A Collaborative Model for Inpatient Training in a Small Pediatric Residency Program

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Abstract

Background The nationwide decline in pediatric admissions to community hospitals threatens the sustainability of small pediatric residency programs. Little is known about the response of small programs to this challenge.

Objectives We report on the design and evaluation of an innovative, collaborative model for pediatric inpatient training between an academic community medical center and a children's hospital.

Methods We describe the operational, academic, and financial features of the model. Outcome measures include patient volume and subspecialty mix, resident and faculty perceptions as reported in an anonymous survey, and Accreditation Council for Graduate Medical Education Residency Review Committee (RRC) review.

Results In 2003, Albert Einstein Medical Center (Einstein) closed its pediatric inpatient unit and established an independent teaching service at St Christopher's Hospital for Children (St Christopher's) in Philadelphia, Pennsylvania. Under the new model, patient volume and subspecialty mix more than tripled. Einstein residents and faculty identified 5 major strengths: level of responsibility and decision making, caring for medically complex children, quality of teaching, teamwork, and opportunity to participate in academic activities at a children's hospital. St Christopher's leadership reported increased volume, no disruption of their residency program, and no dilution of clinical teaching material. The Einstein program was reaccredited by the RRC in 2006 for 2 years and in 2009 for 4 years.

Conclusion A collaborative model for inpatient training was successful in maintaining a community hospital–based pediatric residency program. Positive outcomes were documented for the residency program, the parent community hospital, and the collaborating children's hospital.

Background

The nationwide decline in pediatric admissions to community hospitals threatens the sustainability of small pediatric residency programs.[1] From 2005 through 2009, 6% to 12% of pediatric programs risked probation annually, and 10 lost accreditation. Low inpatient and subspecialty volume were major contributing factors.[2]

In contrast, children's hospitals have experienced growing occupancy[3] and increasing medical complexity of hospitalized children.[4] Community and children's hospitals are facing additional resident duty hour restrictions and considerations for inpatient caps. Thus, pediatric programs of any size are facing challenges to maintain educational quality and financial sustainability.

Relatively little is known about how small pediatric programs respond to the challenge of low inpatient census and low acuity. A common solution is the *guest rotator model*. This enhances resident inpatient exposure but may decrease resident identity with the home program.[5] In the *merger model*, 2 programs integrate their residencies to varying degrees.[6] Challenges described include blurring of program identities, conflicts between cultures, and impact upon prestige.[7,8] Programs that merge and create separate tracks also describe inequalities in resident workload, patient exposure, and education.[9]

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TABLE **Characteristics of Albert Einstein Medical Center and St Christopher's Hospital for Children**

	Einstein	St Christopher's
Institutional model	Academic community medical center	Free-standing children's hospital
Patient population	Inner city	Inner city, suburban, and referral
Economic model	Nonprofit	For profit
Residency program	Predominantly international medical graduates	American medical graduates
Medical school affiliation	Thomas Jefferson University	Drexel University
Pediatric subspecialties	Selected	Full complement

A third, less explored, approach is the *collaborative model*, in which programs maintain their individual identity but align resources. In this article, we report on the creation and evaluation of a collaborative model of pediatric inpatient training between a small pediatric residency program at an academic community medical center and a children's hospital.

Methods

In 2003, a collaborative relationship for inpatient training was established between the Albert Einstein Medical Center (Einstein) and St Christopher's Hospital for Children (St Christopher's) in Philadelphia, Pennsylvania. The characteristics of the institutions are described in the TABLE.

In 2002, Einstein had explored closing its pediatric inpatient unit owing to declining census and increased demand for adult beds. Einstein's leadership was committed to maintaining the pediatric residency, and St Christopher's emerged as a potential collaborator owing to its proximity and prior positive history of collaboration through a guest rotator model. At the same time, St Christopher's was seeking to increase admissions and Einstein, with its large primary care network, was viewed as an appealing collaborator.

The leadership of Einstein and St Christopher's developed 4 goals to guide the collaboration: (1) improve Einstein's pediatric inpatient training; (2) increase St Christopher's admissions and referrals; (3) prevent disruption of St Christopher's residency; and (4) ensure nondiscrimination in patient care. A task force of program leaders met regularly to design the model and evaluate progress.

