Journal of HOSPITAL MEDICINE www.journalofhospitalmedicine.com

REVIEW-NARRATIVE

Consultative Pediatrics in the New Millenium

Kishore Vellody, MD
Basil J. Zitelli, MD

Paul C. Gaffney Diagnostic Referral Service, Department of Pediatrics, Children's Hospital of Pittsburgh, University of Pittsburgh School of Medicine, Pittsburgh, Pennsylvania.

Disclosure: Nothing to report.

The pediatric hospitalist program at the Children's Hospital of Pittsburgh (CHP)—the Diagnostic Referral Service (DRS)—was first described in the pediatric literature in 1988. At that time, the group consisted of 5 members with a variety of inpatient and outpatient responsibilities. Since then, there has been a significant nationwide growth in pediatric hospital medicine. In the same time frame, the DRS has also grown significantly, with new and enhanced responsibilities in both the inpatient and outpatient settings. This work reflects on the recent trends in pediatrics that resulted in the growth of specialists in hospital medicine and in the evolution of the DRS responsibilities. A detailed description of the unique changes in the DRS is provided as a model for effective care of children in the modern era. ***Journal of Hospital Medicine*** 2010;5:E34–E40.

KEYWORDS: hospitalist, pediatric, safety, teaching, training.

In an ideal situation, a child could be cared for by 1 physician from childhood through adolescence. This physician could care for the child from the first days in the nursery, through multiple well-child and sick visits, and during any hospitalizations. In 1992, the American Academy of Pediatrics (AAP) introduced the concept of the medical home to provide accessible, continuous, comprehensive, family-centered, coordinated, and compassionate care for children.[1] These ideals were reaffirmed in a 2002 AAP policy statement.[2] The demands for outpatient care have become more intense and patient safety issues have become a public focus. Combined with the necessity for increased efficiency, the ideal medical home has become difficult to achieve simultaneously in both an outpatient and inpatient setting. This has led to the growth of the hospital specialist or "hospitalist," a term first coined by Drs. Wachter and Goldman in August 1996.[3] A hospitalist has been defined as a physician whose primary professional focus is the general medical care of hospitalized patients . . . teaching, research, and leadership related to hospital care.[4] Despite early concerns voiced after the publication of this landmark article, there has been tremendous growth in the number of hospitalists nationwide.[5] Initially, this growth was seen in adult medicine, but pediatric hospitalists have become increasingly more common. There are an estimated 10,000 to 20,000 hospitalists in the profession, with more than 30,000 expected by the end of the decade, with just over 10% being pediatric hospitalists.[4] Several studies have shown the benefits of pediatric hospitalist programs with decreased length of stay, hospital charges, and utilization of unnecessary tests and therapies, and increased satisfaction among the physicians, students, and patients.[6–11]

History of the Diagnostic Referral Service

Despite the coining of the term "hospitalist" in 1996, specialization in inpatient care existed in various forms long before then.[12] The Diagnostic Referral Service (DRS) at Children's Hospital of Pittsburgh (CHP) initially began under the guidance of Dr. Edmund R. McCluskey, chairman of the Department of Pediatrics at CHP, and Dr. Paul C. Gaffney, a beloved and revered clinician and educator. In 1951, Dr. Gaffney joined the full-time CHP faculty after residency, chief residency, and a year of fellowship, providing his expertise in hematology and oncology. Over time, Dr. Gaffney's role expanded to that of a master physician, and pediatricians and family practitioners in the community began sending their most diagnostically challenging patients to be seen in his clinic. His activities further extended to providing inpatient care and consultations for complex patients.

With these growing responsibilities, Dr. Gaffney formed the DRS as a separate division within the Department of Pediatrics in the mid-1970s and began developing the division. The group, then and now, is comprised of general pediatricians who provide multidisciplinary care for hospitalized children as well as for ambulatory consultations. The DRS was initially described in the literature 20 years ago; the roles of the 5 full-time physicians at that time included a variety of clinical, teaching, and scholarly activities, as both inpatient and outpatient consultative physicians.[13] Though much growth has occurred within the division since then, Dr. Gaffney's initial goals of providing excellent patient care and education in an academic setting still remain at the heart of each group member.

