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U.S. News & World Report
Best Children's Hospitals 2010 Methodology

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I. Introduction

U.S. News & World Report has ranked hospitals in pediatrics since launching the annual “Best Hospitals” rankings in 1990. Until 2007, however, the pediatric rankings were based solely on reputation, determined by an annual survey of board-certified pediatricians and adolescent-medicine specialists.

The obstacle to data-driven rankings was the absence of quantitative measures comparable to those used to rank most Best Hospitals specialties. For example, Medicare data (i.e., MedPAR) are used to determine mortality in 12 adult specialties. No such large pediatric mortality database was or currently is available. (A relatively small number of children, under narrowly defined conditions of eligibility, receive care under Medicare because of legislatively mandated changes in coverage over time.) Reliable structural measures were also absent. Available data sources generally reported volume, advanced technologies, and patient services across a hospital and did not break out pediatric-specific information.

Continuing to rank this important specialty on reputation alone for several years or more while experts worked out definitions of performance data and how best to collect and verify the data was not acceptable. *U.S. News* enlisted RTI International[†] to develop an enhanced methodology for ranking hospitals in pediatrics, utilizing data obtained directly from pediatric hospitals (the Pediatric Hospital Survey). Rankings incorporating such data appeared in a separate issue of the magazine in 2007 as “Best Children’s Hospitals.” Separating the pediatric and adult rankings highlighted the change and minimized potential confusion created by apparently similar methodology used in both sets of rankings.

In 2008, both the Pediatric Hospital Survey and the survey of physicians were expanded, permitting pediatric hospitals to be ranked in general pediatrics and in six pediatric specialties.[‡] In 2009 the number of specialties was further expanded to 10 and general pediatrics was dropped. There were no additions or subtractions in 2010, although several specialty names were changed. The 2010 specialties:

- Cancer
- Diabetes & Endocrinology
- Gastroenterology
- Heart & Heart Surgery
- Kidney
- Neonatology
- Neurology & Neurosurgery
- Orthopedics
- Pulmonology
- Urology

[†] RTI International is the trade name of Research Triangle Institute.

[‡] Previous years’ methodology reports are available online at www.rti.org/besthospitals.

Like Best Hospitals, the Best Children's Hospitals rankings reflect the interrelationship among *structure*, *process*, and *outcomes*, the three components of the Donabedian paradigm.¹⁻⁵ The specific measures, weights, and scoring, however, are quite different in the pediatric rankings, partly because of constraints on the available data. The three Donabedian components are structure, process, and outcomes:

- *Structure* refers to hospital resources directly related to patient care. Examples include the ratio of nurses to patients, specialized clinics and programs, and certification by recognized external organizations.
- The *process* of health care delivery encompasses overall rendering of diagnosis, treatment, prevention, and patient education. In both the pediatric and adult rankings, process is represented by a reputational score based on the annual survey of board-certified physicians cited above.
- *Outcomes* most obviously include death but can also include functional success, such as in children with cystic fibrosis, and adverse events such as bloodstream infections and failure of transplanted organs.

The specific mission of the Best Children's Hospitals rankings is to identify hospitals that provide the highest quality of care for children with the most serious or complicated medical conditions, using the most robust and sensitive measures available to represent the three Donabedian elements. *Section IV* describes the data and the construction of each element.

As in previous years, most structure and outcomes data were obtained directly from children's hospitals through the Pediatric Hospital Survey (described in *Section III*). The methodology also incorporates nominations of hospitals from board-certified pediatric specialists in each of the 10 specialties through the Pediatric Physician Survey (described in *Section VI*). Two external organizations supplied data for two measures: the American Nurse Credentialing Center (Nurse Magnet designation) and the Foundation for the Accreditation of Cellular Therapy (accreditation for stem cell transplantation).

II. Eligibility

To be considered for the pediatric rankings, hospitals had to provide data about their services and capabilities on the 2010 version of the Pediatric Hospital Survey submission form. Hospitals were asked to submit data based on their standing in the National Association for

Children’s Hospitals and Related Institutions (NACHRI)[§] in any of three membership classifications: freestanding children’s hospital; children’s “hospital within a hospital” (a pediatric service that functions autonomously but does not physically stand apart), or associate member (pediatric hospitals that are affiliated with medical schools but are not the primary pediatric teaching hospital). Certain specialty and non-NACHRI member hospitals were added because they had appeared previously in the Best Children’s Hospitals rankings or because their inclusion was recommended by members of expert advisory panels that participated in a review of pediatric hospital quality measures in the fall of 2009. Of the 170 total hospitals included, 96 submitted data for the 2010 rankings.