The Memorandum of Agreement

In 2003, Einstein closed its pediatric inpatient unit and created the Einstein Service at St Christopher's. St Christopher's agreed to bill for hospital services and Einstein, for its physician services. Subspecialty services would be provided by St Christopher's faculty. Einstein would provide resident salary and benefits, but St Christopher's would claim Einstein residents for graduate medical education purposes and reimburse Einstein a fixed amount per rotating resident per year.

Residency Review Committee Approval

In October 2002, Einstein's pediatric residency was reaccredited for 2 years with citations for resident experience in inpatient and subspecialty services. In October 2003, the Residency Review Committee (RRC) approved Einstein's new model and granted a 1-year extension from the original cycle.

The Einstein Service

The Einstein service is an independent clinical and teaching service staffed by Einstein faculty and residents with full access to St Christopher's resources. It is not housed in a specific geographic location; rather patients are assigned to units appropriate for diagnosis. Patients are referred from Einstein's 3 emergency departments and large primary care network. Einstein and St Christopher's services operate in parallel to provide patient care but interface during educational conferences and subspecialty consultations.

Evaluation of the Collaborative Model

We evaluated the inpatient volume, resident and faculty perceptions, and RRC accreditation.

The Inpatient Experience We analyzed the effect of the collaborative relationship on inpatient admissions and subspecialty exposure. Data sources included inpatient logs (2002–2009) and work sheets (2003–2009). To estimate the rate of subspecialty exposure, defined as a case with a subspecialty principal diagnosis, we sampled 100 consecutive admissions in the first and third quarters of each year (200 patients/year), from 2002 to 2009, for a total of 1600. The years 2002–2003 reflect the old pediatric inpatient unit at Einstein, whereas 2004–2009 reflect the new model.

Resident and Faculty Perceptions Einstein resident perceptions were obtained through meetings with program leadership and rotation evaluations. In June 2010, we conducted an online anonymous survey of Einstein residents and faculty to assess satisfaction with the inpatient training

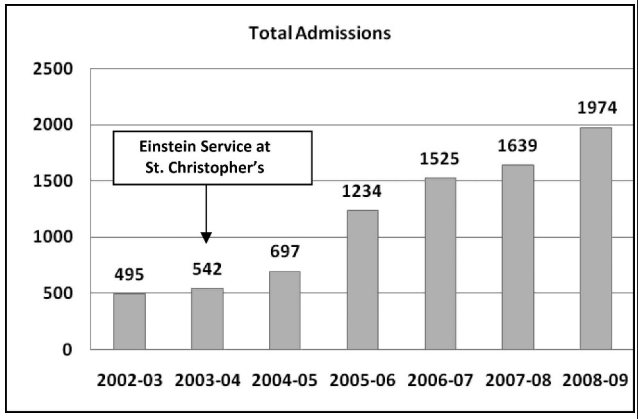

FIGURE 1 **Inpatient Admissions to the Einstein Service at St Christopher's Hospital for Children, 2002–2009**

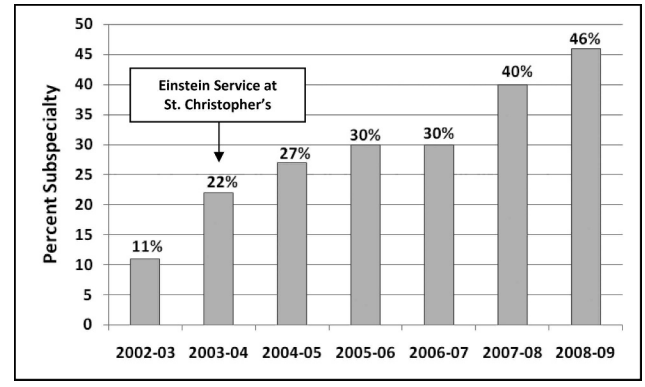

FIGURE 2 **Percentage Subspecialty Inpatient Admissions to the Einstein Service at St Christopher's Hospital for Children, 2002–2009**

experience and impressions of how they were perceived by their St Christopher's colleagues. Responses used a 5-point Likert scale and open-ended formats. St Christopher's program leadership provided ongoing feedback regarding their perceptions of the model at task force meetings.

