia, asthma, urinary tract infection, cellulitis, gastroenteritis, osteomyelitis, failure to thrive, uncomplicated seizures, term and near-term neonates with hypoglycemia or hyperbilirubinemia, and others.

However, in addition to providing acute inpatient care, pediatric hospitalists may also have responsibilities covering inpatient consultations, emergency departments, subspecialty services, and emergency response teams, as well as providing leadership for institutional quality improvement (QI) programs, teaching, and academic scholarship that advance the discipline.⁶ As such, some graduates need additional postresidency training to be competent and effective in the full breadth of pediatric hospitalist roles.

Impact of Pediatric Hospital Medicine on the Future of General Pediatric Training

The majority of pediatric residencies and student clerkship programs depend at least in part on hospitalists as teaching attending physicians for their general inpatient services.⁴⁴ Evidence suggests that trainees are more satisfied with inpatient teaching from hospitalists than with teaching from nonhospitalists.⁴⁴⁻⁴⁷ However, we are not aware of published studies comparing other educational outcomes, such as knowledge acquisition or clinical performance, under hospitalist and nonhospitalist models. Of note, the

proposed PHM fellowship curriculum includes formal pedagogical training, suggesting that inpatient pediatric teaching could be additionally enhanced.

Pediatric residencies are designed so that trainees assume progressively greater responsibilities so that, on graduation, they are competent to provide high quality unsupervised care. Studies of whether the presence of hospitalists might impede the development of resident autonomy are conflicting: some show a perceived decrease in senior resident autonomy, and others show the opposite.⁴⁴⁻⁴⁷ Thus, any firm conclusions about the impact of hospitalists on pediatric resident autonomy will require more rigorous study.⁴⁷⁻⁵¹

Developmental, behavioral, and mental health issues have become a major component of the general pediatrician's practice, yet the pediatric residency curriculum only requires a 1-month developmental-behavioral pediatrics rotation. The disparity between current training and the increasing need for skills in mental and behavioral health has been identified as a major challenge to pediatric care and resident training.⁵² However, if residency training evolves to include more time training in mental and behavioral health, residents' training in the care of hospitalized children might be additionally reduced, making postresidency training for hospitalists more compelling. Pediatric educators and pediatric hospitalists will also need to work with their developmental, behavioral, and mental health colleagues to enhance resident skills in these areas as applied to outpatients and hospitalized patients.

Participating in a QI project and developing an appreciation of systems-based practice are expectations for all general pediatric residents. However, it has been argued that resident "engagement

in QI is lacking and that contextual support for practice-based learning and systems-based practice is often suboptimal."⁵³ Resident education in these areas would likely be improved by expanding the cadre of faculty-level mentors who have been fellowship trained in these areas.⁵⁴

The Body of Knowledge in PHM Versus General Pediatrics

Detailed core competencies in PHM have been published by the Society of Hospital Medicine and the PHM community.⁵⁵ The knowledge and skills expected of pediatric hospitalists are organized into an array of clinical and nonclinical topics that are beyond the goals of the 33 required months of pediatric residency training. These competencies provide a template for standardizing the curriculum of existing and future PHM fellowship programs.

Clinical Components of the PHM Curriculum

The clinical domain of PHM is generalist in nature; being neither organ-specific nor disease-specific. As such, clinical competency topics for PHM necessarily have some overlap with those listed for the general pediatric residency, as is also the case with the subspecialties of pediatric emergency medicine and adolescent medicine. However, compared with general pediatrics residency, PHM trainees are expected to achieve a level of expertise with expanded breadth and extended depth in certain clinical areas, such as⁵⁵:

- serious acute complications of common conditions;
- complex conditions and diseases: children with special health care needs, technology-dependent children, and/or children with multiple comorbidities;
- comanagement of surgical patients;
- sedation and pain management;

- palliative care;
- selected invasive procedures and technical skills: airway management, venous access, arterial puncture, placement of feeding tubes, needle thoracotomy; and
- other core skills may include (depending on a fellow's career goals): tracheal intubation, central line and peripherally inserted central catheter placement, bedside sonography, chest tube placement, and transport of the critically ill child.