Growth of the Division

In March 2002, there were 4 full-time physicians within the DRS. A remarkable increase in the group size has occurred since then, and currently there are 16 physicians. Each member of the division is assigned a specific activity, either outpatient or inpatient, for at least a 5-day block. This allows the division to provide continuity in the care of

2010 Society of Hospital Medicine DOI 10.1002/jhm.553
Published online in wiley InterScience (www.interscience.wiley.com).

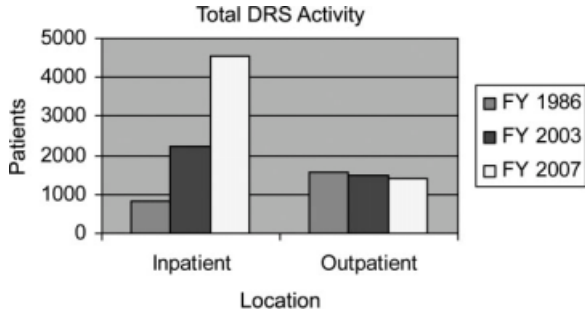

FIGURE 1. Total number of patients seen by DRS in inpatient and outpatient settings in fiscal years 1986, 2003, and 2007.

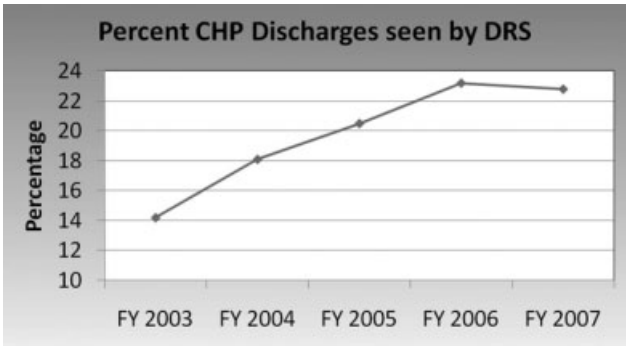

FIGURE 2. Percentage of total CHP discharges by DRS in fiscal years 2003-2007.

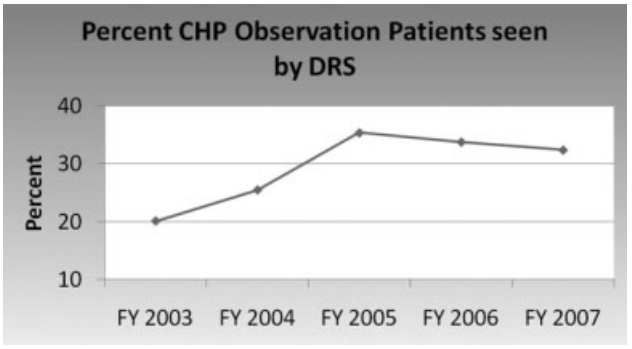

FIGURE 3. Percentage of CHP observation patients seen by DRS in fiscal years 2003-2007.

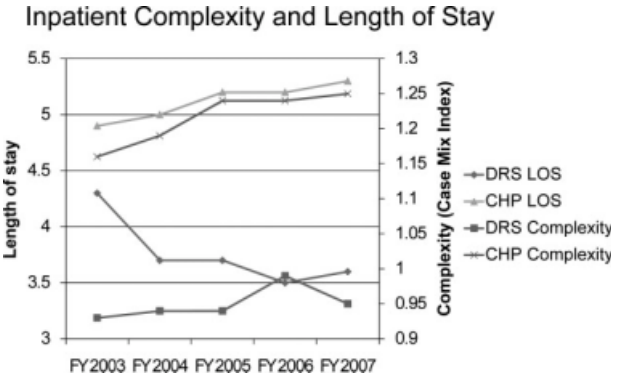

FIGURE 4. Comparison of inpatient complexity and average length of stay between DRS and all of CHP.

complex patients in both settings and help maintain a medical home for these challenging patients. The primary care physician (PCP) remains responsible for primary care of the patient while the DRS can help manage the patient's complexities in the outpatient and inpatient setting. In essence, there is joint patient ownership between the DRS and the PCP, with relegation of different skill sets to provide a complete medical home for the patient.

