

## COMMENTARY

# Pediatric Post–Acute Hospital Care: Striving for Identity and Value

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The landscape of hospital care for children is changing. Hospital clinicians are challenged to provide high-quality care to 2 increasingly complex groups of children: (1) healthy children admitted for high-severity acute illnesses or injury and (2) children admitted with lifelong, and often disabling, chronic conditions. Hospitalizations for both of these groups are becoming more prevalent, lengthy, and costly. In many situations, these children need weeks, or sometimes months, to recover from their illness or injury, with a sustained intensity of daily caregiving needs throughout their recovery period. Pediatric post-acute hospital care is a little-known and underused option in pediatric health care that could substantially help these children stabilize in a less restrictive and less costly environment than acute care hospitals can provide. In this commentary, we (1) propose the need and place for pediatric post-acute care hospitals along the continuum of care, (2) discuss the characteristics of children currently cared for in pediatric post-acute care hospitals, (3) suggest research opportunities and challenges, and (4) present issues related to the cost and value of pediatric post-acute care hospitals.

## ABSTRACT

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www.hospitalpediatrics.org

DOI:10.1542/hpeds.2015-0133

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HOSPITAL PEDIATRICS (ISSN Numbers: Print, 2154-1663; Online, 2154-1671).

**FINANCIAL DISCLOSURE:** The authors have indicated they have no financial relationships relevant to this article to disclose.

**FUNDING:** Children's Hospital Association, Overland Park, KS (principal investigator: J. O'Brien).

**POTENTIAL CONFLICT OF INTEREST:** The authors have indicated they have no potential conflicts of interest to disclose.

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## NEED FOR PEDIATRIC POST-ACUTE CARE

Post-acute care refers to a broad range of medical, nursing, and rehabilitative services and includes any care provided after an acute care hospitalization. Post-acute care settings include hospital, nonhospital, and residentially based post-acute care services and providers. Adults often rely on post-acute care facilities after acute care hospital discharge to maintain their health and safety while recovering from an illness or injury. In contrast to children, it is culturally expected that the health system will offer and provide a high-level of care to adult patients to support their recovery after an acute care hospitalization. Nearly 40% of high-cost, hospitalized adult Medicare beneficiaries are transferred from an acute care hospital to a post-acute care hospital facility at discharge.<sup>1</sup> Children have similar needs to adults for high-level post-acute care, but the burden of care falls on the family.

As acute care hospitals are facing increasing pressure to minimize children's length of stay, families often have limited options for caregiving help after discharge. The effort, out-of-pocket expenses, and missed days of work endured by families

to manage their children's complex medical and rehabilitation needs at home after hospitalization are substantial.<sup>2,3</sup> In many cases, home-care options are not an appropriate or safe alternative for children with medical complexity and/or technology dependence recovering from acute illnesses. There is often limited availability of home care personnel (eg, home nurses or personal care attendants) to help provide care at home for these children. Moreover, parents often report difficulty finding outpatient providers capable of responding rapidly when their child's health declines after hospital discharge.<sup>2</sup> Loss of employment, marital discord, and emotional instability are commonly experienced by families as they struggle to find help.<sup>3</sup> The likelihood of the children returning to the hospital to stabilize their health is high, with readmission rates as high as 30%.<sup>4</sup>

## POST-ACUTE CARE ALONG THE CONTINUUM

There are several forms of post-acute care for adult patients and the distinctions among them can be difficult to decipher. Hospital-based post-acute care is provided in long-term acute care, subacute care, and inpatient rehabilitation programs for adults. There are similar but fewer existing

post-acute care options available to children who need additional time to recover from an acute care hospitalization. These options, also collectively described as post-acute care, support children at home, in skilled nursing facilities, or in a pediatric post-acute inpatient hospital setting.

Pediatric post-acute care hospitals admit children from acute care hospitals and provide long-term (>25 days average length of stay) inpatient care for children who remain too debilitated or unstable to be discharged from the hospital. Often referred to as pediatric specialty hospitals or pediatric rehabilitation hospitals, pediatric post-acute care hospitals provide a less restrictive level of care than an acute care hospital in which children receive medical care, rehabilitation services, and family teaching in a developmentally appropriate physical environment. Table 1 provides distinctions in the levels of inpatient hospital post-acute care for children and adults.