Rather than simply spending more time on a pediatric inpatient service, achieving competency in many of these clinical areas will require in-depth interdisciplinary training involving collaborations with critical care medicine, anesthesia, surgery, emergency medicine, and other pediatric subspecialties.

Nonclinical Components of the PHM Curriculum

Traditionally, pediatricians are trained to practice within health care systems to best care for individual hospitalized patients. Hospitalists have the responsibility to address health system issues that affect the broad population of hospitalized children. Effectiveness in this role is facilitated by specific training and experience in formulating, advocating for, and implementing changes within health care systems and institutions. Advanced training in this area is generally beyond that received during pediatric residency. Moreover, the limited time a busy primary care practitioner can spend in the hospital impedes his/her ability to effect changes in hospital systems, policies, and practices.

Thus, beyond achieving additional expertise in the clinical care areas noted above, hospitalists are also expected to have more advanced skills, over and above those acquired

during residency, in areas related to health systems practice, such as:

- continuous QI leadership and research: pediatric residencies and subspecialty fellowships require trainees to “have a meaningful involvement in a QI project.” PHM training requires that fellows develop the level of expertise that allows them to conceptualize and lead QI initiatives and engage in developing new research methodology for QI. This level of expertise requires formal didactic and experiential training in QI and safety processes, developing research methodology, data analysis, culture change, team management, etc, all of which are beyond the scope of general pediatric training;
- patient safety principles and innovation;
- evidence-based medicine;
- transitions of care;
- cost-effectiveness and health care business practices;
- health information systems;
- legal issues and risk management;
- ethics; and
- educator skills and innovation in medical education.

A detailed description of the specific elements encompassed in the competencies related to each of the above areas of health systems practice has been previously published.⁵⁵

Importantly, successful completion of an accredited PHM fellowship will also require evidence that the applicant has produced scholarly work that advances the field. In most instances, this will involve in-depth training in the science of QI, comparative effectiveness research, innovation in patient safety systems, or innovation in educational strategies and systems.

Achieving true expertise and becoming an innovation leader and

effective mentor in these clinical and nonclinical areas requires significantly more focus and specific training than is practicable during a categorical pediatric residency.^{53–55}

IMPACT OF PHM ON THE CLINICAL ROLES AND SCOPE OF PRACTICE OF GENERAL PEDIATRICIANS AND OTHER PEDIATRIC SUBSPECIALISTS

Impact on General Pediatricians

Primary care pediatricians and pediatric hospitalists have complementary roles as stewards and partners in the care of children across the continuum of care. As these roles evolve, primary care pediatricians might be concerned that their admitting privileges could be threatened if hospitals began to require PHM subspecialty certification to admit children. In small or rural communities where a general pediatrician may be more likely to care for his/her inpatients, a child's access to the full spectrum of pediatric care could then be jeopardized. Of note, we could not find evidence demonstrating that kind of “practitioner crowd out” with the other generalist-type pediatric subspecialties of emergency medicine, adolescent medicine, developmental-behavioral pediatrics, or child abuse pediatrics.

Credentialing and privileging are local hospital processes that can vary from hospital to hospital. A priori, subspecialty status for PHM does not create inherent limitations to a general pediatrician attaining privileges to care for children, assuming the physician meets that hospital's standards of competence. That said, as community-based pediatricians increasingly opt to refer their patients to hospitalists for reasons of efficiency, some hospitals could choose to limit a practitioner's scope of practice in the hospital if he/she does not maintain a sufficient inpatient census or procedure volume. On the other

hand, at the present time, there are not enough hospitalists to care for the entire population of hospitalized children. Thus, it is unlikely that hospitals without hospitalists will adopt standards restricting a general pediatrician's ability to care for his/her own inpatients. Both the AAP and the PHM community are in support of the AAP policy statement "Guiding Principles for Pediatric Hospital Medicine Programs," which states that general inpatient units should not be closed to general pediatricians.⁵⁶

Importantly, an AAP survey of pediatricians who use hospitalist services showed that they perceived no adverse effect on practice income or the quality of their relationship with their patients.¹³

Impact on Other Pediatric Subspecialists

Some subspecialties emphasize the benefit that results from having hospitalists provide care for uncomplicated subspecialty inpatients, taking the pressure off the subspecialists and allowing them to more efficiently care for their outpatients and provide more timely consultations.²⁷

Subspecialty hospitalist models are well established for certain adult medical and surgical services and are beginning to emerge in pediatrics.²⁷ However, presently, most pediatric subspecialists continue to provide both inpatient and outpatient care to maintain continuity of care, quality, and patient satisfaction.