The current activities of the group are summarized as follows.

Inpatient Activities

Inpatient Care

Corresponding to the growing pediatric hospitalist movement in the past decade, several area PCPs began requesting that their office patients be followed by the DRS when admitted to CHP. In 2003, the DRS physician referral list had 150 physicians, and it currently has over 325 physicians who refer the inpatient care of their patients to the DRS. These practices are located in a variety of locations in Western Pennsylvania, Ohio, and West Virginia. There are only 7 private practices that continue to maintain their admitting privileges to CHP, and these practices account for <0.5% of general pediatric admissions. The remaining admissions (those PCPs not on the DRS referral list or with admitting privileges) are covered by a rotating attending physician; 85% of the time this is a DRS physician. Therefore, while <0.5% of general pediatric admissions are cared for by private pediatricians, >95% of all general pediatric admissions are cared for by DRS, with the remaining patients cared for by a small number of pediatric subspecialists who occasionally serve as rotating attendings.

Associated with the increase in referrals has been a marked increase in inpatient activity (Figures 1–3). Nearly 1 of every 4 CHP discharges and 1 of every 3 observation patients are cared for by the DRS.

The DRS division has seen an increase in complex inpatient admissions as well as a much larger number of routine pediatric admissions from the community PCP referrals, as described above. Statistically, this has resulted in an overall stable to slightly increased inpatient complexity for the DRS group. During this same time period, there was a steep decrease in DRS inpatient length of stay followed by maintenance at the shorter length of stay thereafter. Inpatient complexity has increased throughout CHP, yet the same decreases in length of stay have not been seen universally in all the divisions (Figure 4). The advantage that a hospitalist group can bring in decreasing length of stay (and, thereby, hospital costs) has been seen in hospitalist programs around the country.[6,7]

Each member of the group attends on the general pediatric ward for 9 to 10 months per year as compared to 2

2010 Society of Hospital Medicine DOI 10.1002/jhm.553
Published online in wiley InterScience (www.interscience.wiley.com).

TABLE 1. Most Common Inpatient Diagnoses

FY 1986		FY 2007	
Rank	**Diagnosis**	**Rank**	**Diagnosis**
1.	Asthma	1.	Bronchiolitis
2.	Gastroenteritis	2.	Asthma
3.	Failure to thrive	3.	Pneumonia
4.	Seizures	4.	Dehydration
5.	Bronchiolitis	5.	Viral enteritis
6.	Pneumonia	6.	Viral infection, NOS
7.	Suspected sepsis	7.	Esophageal reflux
8.	Apneic episodes	8.	Fever
9.	Meningitis	9.	Cellulitis
10.	Otitis media	10.	Convulsions

Abbreviations: FY, fiscal year; NOS, not otherwise specified.

months per year in 1986. In order to prevent job-related fatigue, 6 to 8 members of the group typically attend on the ward at the same time so that individual patient volume is more manageable. On average, each individual physician is responsible for about 6 to 8 patients per day. This census allows for daily education of residents and medical students as well as faculty participation in a variety of administrative activities. Despite emphasis on careful documentation and billing for both inpatient and ambulatory activities, the division, like most other pediatric hospitalist divisions, depends upon financial support from CHP and the Department of Pediatrics.

There is a wide variety of diagnoses that are seen in the inpatient setting, with notable similarities and differences when compared to 2 decades ago (Table 1). For example, asthma, gastroenteritis, and bronchiolitis continue to be frequent diagnoses, with bronchiolitis admissions becoming more frequent, following national trends.[14]

In general, a DRS faculty member becomes the primary resource for families with medically complex children. The same faculty member tends to follow the patient in the consultative ambulatory clinic, be available for phone calls, and, if possible, follow them as the attending physician when the patient is admitted. This provides a degree of continuity generally not seen in many other hospitalist programs and has the potential to increase patient and physician satisfaction as well as patient safety.