We believe the number of pediatric post-acute care hospitals across the United States to be small, with an estimated 36 of such hospitals located in 21 states and Washington DC. There are another

**TABLE 1** Types of Post-Acute Hospital Care for Adult and Pediatric Patients

Adult Patients
<p>Long-term acute care (LTAC): LTACs provide care for hospitalized patients with &gt;1 complex chronic condition who are ready for hospital discharge but require ongoing skilled nursing care for health issues such as cardiac recovery, ventilator dependency, cancer care, and wound care. Patients admitted to LTAC are not ready for inpatient rehabilitation. However, they are eventually expected to improve enough to benefit from rehabilitation (ie, they will eventually experience transfer to a rehabilitation facility) and to return home. To enter an LTAC facility, patients are expected to stay at least 25 days. LTAC patients typically transfer from an ICU. LTAC nursing staff is typically available 24 h a day.</p>
<p>Inpatient rehabilitation: inpatient rehabilitation facilities admit patients from acute care hospitals who have neurologic, musculoskeletal, and/or cardiopulmonary impairment and who are ready for intensive, active rehabilitation. Rehabilitation patients are admitted with a high likelihood that they will exhibit improvement in the areas of self-care, mobility, safety, communication, cognition, and behavior before discharge from the rehabilitation facility. Rehabilitation patients typically receive an intense specified number of rehabilitation therapy hours per day (eg, at least 3 h) for 5–7 d per week with emphasis on specific functional goals. Rehabilitation nursing staff is available 24 h a day.</p>
<p>Subacute care: subacute care is an alternative setting of rehabilitation for patients ready for some degree of rehabilitation but not the intensive, active rehabilitation offered by an inpatient rehabilitation facility. Subacute rehabilitation patients typically receive less than 3 h of rehabilitation per day, and the rehabilitation is often focused on 1 particular goal (eg, eating or toileting). Nursing services in a subacute care facility may not be provided for a full 24 h a day</p>
Pediatric Patients
<p>Pediatric post-acute care: the types of post-acute care for children are not as distinct as the types for adult patients. Pediatric post-acute care facilities admit children from acute care hospitals. They provide long-term inpatient care for children who (1) remain too debilitated or unstable to be discharged from the hospital and require ongoing hospital-level of medical care (eg, to wean ventilator support, complete IV antibiotic administration, wean medications); and (2) who have a prognosis for improvement in the areas of self-care, mobility, safety, communication, cognition, and behavior before discharge from the rehabilitation facility and require an intense specified number of rehabilitation therapies per day. Rehabilitation patients typically receive a minimum of 3 h per day for 5–6 d per week with an emphasis on functional goals. Rehabilitation nursing staff is available 24 h a day. Pediatric post-acute care hospitals are also referred to as pediatric specialty hospitals or pediatric rehabilitation hospitals.</p>

Adapted from the Association of Rehabilitation Nurses.

~145 “embedded” rehabilitation units in acute care children’s hospitals across the United States. Absent a central listing, we used hospital websites, Children’s Hospital Association listings, and state hospital licensure sites to identify characteristics of pediatric post–acute care hospitals. We found that pediatric post–acute care hospitals identified have as many as 126 beds; the majority “stand alone” and have no affiliation with a tertiary medical center, and less than half are affiliated with an acute care children’s hospital or adult facility.

In 2014, we surveyed chief executives and chief medical officers of pediatric post–acute care hospitals to learn more about license classification, academic affiliation, reimbursement, and patient acuity.<sup>5</sup> Providers from 14 pediatric post–acute care hospitals responded and reported the following classifications: pediatric specialty ( $n = 2$ ), acute care ( $n = 5$ ), acute care specialty ( $n = 3$ ), skilled nursing facility ( $n = 2$ ), long-term acute care ( $n = 1$ ), and rehabilitation ( $n = 3$ ). All 14 hospitals were reported to be freestanding, “stand-alone” facilities. Eleven hospitals reported receiving per diem payment, 3 are part of an integrated health care system, and 4 have academic affiliations. Six hospital representatives reported that recent internal evaluations indicated that children are being transferred from acute care sooner than 5 years ago, and 9 of the 14 indicated that length of stay in the pediatric post–acute care hospital is also shorter now than 5 years ago.