III. Pediatric Hospital Survey

As in previous years, advisory panels were convened before the 2010 survey was sent to hospitals to offer guidance and suggest improvements to the prior version. Panel members were recruited in cooperation with NACHRI, which issued a request to the pediatric-hospital community to propose candidates with broad-ranging expertise in both general and specialty pediatric medical care and familiarity with current research into hospital quality. The panels ultimately comprised pediatric physicians, nurses, hospital quality experts, and other healthcare professionals. Panels in infection control and in health information systems/coding were added to the existing 10 specialty panels.

Through conference calls, ad hoc phone discussions, and e-mails during the summer and fall of 2009, panel members proposed, reviewed, and discussed extensive revisions to the previous survey, including prospective new measures.

The RTI project team and *U.S. News* created a draft set of measures and survey instrument. A smaller group of advisors reviewed both the broad content and specific information, such as individual ICD-9-CM codes that identify diagnoses and treatments. In addition, experts at three children’s hospitals extensively reviewed the survey to ensure that the questions made sense and were answerable. The final result was a survey significantly expanded and more thorough than the 2009 version. The data submission form was administered to hospitals from January to March 2010 via a dedicated Web page.

Analysis of the results indicated that some measures should be excluded because of failure to demonstrate meaningful variability among the responses. The remaining items were used to develop the majority of the structural and outcomes measures. The items are described in

[§] More information about NACHRI and its member hospitals can be found at www.childrenshospitals.net.

detail below. The Pediatric Hospital Survey data submission form will continue to be updated and modified in subsequent years to reflect the quality of care provided by U.S. pediatric facilities and the evolution of the discipline of quality improvement.

IV. Structure

The structural element is represented by volume, technology, clinical services, and other characteristic features of a high-quality pediatric hospital. In the Best Hospitals adult specialty rankings, most structural measures and their associated data are derived from the American Hospital Association (AHA) annual survey. Because the AHA survey focuses primarily on overall hospital measures, however, pediatric data lack specificity. For Best Children's Hospitals, structural data were collected through the Pediatric Hospital Survey, an independent effort conducted by RTI.

All measures used in the rankings are described in the following sections. The print version of the Best Children's Hospitals rankings displays only a subset of measures; a broader selection is displayed online. The measures are divided into two categories—those that apply to all specialties and those that apply to specific specialties. They are listed alphabetically.

A. Structural Measures (All Specialties)

Certain measures, such as absolute or relative patient and/or procedure volume, availability of advanced clinical services, and quality improvement activities are included in most or all specialties because they represent fundamental elements of high-quality hospital-based pediatric care. This section describes these measures. (Specialty-specific measures appear in *Section III. B.*)

Advanced Clinical Services

Hospitals frequently offer clinical services and organize teams or programs to address special needs of specific groups of patients. These services or programs may be organized around a particular diagnosis, need, or age group. The structure of the services or programs facilitates ensures that a range of resources are available. Specialized skills of a multidisciplinary staff improve overall quality of care and presumably outcomes. The clinical services recognized in each specialty are described in *Table 1*. One point was awarded for each service offered in a specialty.

Table 1. Advanced Clinical Services Offered by Specialty

Cancer (11 services)	
Service	Description
Pediatric Trauma Center	Level 1 or 2 Pediatric Trauma Center certified by the American College of Surgeons or state licensing board
Cancer care coordination	Hematologist-oncologist is involved in more than 50% of the evaluations and management visits with the patient
Cancer pharmacists	Offering the following: <ul style="list-style-type: none"> • a dedicated chemotherapy-certified pharmacist • pharmacists specifically assigned to participate in daily inpatient rounds with the pediatric cancer treatment team
Support services	Offering the following: <ul style="list-style-type: none"> • pediatric child-life specialists • school programs for hospitalized patients • psychosocial support program
Ease of access	Offering the following: <ul style="list-style-type: none"> • satellite offices/outreach clinics to assist patients facing barriers to care • coordinated outreach program that enables cancer patients to receive community-based follow-up care • multidisciplinary clinics, allowing patients to see multiple care providers in a single visit • social work support for the pediatric cancer program