Limited Stay Unit

In addition to general inpatient care, the DRS developed and maintains the Limited Stay Unit (LSU). This unit was specifically created in 2001 to serve patients with uncomplicated diagnoses who are expected to be discharged within 48 hours. Up to 10 short-stay/observation patients are admitted to this unit each day, with nurses and staff specially prepared to handle rapid patient turnover. A child's eligibility for the unit is determined by the Emergency Department physicians or by phone consultation between the referring physician and the attending LSU physician. The design of the LSU allows for efficient admission and discharges of patients admitted with uncomplicated diagnoses. Each morning, the LSU attending physician, nurse practitioner, and residents discuss each patient with the nursing team and assess discharge readiness. Prescriptions and other discharge paperwork are prepared before morning rounds in order to avoid delays when the child has met criteria for safe discharge. Initial internal data evaluating the efficiency of the LSU demonstrated shorter length of stay for similar diagnoses admitted to the general ward. This difference was not observed in a subsequent study, likely due to CHP initiatives to improve the efficiency of discharge processes throughout the hospital.

Inpatient Consultations

The DRS serves as the inpatient pediatric consultant for the medical and surgical subspecialties. In 2007, the division saw 292 inpatient consultations. Many of the consultations originate from the surgical subspecialties (eg, a consult from neurosurgery for vomiting in a child with a functioning ventriculoperitoneal shunt). Other consultations come from pediatric subspecialties (eg, a patient with a congenital heart defect managed by the pediatric cardiology service with recurrent aspiration pneumonia of unclear etiology). The consultation process begins with the primary service discussing the patient with a senior resident who performs the initial history and physical, formulates an assessment and recommendations, and discusses the case with the DRS physician. Any necessary changes to the recommendations are made and relayed to the primary service. In addition, the DRS consults on known chronically ill patients in the intensive care unit (ICU), providing support to the family, nuances of chronic care to the ICU team, and continuity of care when the patient is transferred to the general ward.

Evening Hospitalist Program

In September 2005, the DRS began to provide extended in-house attending coverage until midnight on weekdays and 10 PM on weekends. The evening hospitalist (EH) not only sees the new DRS admissions during the evening but also is available for formal consultations from subspecialty services and informal consultations from house staff. The EH is responsible for resident and medical student education (including direct observation of history taking and physical exam skills), facilitation of early discharges for the following morning, and enhancement of patient safety. The EH is also a part of the Condition Help team,[15] a novel patient safety initiative discussed below.

The EH program benefits patients and DRS members alike. Other members of the group are able to assume care of patients in the morning for whom the diagnostic evaluation has already been initiated by the EH. Therefore, definitive plans are in place earlier, and many laboratory tests,

2010 Society of Hospital Medicine DOI 10.1002/jhm.553
Published online in wiley InterScience (www.interscience.wiley.com).

radiographs, and other tests have returned by the time the daytime attending sees the patient.

The EH program was structured to enhance patient care and resident supervision while avoiding scheduling that could adversely affect job sustainability and retention. As currently structured, the EH program offers numerous advantages over 24-hour, 7-days-per-week coverage. First, resident autonomy is crucial during their training.[16] One significant early concern was that extending the hours of attending physician coverage could diminish this autonomy. To prevent this from occurring, the EH allows the senior residents to take ownership of patient care and provide the initial teaching and instructions to interns, students, and families before the EH becomes involved. This structure of the EH program enhances the development of resident autonomy, yet provides support for the residents either by the EH or on-call attending through all hours of the night. Second, the senior residents meet with members of DRS each morning to discuss their decision-making process for overnight admissions that arrive after the EH shift has ended. This allows analysis of house staff thought processes and discussion of considered alternatives. Third, with the recent resident work-hour restrictions, several residency programs have moved to either daytime or nighttime shift-based work for the residents. Therefore, having the same EH working each day for the week allows for more accurate assessment of the nighttime residents than scattered 24-hour attending shifts. Fourth, evening coverage allows for simpler scheduling and a less disruptive sleep cycle for the EH than 24-hour coverage could allow. Finally, the EH is able to transition to typical daytime hours following a week of evening shifts, which helps to enhance EH retention by providing opportunities for academic endeavors and peer interactions.