### CHARACTERISTICS OF CHILDREN SERVED BY POST-ACUTE CARE HOSPITALS

Limited data are available to describe the clinical characteristics and medical and rehabilitation needs of infants, children, and youth who use pediatric post–acute hospitals. Clinical characteristics are consistent with existing frameworks of medical complexity, including the presence of a chronic complex medical condition (eg, multiple congenital anomalies, cerebral palsy, Down syndrome, myopathy) with  $\geq 1$  of the following: tracheostomy,

gastrostomy, postsurgery (orthopedic, gastrointestinal), sepsis, ruptured appendix, new-onset or uncontrolled seizures, respiratory distress, dehydration, failure to thrive, and malnutrition.<sup>6</sup> Children with medical complexity are distinguished from children with special health care needs based on their health care service needs, having  $\geq 1$  chronic conditions, functional limitations, and health care utilization.<sup>7</sup> Medical and rehabilitation needs include (1) weaning or stabilization on invasive and noninvasive mechanical ventilation; (2) intense rehabilitation therapy after an injury, illness, or surgery; (3) weaning of medications after neonatal addiction, surgery, or intensive care; and (4) medical care and support for  $\geq 1$  chronic conditions.<sup>4,6</sup>

### OUTCOME MEASUREMENT AND RESEARCH OPPORTUNITIES AND CHALLENGES

There are no national standards for care provision or outcome assessment in pediatric post–acute care hospitals. With this heterogeneous group of both hospitals and children, determining which results to measure for children requiring post–acute hospital care has yet to be determined. Health care outcomes for children requiring hospital-based post–acute care are dependent on medical condition and diagnosis; the acute care services provided; social, geographic, and economic influences; and the post–acute care received. To date, outcome studies have shown that inpatient pediatric post–acute care is effective for improving function after neurologic injury<sup>8,9</sup> and after musculoskeletal trauma or surgery.<sup>10</sup> Inpatient pediatric post–acute care has also been shown to be effective for decreasing airway support,<sup>11</sup> weaning children from invasive and noninvasive mechanical ventilation,<sup>12</sup> and weaning infants from treatment medications following neonatal addiction.<sup>13</sup> Children with tracheostomies who consistently used post–acute care spend fewer days in an acute care hospital.<sup>14</sup>

Federally funded National Institutes of Health– and pharmaceutical industry–sponsored pediatric health care

research is conducted primarily in acute care hospitals as the populations served in the post–acute hospital setting are small and heterogeneous. The avenues for study in pediatric post–acute care are many, yet the methodological and measurement challenges are significant. Facility culture, time, and staff knowledge and training are all challenges to implementing research initiatives. In addition, methodological challenges include the heterogeneity of children’s diagnoses and conditions, small sample sizes within facilities, the age range of the children served, and the availability of appropriate measures.

Determining more specific demographics (eg, size, distance from large population centers) of pediatric post–acute care hospitals in the United States would be advantageous. Identifying providers of similar services for similar groups of children is a logical initial step in identifying areas in need of examination (and subsequent improvement). Development of a national workgroup addressing pediatric post–acute hospital care including the development of a national database with standardized data would allow for examination of patient and family demographics; care outcomes; how care differs in regions with and without a pediatric specialty hospital; the impact of health care reform on pediatric post–acute care hospitals; the percentages of children discharged to different levels of post–acute care (eg, post–acute hospital, skilled nursing facility); and identification of the clinical and fiscal differences and similarities between pediatric post–acute care hospitals and embedded rehabilitation units for children.

### COST AND VALUE OF PEDIATRIC POST-ACUTE CARE

To determine value, pediatric post–acute care hospitals need to demonstrate that they improve patient health outcomes and are cost-effective when doing so. Reports indicate that the cost of providing post–acute care is less than the cost of acute or intensive hospital care.<sup>15,16</sup> Reimbursement for post–acute care is, however, substantially lower.<sup>6</sup> Reimbursement may be one of the reasons why pediatric

post-acute care has not substantially penetrated the health care marketplace and why there are few post-acute care pediatric hospitals. The balance between the clinical value added from pediatric post-acute care and the cost to provide this level of care has not been evaluated. As acute care hospitals face capacity constraints, post-acute care hospitals can help relieve the pressure while providing an appropriate and effective level of care for children who require active rehabilitation services, are weaning from technology and/or medications, and require medical care for  $\geq 1$  chronic conditions.<sup>4,6</sup> If value can be demonstrated, perhaps adjustments in reimbursement for pediatric post-acute care might occur to incentivize increased capacity.

## CONCLUSIONS

Pediatric post-acute care hospitals are a vital component in the continuum of care providing high-quality care at a reduced cost, while relieving the capacity constraints of acute care hospitals. It is our experience that families, payers, and policy-makers familiar with pediatric post-acute care hospitals recognize the unique contribution that these centers make and eagerly support their existence. We believe that pediatric post-acute care hospitals can provide part of the solution for managing escalating costs of medical care with finite resources—the core concept of health care reform. We encourage the pediatric post-acute care hospitals across the United States to join us to claim our identity and prove our value along the continuum.

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*Hospital Pediatrics* 2015;5;548

DOI: 10.1542/hpeds.2015-0133

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