Diabetes & Endocrinology (19 services)	
Service	Description
Pediatric Trauma Center	Level 1 or 2 Pediatric Trauma Center certified by the American College of Surgeons or state licensing board
Diabetes support staff	Having the following personnel available for consultation: <ul style="list-style-type: none"> • social workers • diabetes nurse educators • dietitians • genetic counselors • psychologists • exercise physiologists
Remote access to records	Providing physicians with remote access to patient records from locations off-site (e.g., electronic health records)
Diabetes patient services	Offering the following: <ul style="list-style-type: none"> • standardized educational program used to evaluate and prepare patients for use of an insulin pump • Certified diabetes educators (CDEs) to provide pump training to patient families • standardized education program used to evaluate and prepare patients for use of continuous glucose monitors (CGMs) • certified CGM trainers to provide CGM training to patient families • standardized educational program for families of new-onset diabetes patients • formal educational program for school nurses through either a yearly school nurse education conference or written materials distributed each school year to the school nurses to ensure appropriate care of each patient • designated school liaison who is an RN or CDE in hospital's pediatric diabetes program

(continued)

Table 1. Advanced Clinical Services Offered by Specialty (continued)

Diabetes & Endocrinology (19 services) (continued)	
Service	Description
Diabetes Educators	At least 75% of diabetes educators are CDEs
Diabetes support services	Offering the following programs or services: <ul style="list-style-type: none"> • Product fair to introduce patients/families to various treatment options • Diabetes education program certified by American Diabetes Association • Diabetes-specific support group for parents and families

Gastroenterology (8 services)	
Service	Description
Pediatric Trauma Center	Level 1 or 2 Pediatric Trauma Center certified by the American College of Surgeons or state licensing board
Gastrointestinal (GI) specialists	Having the following specialists available for consultation 7 days a week: <ul style="list-style-type: none"> • pediatric gastroenterology/liver-specialized pathologists • pediatric interventional radiologists
GI support groups	Providing support groups for: <ul style="list-style-type: none"> • inflammatory bowel disease • celiac disease • liver disease • other pediatric gastroenterology
GI education materials	Providing educational material on GI-specific conditions to patients

Heart & Heart Surgery (18 services)	
Service	Description
Pediatric trauma center	Level 1 or 2 Pediatric Trauma Center certified by the American College of Surgeons or state licensing board
Echocardiography laboratory	Offering certified echocardiography laboratory in: <ul style="list-style-type: none"> • transthoracic echocardiographic testing • transesophageal echocardiographic testing • fetal echocardiographic testing
Cardiovascular services	Offering these diagnostic and treatment services: <ul style="list-style-type: none"> • inpatient cardiology consultation • dedicated cardiac surgical operating room • cardiac intensive care unit • remote monitoring capability • cardiac diagnostic catheterization laboratory • cardiac interventional catheterization laboratory • electrophysiology laboratory • congenital heart disease clinic • ventricular assist program • 24-hour in-house extracorporeal membrane oxygenation (ECMO) • cardiovascular genetics clinic • transesophageal testing, supervised by pediatric cardiologist
Heart failure program	Providing a heart failure program with a designated medical director and nursing coordinator
Circulatory support	Offering ventricular assist devices (other than ECMO) for patients under 10 years old

(continued)

Table 1. Advanced Clinical Services Offered by Specialty (continued)

Kidney (22 services)	
Service	Description
Pediatric trauma center	Level 1 or 2 Pediatric Trauma Center certified by the American College of Surgeons or state licensing board
Maintenance dialysis staff	Having the following staff dedicated to maintenance dialysis: <ul style="list-style-type: none"> • clinical nurses • social workers • dieticians
Dialysis treatment	Providing the following dialysis options for acute kidney insufficiency: <ul style="list-style-type: none"> • hemodialysis • peritoneal dialysis • continuous renal replacement therapy
Maintenance dialysis services	Offering the following services in maintenance dialysis program: <ul style="list-style-type: none"> • school teachers dedicated to working with patients • standard review of patients' school performance and education
Education	Percentage of school-age dialysis patients enrolled in a school rehab program: <ul style="list-style-type: none"> • 51-75% of patients enrolled, hospitals receive 1 point • >75% of patients enrolled, hospitals receive 2 points
Kidney transplant services	Providing the following: <ul style="list-style-type: none"> • kidney transplantation program recognized by United Network for Organ Sharing (UNOS) • formal transition program for kidney transplant recipients • 51-75% of living donor nephrectomies conducted via laparoscopy (1 point) • >75% of living donor nephrectomies conducted via laparoscopy (2 points) • review the care of kidney transplant patients at an interdisciplinary care conference • maintain clinical database of attributes of current active kidney transplant patients for quality assessment and improvement
Pediatric dialysis unit	Unit providing the following: <ul style="list-style-type: none"> • designated medical director who is a pediatric nephrologist • continuous quality improvement activities discussed independently from the adult dialysis services • a physically separate unit for treatment of pediatric patients • dedicated nursing staff with formal training in pediatric dialysis • chronic maintenance dialysis at-home program for adolescents