The Children's Home

Since August 2007, the DRS has provided inpatient care for children admitted to The Children's Home of Pittsburgh and Lemieux Family Center (TCH). This independent facility is administratively and geographically separate from CHP. The DRS manages a 6-bed unit that specializes in transitional pediatric care and serves technology-dependent infants and children in a family-centered, home-like environment. In general, patients who require these services are seen at CHP initially, medically stabilized, and then transferred to TCH to continue their care. There is 1 DRS physician assigned each week to providing care for these patients. Examples of patient problems cared for at this facility include feeding issues, long term intravenous (IV) antibiotic treatment (eg, neonates recovering from sepsis, meningitis, osteomyelitis), and family education for technology-dependent children (eg, new tracheostomy or ostomy). The average length of stay is 10.2 days, which decreases CHP length of stay and promotes CHP savings during periods of high census.

TABLE 2. Most Common Outpatient Diagnoses (FY 2007)

Rank	Diagnosis
1.	Failure to thrive, poor weight gain, weight loss
2.	Abdominal pain
3.	Fever
4.	Chronic fatigue
5.	Syncope
6.	Gastroesophageal reflux
7.	Chest pain
8.	Developmental delay
9.	Headache
10.	Coordination of care

Abbreviation: FY, fiscal year.

Outpatient Activities

Outpatient Care

Many physicians in community clinics have large daily patient volumes, seeing upward of 30 to 40 patients per day. These added outpatient responsibilities can lead to decreased time available for a PCP to round on inpatients (hence, the nationwide growth of hospitalists).[17] Additionally, this increased practice intensity may lead to less time to manage individual patients in the primary care setting.[18]

The pediatric patient has become significantly more complex, likely due to increased survival of patients with chronic medical problems.[19] This is also evidenced at CHP by steadily increasing patient acuity scores (Figure 4). With this growing complexity, effective outpatient care in a standard 15-minute to 20-minute patient visit[20] is difficult, especially given the AAP recommendations of providing an effective medical home for every patient.[2] Since its inception, the DRS has provided ambulatory consultative services for the community. Sixty percent of the 1400 to 1900 patients seen each year are new patient referrals. The outpatient clinic activity has been essentially stable over the past several years (Figure 1), likely due to increased access to CHP subspecialty clinics and overall increased manpower in the Department of Pediatrics. A wide variety of diagnoses are made in the outpatient clinic (Table 2).

The DRS provides long-term, multidisciplinary continuity of care for medically complex children. The child is seen by the same DRS physician during each clinic visit. If the patient is admitted to the hospital, every effort is made for the patient to be seen by the DRS physician who saw the patient in the clinic setting. This process allows for medically complex children to have the coordinated care that can be difficult to achieve if a different hospitalist physician is responsible for their care during each admission.

The DRS works closely with the PCP to augment continuity of care while the PCP continues to provide primary care services. This provides the PCP with assurance that the patient will remain in their practice while the patient's multiple medical needs are addressed by the DRS. In this

2010 Society of Hospital Medicine DOI 10.1002/jhm.553
Published online in wiley InterScience (www.interscience.wiley.com).

manner, a complete medical home can be provided. Insurance companies have recognized members of the DRS to be specialists in general pediatric care and permit DRS faculty to bill as specialists.

Education

Teaching is a major role for the DRS, and the division is closely involved in leadership in medical education. Two members are directors of the pediatric physical exam course for first-year and second-year medical students, 2 members are the third-year medical school Pediatric clerkship directors, 1 member is co-director for the fourth-year acting internship, 1 member is co-director of the advanced pediatric interviewing program, 1 member is director of the pediatric medical education program, and 1 member is associate residency program director.

The entire group is involved with teaching at all of these levels. The majority of the group is involved with formal mentoring and advising of residents and medical students. The only general pediatric aspect of student and resident medical education in which the DRS is no longer involved is ambulatory pediatric medicine. The full-time ambulatory faculty is responsible for the primary ambulatory care experience. However, many residents choose to complete an elective in DRS, including the outpatient clinic, to become exposed to the different diagnostic dilemmas and coordination of care visits that they may not see in their primary care continuity clinics.