RRC Accreditation We report on the program's RRC accreditation reviews in 2006 and 2009.

Results

The Einstein Inpatient Experience

Inpatient admissions and rate of subspecialty exposure more than tripled between 2002–2003 and 2008–2009 in the new collaborative Einstein Service (FIGURES 1 and 2).

Einstein Resident Perceptions

Einstein residents experiencing the transition (2003–2005) perceived the new model as superior with regard to patient volume, diagnostic diversity, and subspecialty access. A critical outcome was preservation of the Einstein program's identity and residents' sense of belonging to their primary institution. Several residents described the experience as the "best of both worlds." Perceived challenges included the perception of competency by St Christopher's residents, faculty, and staff.

In 2010, 27 of 30 Einstein residents (90%) responded to the survey. Most (81%) felt the model prepared them well to care for sick children, were satisfied/very satisfied with level of responsibility (100%), experience of teamwork (100%), development of clinical judgment skills (88%), and patient volume (81%). Only one-third (38%) were satisfied with patient diversity. Einstein residents felt they were perceived as competent/very competent by St Christopher's residents (85%), faculty (73%), and staff (88%). There were no differences in responses by year of training. Residents identified 5 major strengths: level of responsibility and decision making, caring for medically complex children, quality of teaching, teamwork, and conferences.

Einstein Faculty Perceptions

One hundred percent of the Einstein inpatient faculty (7 of 7) felt the model prepared residents very well for the care of sick children, responsibility, and clinical skills (100%). Most were satisfied with patient volume (72%) and diversity (86%). Most felt the inpatient experience enhanced their own professional development (71%) and felt very respected by St Christopher's faculty and staff (100%).

St Christopher's Leadership Perceptions

St Christopher's leadership rated their experience highly. The collaboration increased inpatient volume and subspecialty referrals in a competitive health care market. They described an overall perception of positive relationships between residents and faculty of both programs and felt interactions during educational conferences were mutually enhancing. Importantly, there was no perception of compromise of teaching experience or dilution of clinical material. As St Christopher's volume grew and their program implemented a resident cap system, the additional trainee workforce provided by the Einstein residents was seen as a positive contribution. Although not quantitatively measured, St Christopher's leadership reported progressive acceptance of Einstein residents and respect for their competency by St Christopher's residents and faculty.

RRC Accreditation

In June 2006, the Einstein program was reaccredited for 2 years. Inpatient volume was considered adequate but "lacking variety and complexity." In August 2009, the program was reaccredited for 4 years, with noted improvement in inpatient subspecialty exposure.

Discussion

Our collaborative model for pediatric inpatient residency training was successful in maintaining a pediatric residency program in an academic community medical center by developing a defined relationship with a children's hospital. The model is unique in that we created a separate inpatient service at a children's hospital, which further is not centered on a "geographic" unit. Although there may be precedent in graduate medical education for other collaborative models, to our knowledge, this is the first description of such a model for pediatric residency training.

The results show that both collaborators benefited under the model. For Einstein, the academic community medical center, it enhanced inpatient residency training and helped maintain program accreditation. For St Christopher's, the children's hospital, it increased admissions and provided additional trainee workforce.

An initial concern was how to successfully interface 2 distinct residency programs in 1 institution and create success for both.[10] Unlike mergers, with their forced integrations of programs, our model was successful as it resulted from the initiative and work of the program leaders, sought an optimal blend of independence and interdependence, and enhanced the service-learning balance for both programs in a time of restricted resident duty hours. Our collaborative model could be replicated in other programs, with the key determinants for success being a prior positive history between the institutions, geographic proximity, and commitment of leadership and faculty. In addition, the model should have the ability to produce early and significant outcomes for both collaborators, in our case residency program accreditation and increased inpatient admissions. These elements have also been described as important tools for designing successful program mergers.[11–13]

We describe key aspects of our graduate medical education collaboration and the impact on our small pediatrics program. If this model is to be applied to other programs, studies should assess additional outcomes, such as outcomes for similar collaborations in large programs, and the effect of the collaboration on resident and faculty recruitment, quality of patient care, and financial outcomes.

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