(continued)

Table 1. Advanced Clinical Services Offered by Specialty (continued)

Neonatology (3 services)	
Service	Description
Pediatric trauma center	Level 1 or 2 Pediatric Trauma Center certified by the American College of Surgeons or state licensing board
NICU support staff	Offering the following: <ul style="list-style-type: none"> • neonatal intensive care unit (NICU)-specific pharmacist onsite who attends rounds with clinical team • NICU-designated nutritionist who supports clinical team

Neurology & Neurosurgery (14 services)	
Service	Description
Pediatric trauma center	Level 1 or 2 Pediatric Trauma Center certified by the American College of Surgeons or state licensing board
American Society of Pediatric Neurosurgeons membership	Full/candidate members of American Society of Pediatric Neurosurgeons <ul style="list-style-type: none"> • 1-2 members, 1 point • 3 or more members, 2 points
Neurology & neurosurgery support services	Offering the following: <ul style="list-style-type: none"> • neuroradiology interventionalists • psychologists who specialize in neuropsychological testing • neuroanesthesia program • dedicated neurology/neurosurgery intensive care unit or beds • a neuro-critical care discharge clinic to transition patient • neurological rehabilitation program
Neurological rehabilitation	Providing neurological rehabilitation procedures for: <ul style="list-style-type: none"> • traumatic brain injury • brain tumors • Guillain-Barre syndrome • multiple sclerosis • spinal cord injury

Orthopedics (19 services)	
Service	Description
Pediatric trauma center	Level 1 or 2 Pediatric Trauma Center certified by the American College of Surgeons or state licensing board
Orthopedic surgical specialists	Specialized orthopedic surgeons in: <ul style="list-style-type: none"> • hand surgery • spinal surgery • musculoskeletal oncology • sports medicine
Advanced care services	Comprehensive pediatric orthopedic program with: <ul style="list-style-type: none"> • designated inpatient unit for pediatric orthopedic patients • dedicated pediatric imaging center • imaging center staffed by a radiologist • multidisciplinary musculoskeletal oncology program

(continued)

Table 1. Advanced Clinical Services Offered by Specialty (continued)

Orthopedics (19 services) (continued)	
Service	Description
Clinics	<p>One point each clinic offered, plus one additional point for having 3 to 5 clinics, or 2 additional points for having 6 to 8 clinics:</p> <ul style="list-style-type: none"> • spina bifida clinic • spasticity or cerebral palsy clinic • skeletal dysplasia clinic • brachial plexus clinic • neurofibromatosis clinic • muscle disease clinic • pain clinic • sports medicine clinic

Pulmonology (8 services)	
Adv. Clinical Services	Description
Pediatric trauma center	Level 1 or 2 Pediatric Trauma Center certified by the American College of Surgeons or state licensing board
Asthma care specialists	<p>At least 1 full-time equivalent (FTE) staff with clinical responsibilities:</p> <ul style="list-style-type: none"> • respiratory therapists • certified asthma educators
Support services	<p>Offering the following:</p> <ul style="list-style-type: none"> • Cystic Fibrosis (CF) center accredited by Cystic Fibrosis Foundation • pulmonologist routinely involved in outpatient management of patients with sickle cell anemia • sleep center accredited by American Academy of Sleep Medicine (AASM) • sleep laboratory accredited by AASM • non-invasive positive pressure ventilation titration sleep studies

Urology (7 services)	
Service	Description
Pediatric trauma center	Level 1 or 2 Pediatric Trauma Center certified by the American College of Surgeons or state licensing board
Treatment options	<p>Offering the following:</p> <ul style="list-style-type: none"> • shock wave lithotripsy • ureteroscopy • percutaneously nephrolithotripsy/nephrolithotomy • laparoscopic variocolectomy • laparoscopic orchiopexy • robotic laparoscopic pediatric surgery

Availability of Pediatric Specialists

This measure evaluates the presence of a variety of physician specialists and surgeons available for consultation as well as having dedicated full-time medical staff who are critical to the delivery of appropriate care by pediatric hospitals. **Table 2** identifies the relevant specialists and surgeons for each pediatric specialty. Hospitals received 1 point for each appropriate physician specialist available for consultation to patients in their program.