The division always welcomes new teaching challenges and incorporates new methods of teaching as opportunities arise. For example, the recent family-centered rounds initiative allowed for new teaching methods that were not previously possible. The team, comprised of a senior resident, 2 interns, 2 students, and an attending physician rounds at the bedside with permission from the parent. The patient's nurse, when available, and a pharmacist are often a part of the team. The case is presented by the student or intern (directed to the parent), and the case is discussed and clarified for the family. A plan for the day is presented and discussed with the family for approval. Through family-centered rounds, the DRS attending provides patient specific teaching and role modeling during rounds that would not otherwise have been possible with classical didactic teaching. This method of daily rounding also allows for the patients, families, nurses, nursing students, medical students, and residents to be taught by the attending physician simultaneously. Additionally, it affords the nurses the opportunity to participate in medical decision-making, and the house staff have perceived fewer pages by the nurses to clarify clinical issues.

The EH program also provided new teaching opportunities. Through the EH, the house staff and students are exposed to direct attending teaching in the evenings that otherwise would not occur, such as direct observation of student and resident histories and physical examinations. Based on resident evaluations and comments to the residency program directors, this teaching experience is deemed to be valuable and effective. In fact, since the EH program's inception 3 years ago, 2 EHs have been selected by the residents as "Teacher of the Year."

Patient Safety

Patient safety and reduction of medical errors is a major focus of the entire group. One DRS member serves within the hospital administration as Medical Director for Clinical Excellence and Service to enhance patient safety hospital-wide. One DRS member orchestrates a monthly house staff meeting entitled "To Err is Human" which provides a non-threatening environment for residents to discuss medical errors or difficult situations that they have encountered. Two DRS members are part of the Physician Advisory Committee, which serves as a bridge between the information technology group and clinicians. This committee has aided in achieving a smooth transition to a completely electronic medical record (EMR) and works together to use the tools of an EMR to enhance patient safety. This successful EMR implementation was recognized by the Health Information Management Systems Society in October 2008. Additionally, stemming from several successful patient safety initiatives, CHP was 1 of only 7 children's hospitals recognized for patient safety in 2008 by Leapfrog, the nation's premier patient safety evaluation group.

Condition HELP

In February 2001, the death of 18-month-old Josie King at a leading children's hospital brought medical errors to the national forefront.[21] In response to this tragedy, several hospitals in the University of Pittsburgh system began to implement a program called Condition HELP.[22] Condition HELP gives parents the ability to have their child evaluated by a special medical team if they feel their child's immediate health is in danger or their concerns are not being addressed. In 2005, CHP was one of the first hospitals in the country to implement this type of system. The Condition HELP team consists of a physician, a nursing supervisor, and a patient advocate. During the evening hours, the DRS EH also participates in the calls. The team discusses the family's concern and, with the patient's attending physician, generates a plan of action to help remedy the issue. Usually within 5 days, each call is intensively reviewed for events leading up to the Condition HELP as part of the CHP's patient safety initiative. From September 2005 through August 2007, the CHP Condition HELP team responded to 42 calls from patients and parents, with the most issues found to be related to communication breakdown between caregivers and families. The involvement of this team helped to identify the root cause of the parent or patient's concern and implement measures to help to rectify the issue and increase patient safety.[15]

2010 Society of Hospital Medicine DOI 10.1002/jhm.553
Published online in wiley InterScience (www.interscience.wiley.com).

Scholarly Activity

Previously, the DRS was responsible for the general medical care of liver transplant recipients, and many prior publications from the division focused on these patients.[13] The division no longer provides that service, and the current focus of scholarly activity is publication of case reports, book chapters, and review articles. There were 13 publications from the division members in the past 3 years. The group also serves as a major resource within the department by referring patients that fulfill the clinical criteria for ongoing clinical studies in other divisions.