PHM as a new subspecialty with the attendant additional training in acute and complex care could theoretically result in those fellowship-trained hospitalists being less likely than nonfellowship trained generalists to consult other subspecialists when indicated. Toward that concern, we did not find published peer-reviewed evidence that hospitalists fail to refer patients to subspecialists in either the pediatric or adult literature.

CONCLUSIONS

The ABP's consideration of the PHM proposal begins and ends with their guiding principles for the establishment of any new subspecialty. Those principles are:

- Children will be better served by establishing the discipline as a new subspecialty.
- The new subspecialist must not supplant the generalist in providing continuity of care.
- A distinct body of knowledge should exist in the new subspecialty area requiring additional training beyond pediatrics residency.
- The subspecialist's roles are to provide complex care and consultation, teach, and create new knowledge.
- There must exist sufficient numbers of physicians who concentrate their practice in the proposed new subspecialty area.

With these guiding principles in mind and appreciating the high-impact nature of the decision, the ABP considered what is known and what is not yet known about PHM as a discipline, and the complex of nuances, implications, and speculation generated by the possibility of PHM as a distinct subspecialty.

The pediatric hospitalist practice model is well established throughout our health care system. A large number of pediatricians currently practice as hospitalists, and a significant number of graduating residents choose to enter the field (both directly out of residency and after nonaccredited PHM fellowship training). Evidence supports the fact that the field is expanding in response to pressures for increased efficiency, the imperative to focus on quality and safety, and changes in health care economics. The ABP also carefully considered whether designating PHM as a bona fide new

subspecialty within pediatrics is necessary to further improvements in child health care or whether doing so might have important adverse or unintended consequences.

As the practice of generalist pediatrics evolves toward distinct paths of community-based primary care and hospitalist medicine, optimal care of children demands that we consider the impact of this dichotomy. The current era of patient-centered care, interdisciplinary team practice, and payment for care management and coordination requires practitioners' creativity and adaptability to foster continuity of patient care, support for the concept of medical homes, and enhance communication and collaboration between hospitalists and primary care providers.⁵⁷

In the end, the ABP distilled the key issues, both pro and con, into the following conclusions, leading to a decision to recommend that the ABMS approve the proposal to establish PHM as a new subspecialty:

- Hospitalist care as practiced today has a positive impact on children's health through increased efficiency, lower costs, improvements in certain measures of care quality, adherence to current practice guidelines, generation of new guidelines and standards of care, and both patient and provider satisfaction.
- As a new subspecialty, PHM is likely to accelerate improvements and innovation in QI science as applied to pediatric inpatient care, create a new and larger cadre of QI experts and mentors, and enhance development of professionals skilled in addressing child health issues and safety within the context of complex health care systems (systems-based practice).
- As general disciplines that are neither organ-specific nor disease-specific, PHM fellowship clinical competency topics and those of general pediatric residency have

a certain degree of overlap. What differs is the depth and scope of expectations in many of the clinical areas: from “an experience in...” for residents versus “achievement of expertise in...” for PHM fellows.

- The process of certification requiring accredited training would encourage progress toward a standardized PHM curriculum and therefore improve

the consistency and educational quality of current and future hospitalist fellowship programs.

- Finally, the proposal for PHM to become a distinct subspecialty is strongly supported by a number of respected pediatric professional organizations (the American Academy of Pediatrics, the Academic Pediatric Association, and the Children’s Hospital Association).

ABBREVIATIONS

AAP: American Academy of Pediatrics
ABMS: American Board of Medical Specialties
ABP: American Board of Pediatrics
PHM: pediatric hospital medicine
QI: quality improvement

on pediatric practice and workforce trends, current and future residency training, and the impact of PHM on general and subspecialty practice and revised the manuscript; and Dr Whitley-Williams assisted in reviewing the literature on the body of knowledge in PHM versus general pediatrics and revised the manuscript.

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