Table 2. Physician Specialists by Specialty

Physician Specialists	Cancer	Diabetes & Endocrinology	Gastroenterology	Heart & Heart Surgery	Kidney	Neonatology	Neurology & Neurosurgery	Orthopedics	Pulmonology	Urology
Pediatric Anesthesiologist	●	●	●	●	●	●	●	●	●	●
Pediatric Critical Care Specialist	●	●	●	●	●	●	●	●	●	●
Pediatric Radiologist specializing in Diagnostic Radiology	●	●	●	●	●	●	●	●	●	●
Pediatric Radiologist specializing in Interventional Radiology	●	●	●	●	●	●	●	●	●	●
Pediatric Rheumatologist								●		
Pediatric Infectious Disease Specialist	●	●	●	●	●	●	●	●	●	●
Pediatric Head & Neck Surgeon	●	●				●				
Pediatric Cardiothoracic Surgeon				●		●				
Pediatric General Surgeon	●	●	●	●	●	●	●	●	●	●
Pediatric Neurosurgeon	●	●				●	●			
Pediatric Ophthalmology Surgeon	●					●				
Pediatric Orthopedic Surgeon	●					●		●		
Pediatric Urology Surgeon	●					●				●
Total Elements	11	8	6	7	6	12	7	8	6	7

Table 3 identifies the dedicated medical staff for each pediatric specialty. Hospitals received 1 point for having at least one full-time equivalent staff person who directly supported that specialty program.

Table 3. Other Medical Staff by Specialty

Specialty	1 FTE of the following staff who directly support specialty program:
Cancer (2 points)	<ul style="list-style-type: none"> • Pediatric Hematologist/Oncologist • Oncology Certified Staff
Diabetes & Endocrinology (2 points)	<ul style="list-style-type: none"> • Pediatric Endocrinologist • Clinical Registered Nurse
Gastroenterology (2 points)	<ul style="list-style-type: none"> • Pediatric Gastroenterologist • Clinical Registered Nurse
Heart & Heart Surgery (5 points)	<ul style="list-style-type: none"> • Pediatric Cardiothoracic Surgeon • Pediatric Cardiac Intensivist • Pediatric Cardiac Interventionalist • Pediatric Cardiac Electrophysiologist • Clinical Registered Nurse
Kidney (2 points)	<ul style="list-style-type: none"> • Pediatric Nephrologist • Clinical Registered Nurse
Neonatology (4 points)	<ul style="list-style-type: none"> • Pediatric Neonatologist • Critical Care Certified Registered Nurse • Neonatal-Certified Registered Nurse • Other Registered Nurse
Neurology & Neurosurgery (4 points)	<ul style="list-style-type: none"> • Pediatric Neurologist • Pediatric Neurosurgeon • Certified Neuroscience Nurse • Other Registered Nurse
Orthopedics (3 points)	<ul style="list-style-type: none"> • Pediatric Orthopedic Surgeon • Orthopedic Surgeon who is a member of the Pediatric Orthopaedic Society of North American (POSNA) • Clinical Registered Nurse
Pulmonology (3 points)	<ul style="list-style-type: none"> • Pediatric Pulmonologist • Pediatric Sleep Medicine Physician • Clinical Registered Nurse
Urology (2 points)	<ul style="list-style-type: none"> • Pediatric Urologist • Clinical Registered Nurse

Clinical Research

Networks, clinical trials, and other research activities advance the ability of the field to treat pediatric patients, and enhance care by making new or novel treatments available at centers that participate in such research. In Diabetes & Endocrine Disorders, Gastroenterology, Kidney Disorders, Orthopedics, Respiratory Disorders, and Urology, hospitals received 1 point for participating in specialty-specific clinical research activities such as clinical trials or other translational research activities.