One member of the group continues to serve as senior editor of the Atlas of Pediatric Physical Diagnosis, which is currently in its fifth edition. Several members of the group contribute chapters to this well-known text. One member is an editor and another is a specialty reviewer for FirstConsult.com, a website for physicians. Another member has served as an associate editor for the Journal of Pediatrics Grand Round Section.

At the University of Pittsburgh, both tenured and nontenured faculty promotions carry the same title without a prefix. Academic promotions for clinician-educators center around clinical excellence and innovation in education. The 3 senior members of the group have been promoted to professor (1 tenured, 2 nontenured), and 2 other members are currently in consideration for promotion to associate professor. Two members of the group have been elected to the School of Medicine Academy of Master Educators, which recognizes and rewards excellence in education.

Future Goals

Future goals include expansion and refinement of the division's current inpatient and ambulatory activities. The group increased in size to 16 physicians in July 2008 due to the increased inpatient volume and growing demand for outpatient referrals. The family-centered rounds initiative will continue to be refined to provide the best possible service to the patients and their families. The members of the group will have increased activity and involvement at the regional and national level with the growing pediatric hospitalist movement.

A pediatric hospitalist fellowship program certainly would be feasible in the current environment. At this writing, there are only 8 pediatric hospitalist fellowship programs nationwide. The outpatient/inpatient environment that the DRS provides the community would certainly provide a unique training environment for a hospitalist fellowship. The diversity in hospitalist divisions nationwide and the standardization of fellowship training is an important task for the future.[23]

Discussion

Pediatrics has undergone major changes since the original description of the DRS 20 years ago.[7] These changes have revolutionized the practice of pediatrics in both the ambulatory and inpatient settings. The DRS role has changed significantly along with the national trends in pediatric hospitalist growth over the past decade. Currently, 90% of the division's clinical activity is inpatient care. In essence, this is an extension of the original consultant role, but the model has been extended to provide inpatient multidisciplinary care for pediatric patients.

Despite the remarkable growth in inpatient activity, 1 unique advantage to the DRS model is maintenance of an active outpatient consultation clinic focused on providing a multidisciplinary medical home for chronically ill patients. DRS faculty are able to coordinate the care of these complex patients while not usurping the primary care responsibility of the community physician. The same faculty are able to extend the continuity of care to the inpatient setting should the patient require admission.

There have been several innovations that the DRS has implemented over the past decade. The LSU was designed to provide effective and efficient care. The EH program extends attending in-house coverage without the disadvantages of 24-hour, 7-day-per-week coverage. Expanding services to include The Children's Home allows for easier transition to home for technology-dependent patients and families. At the same time, DRS continues to strive for innovative clinical leadership as well as creative and effective student and resident education.

Conclusion

Despite the remarkable growth and increased clinical activity of the DRS since its inception, Dr. Gaffney's ideals continue to serve as the lifeline for the division. The DRS still maintains the consultative pediatric role that he originated, but the inpatient activity has grown with the pediatric hospitalist movement at the same time. The division also maintains an active outpatient clinic. This dual function allows the DRS to continue to serve the community in a unique manner.

Address for correspondence and reprint requests:
Kishore Vellody, MD, Assistant Professor of Pediatrics, Childrens Hospital of Pittsburgh Diagnostic Referral Service, 3rd Floor FP, 45th and Penn Ave, Pittsburgh, PA 15201;
Telephone: 412-692-5135; Fax: 412-692-7038;
E-mail: kishore.vellody@chp.edu Received 4 October 2008; revision received 27 March 2009; accepted 2 May 2009.

References

1. American Academy of Pediatrics. Ad hoc task force on definition of the medical home, the medical home. *Pediatrics*. 1992;90:774.
2. American Academy of Pediatrics. Medical Home Initiatives for Children with Special Needs Project Advisory Committee, The Medical Home. *Pediatrics*. 2002;110:184–186.
3. Wachter RM, Goldman L. The emerging role of "hospitalists" in the American health care system. *N Engl J Med*. 1996;335:514–517.
4. Society of Hospital Medicine. Home. Available at http://www.hospitalmedicine.org. Accessed June 2009.
5. Epstein D, Guttler S, Nakashima WF, et al. The role of "hospitalists" in the health care system. *N Engl J Med*. 1997;336:444–446.