In Cancer, hospitals received up to 8 points for participating in clinical research activities such as clinical trials or other translational research activities. Hospitals received up to 3 points for participating in cancer research networks such as the Children's Oncology Group, National Cancer Institute Phase 1/Pilot Consortium, or another cancer-related organized clinical research network. Hospitals received up to 5 additional points for engaging in investigator-initiated phase I and II clinical trials (translational research) for leukemia, brain tumors, sarcomas, neuroblastomas, or trials for biologically targeted novel agents that are not disease specific (e.g., tyrosine kinase inhibitors).

In Heart & Heart Surgery, hospitals received up to 5 points for participating in an externally audited, national quality improvement research network such as the Society of Thoracic Surgeons' Congenital Cardiac Surgery Database, Child Health Corporation of America Collaborative, Congenital Heart Surgeons Society database, or Pediatric Heart Research Network (PHRN). Hospitals could receive up to 2 additional points based on the number of PHRN protocols being tracked in the program: 1 point for tracking one protocol and 2 points for tracking two or more protocols.

In Neonatal Care, hospitals received up to 5 points for participation in externally audited, national NICU treatment and quality-improvement research networks. Hospitals received 1 point each for participation in the National Institute of Child Health and Human Development's Neonatal Research Network, Vermont Oxford Network, or Extracorporeal Life Support Organization (ELSO) data exchange network/registry. Hospitals received 1 point for participating in clinical research activities such as clinical trials or other translational research activities.

In Neurology & Neurosurgery, hospitals received 1 point for belonging to a national Phase 1 neuro-oncology clinical research consortium and 1 point for participating in clinical research activities such as clinical trials.

Clinical Support Services

Many hospitals provide access to medical and surgical clinical support services through the hospital's health system, a local community network, or a contractual arrangement or joint venture with another provider in the community. On- and off-site services received equal credit. Up to 10 services are included in the clinical support services, depending on the specialty. Brief descriptions follow. Data came from the Pediatric Hospital Survey.

For eligible hospitals, specialty-specific mixes of medical and surgical services are used in computing the points for this measure. **Table 4** presents the complete list of medical and surgical services considered for each specialty in 2010. Definitions can be found in the glossary in **Appendix A**.

Table 4. Clinical Support Services by Specialty

Clinical Support Service	Cancer	Diabetes & Endocrinology	Gastroenterology	Heart & Heart Surgery	Kidney	Neonatology	Neurology & Neurosurgery	Orthopedics	Pulmonology	Urology
Dedicated surgical intensive care unit (SICU) or beds	●	●	●	●	●		●	●	●	●
Genetic testing/counseling	●	●				●				
Multidisciplinary pediatric acute pain/sedation service (available onsite 24/7) hours a day)	●	●	●	●	●	●	●	●	●	●
Neonatal intensive care unit (NICU)	●	●	●	●	●		●	●	●	●
Pediatric anesthesia program (available onsite 24 hours a day)	●	●	●	●	●	●	●	●	●	●
Pediatric infectious disease program (available onsite 24/7)	●	●	●	●	●	●	●	●	●	●
Pediatric pain management program (available onsite 24/7)	●	●	●	●	●	●	●	●	●	●
Pediatric intensive care unit (PICU)	●	●	●	●	●		●	●	●	●
Rapid response team (available onsite 24/7)	●	●	●	●	●	●	●	●	●	●
Reverse isolation/infection control facilities	●	●	●	●	●	●	●	●	●	●
Total Elements	10	10	9	9	9	7	9	9	9	9

● Indicates a service is included for the specialty.

Fellowship Training Programs

Participation in fellowship training programs represents a commitment by hospitals to provide high-quality care in a specialty area and assure that the program meets standards of quality. Hospitals that offer fellowship programs accredited by the Accreditation Council for Graduate Medical Education were awarded 1 point for each fellowship program that had at least one active fellow in the program in the past year. **Table 5** indicates fellowships credited.

Table 5. Fellowships by Specialty

Clinical Support Service	Cancer	Diabetes & Endocrinology	Gastroenterology	Heart & Heart Surgery	Kidney	Neonatology	Neurology & Neurosurgery	Orthopedics	Pulmonology	Urology
Child neurology						●	●			
Congenital cardiac surgery						●				
Neonatal-perinatal medicine						●				
Neurosurgery (with focus on pediatrics)						●	●			
Pediatric cardiology				●		●				
Pediatric endocrinology		●				●				
Pediatric gastroenterology			●			●				
Pediatric hematology-oncology	●					●				
Pediatric nephrology					●	●				
Pediatric orthopedics						●		●		
Pediatric pathology	●					●				
Pediatric pulmonology						●			●	
Pediatric urology						●				●
Thoracic surgery (with focus on pediatric cardiothoracic surgery)				●		●				
Pediatric infectious diseases						●				
Total Elements	2	1	1	2	1	15	2	1	1	1

● Indicates a fellowship is included for the specialty.

Health Information Technology

Hospitals received up to 8 points for incorporating and using a computerized physician order entry (CPOE) system and electronic medical records (EMR). Hospitals received 1 point for implementing a CPOE system, and 1 additional point for each of the following attributes of the CPOE system: documenting 95% or more of inpatient medication orders, identifying medication orders if an allergy to the medication is documented, including alerts for dosing errors for high-risk medications, and using CPOE in three current projects that focus on dosing errors for high-risk medications. Hospitals received up to 3 points for EMR: 1 point for implementation, 1 point if the EMR identifies and reports potential adverse events for patients, and 1 point if the EMR system is used to identify potential adverse events in at least three current projects.

Infection-Preventing Activities

The Infection Prevention measure captures the commitment of a hospital to reducing the risk of infection to a child. A core set of submeasures for all specialties was worth up to 13 points. Specialty-specific measures in all specialties except Urology allowed an additional 4 to 25 points, depending on the specialty.

Core Infection Prevention Measures

- Hospitals received 1 point for tracking hand hygiene compliance rates. Up to 2 additional points were awarded for compliance: 1 point if $\geq 80\%$ and $< 90\%$; 2 points if $\geq 90\%$.
- Hospitals could receive up to 9 additional points for evidence of institutional support of infection control programs, and 1 point for each of the following:
 - Providing financial support for a pediatric infectious disease specialist to serve as a dedicated director of the infection prevention program
 - Receiving certification from the Certification Board in Infection Control of at least 75% of the hospital's eligible infection preventionists
 - Ensuring that at least 75% of attending physicians received an influenza vaccination
 - Ensuring that at least 75% of other on-staff physicians received an influenza vaccination
 - Ensuring that at least 75% of the nursing staff received an influenza vaccination
 - Offering free influenza vaccinations to all of a patient's household contacts and/or caregivers
 - Publishing a yearly antimicrobial summary that is readily available to clinicians
 - Restricting laboratory reporting of susceptibilities to some antimicrobials to prevent overuse of some drugs, such as meropenem
 - Restricting pharmacy use of selected antimicrobial agents to prevent resistance patterns that may develop from overuse
- Hospitals received 1 point for participating in the bloodstream infection (BSI) rate reporting program of the Centers for Disease Control and Prevention's (CDC) National Healthcare Safety Network (NHSN). Hospitals in the program voluntarily measure and report BSI rates to reduce the risk of hospital-acquired infections.

Specialty-Specific Infection Prevention Measures

- In Heart & Heart Surgery, Neurology & Neurosurgery, and Orthopedics, hospitals received 1 point for actively tracking preoperative antibiotic prophylaxis. Up to 2

additional points were awarded for the percent compliance as follows: 1 point if $\geq 75\%$ and $< 90\%$; 2 points if $\geq 90\%$.

- In Neonatology, hospitals could receive up to 2 points, 1 point for including “clinical sepsis” in the numerator (e.g., as an infection) when calculating central-line BSI rates, and 1 point for reporting central line associated BSI rates stratified according to NHSN guidelines for birth weight and device type.
- In Neurology & Neurosurgery, hospitals received 1 point each for actively tracking surgical site infections (SSIs) for shunt placement surgeries. Up to 3 additional points were awarded for the SSI percentage as follows: 1 point if $> 5\%$ and $\leq 10\%$; 2 points if $> 1\%$ and $\leq 5\%$; 3 points if $\leq 1\%$.
- In Pulmonology, hospitals received 1 point for implementing infection control guidelines recommended by the Cystic Fibrosis Foundation (CFF).
- In many specialties, hospitals could receive 3 or 4 points for each group of at-risk patients who received seasonal influenza or pneumococcal vaccinations. Hospitals received 1 point for actively tracking seasonal influenza or pneumococcal vaccinations. Up to 3 additional points were awarded for the percentage vaccinated as follows: 1 point for $\geq 50\%$ and $< 75\%$; 2 points for $\geq 75\%$ and $< 90\%$; 3 points for $\geq 90\%$. **Table 6** identifies the vaccination measures used by each specialty.