2010 Society of Hospital Medicine DOI 10.1002/jhm.553
Published online in wiley InterScience (www.interscience.wiley.com).

6. Ogershok PR, Li X, Palmer HC, Moore RS, Weisse ME, Ferrari ND. Restructuring an academic pediatric inpatient service using concepts developed by hospitalists. *Clin Pediatr*. 2001;40:653–660.
7. Dwight P, MacArthur C, Friedman JN, Parkin PC. Evaluation of a staff-only hospitalist system in a tertiary care, academic children's hospital. *Pediatrics*. 2004;114:1545–1549.
8. Srivastava R, Landrigan CP, Ross-Degnan D, et al. Impact of a hospitalist system on length of stay and cost for children with common conditions. *Pediatrics*. 2007;120:267–274.
9. Landrigan CP, Conway PH, Edwards S, Srivastava R. Pediatric hospitalists: a systematic review of the literature. *Pediatrics*. 2006;117:1736–1744.
10. Bellet PS, Whitaker RC. Evaluation of a pediatric hospitalist service: impact on length of stay and hospital charges. *Pediatrics*. 2000;105:478–484.
11. Conway PH, Edwards S, Stucky ER, Chiang VW, Ottolini MC, Landrigan CP. Variations in management of common inpatient pediatric illnesses: hospitalists and community pediatricians. *Pediatrics*. 2006;118:441–447.
12. American Academy of Pediatrics. Section on Hospital Medicine. Guiding principles for pediatric hospitalist programs. *Pediatrics*. 2005;115: 1101–1102.
13. Gartner JC, Zitelli BJ, Malatack J, Urbach AH, McGregor RS. Consultative pediatrics: a role for the generalist in an academic setting. *J Pediatr*. 1988;112:1035–1038.
14. Shay DK, Holman RC, Newman RD, Liu LL, Stout JW, Anderson LJ. Bronchiolitis-associated hospitalizations among U.S. children, 1980–1996. *JAMA*. 1999: 282:1440–1446.
15. Dean BS, Decker MJ, Hupp D, Urbach AH, Lewis E, Benes-Stickle J. Condition HELP: a pediatric rapid response team triggered by patients and parents. *J Healthc Qual*. 2008;30:28–31.
16. Landrigan CP, Muret-Wagstaff S, Chiang VW, Nigrin DJ, Goldmann DA, Finkelstein JA. Effect of a pediatric hospitalist system on housestaff education and experience. *Arch Pediatr Adolesc Med*. 2002;156:877–883.
17. Pappelbaum SJ. Clinical and behavioral adaptation to managed care: stepwise suggestions for survival. *Pediatrics*. 1995;96:821–824.
18. Forrest CB, Glade G, Starfield B, Baker A, Kang M, Reid R. Gatekeeping and referral of children and adolescents to specialty care. *Pediatrics*. 1999;104:28–34.
19. Lipkin P (Chair, AAP Council on Children with Disabilities). Written Statement on Behalf of the American Academy of Pediatrics: Presented to the Institute of Medicine Committee on Disability in America. January 9, 2006. Available at: http://www.aap.org/advocacy/washing/Testimonies-Statements-Petitions/IOM_testimony.pdf. Accessed June 2009.
20. Blumenthal D, Causino N, Chang Y, et al. The duration of ambulatory visits to physicians. *J Fam Pract*. 1999;48:264–271.
21. Snowbeck C. Systemic errors continue to plague many hospitals. *Pittsburgh Post-Gazette*. 2004 Dec 5: Sect. Living.
22. Josie King Foundation: Creating a Culture of Patient Safety, Together. Available at http://www.josieking.org. Accessed June 2009.
23. Rappaport D. Hospitalist fellowships: pro and con. *Section on Hospital Medicine News*. 2006;1:7, 9. Available at: https://www.aap.org/sections/hospcare/SOHMwinter06news.pdf. Accessed June 2009.

2010 Society of Hospital Medicine DOI 10.1002/jhm.553
Published online in wiley InterScience (www.interscience.wiley.com).