Table 6. Specialty-Specific Vaccination Measures

Specialty	Type of Vaccination	Patient Populations
Cancer	Influenza	<ul style="list-style-type: none"> • Leukemia patients
Diabetes & Endocrinology	Influenza	<ul style="list-style-type: none"> • Diabetes outpatients
Gastroenterology	Influenza	<ul style="list-style-type: none"> • Short-gut patients • Liver-transplant patients
Heart & Heart Surgery	Influenza	<ul style="list-style-type: none"> • Heart-transplant patients
Kidney	Influenza	<ul style="list-style-type: none"> • Hemodialysis patients • Peritoneal dialysis patients • Kidney transplant patients
	Pneumococcal	<ul style="list-style-type: none"> • Hemodialysis patients • Peritoneal dialysis patients • Kidney transplant patients
Pulmonology	Influenza**	<ul style="list-style-type: none"> • Asthma patients • CF patients • Muscular dystrophy patients • Tracheostomy-dependent patients
	Pneumococcal**	<ul style="list-style-type: none"> • Muscular dystrophy patients • Tracheostomy-dependent patients

** Note that hospitals were not awarded points for simply tracking pneumococcal vaccinations for muscular dystrophy or influenza vaccinations tracheostomy-dependent patients, instead only those reporting vaccinations rates in the ranges specified above received points for the Pulmonology infection prevention measure.

Nurse Magnet Hospital

“Nurse Magnet” is a formal designation by the Magnet Recognition Program®, developed by the American Nurses Credentialing Center (ANCC) to recognize hospitals that meet specific standards of nursing excellence. The list of Magnet hospitals is updated throughout the year as hospitals apply for designation and redesignation. Hospitals with Magnet Recognition Program® status as of March 1, 2010, received credit in all specialties. The current list of all Nurse Magnet hospitals is at <http://www.nursecredentialing.org/MagnetOrg/searchmagnet.cfm>.

Nurse-Patient Ratio

This measure is a relative ratio of the number of nurses to the average daily patient census. The numerator is the number of on-staff registered nurses (RNs) devoted to inpatient clinical care, expressed as full-time equivalents (FTE). Nurses are included only if they have an RN degree from an approved nursing school and hold a current state license. The denominator is the average daily number of pediatric inpatients. The source was the Pediatric Hospital Survey. This measure was used in all specialties. For Neonatology, the measure used an equivalent for nurses dedicated specifically to the neonatal intensive care unit (NICU) and the average daily census of NICU patients.

Standardization was performed to ensure that the data were distributed normally, with a mean of zero. This was necessary to prepare the data for factor analysis.

Parent and Family Involvement

This measure reflects the extent to which a hospital involves parents and families in care. It applies to all pediatric specialties and is worth up to 6 points: 1 point for having a parent advisory committee, plus 1 point if the committee meets one or two times a year and 2 points if the committee meets at least three times a year. Hospitals receive up to 3 additional points if the hospital meets all of the following requirements:

- At least one parent or family member is an active member of the strategic or facility committee;
- At least one parent or family member is an active member of one or more standing committees (e.g., quality improvement, patient safety, ethics); and
- Parents or family members are regularly involved in clinical decision making in ways such as family-centered rounds, care conferences, or other participatory programs.

Patient and Family Services

Hospitals received up to 8 points for patient and family services, 1 point for each of the following services provided: family resource center, sleep rooms for parents/siblings, school intervention program, Ronald McDonald house (or other residential facility) and family access to certified child life specialists, family support specialists, pediatric psychologists, and interpreter services. In Neonatology, hospitals could receive up to 7 additional points for offering the following patient and family services: March of Dimes Family Support Center, breast pumping rooms, lactation specialists, parental visitation 24/7, sibling visitation, NICU-specific parent advisory committee, and NICU-specific parent-to-parent support groups. Data came from the Pediatric Hospital Survey.

Quality Improvement Activities

Hospitals received up to 7 points, depending on specialty, for participating in quality improvement activities. Such activities promote internal review and improvement programs and procedures that often lead to improvements in care. Hospitals received up to 2 points for participating in an external review process for measuring patient/parent satisfaction and for publicly reporting performance data on one or more quality metrics. Hospitals received up to 6 additional points for implementing specialty-specific quality measures. These include a formal program review plan, performance-based metrics, patient data tracking, and participation in national quality initiatives.

Technology

Hospitals provide access to key diagnostic and treatment technologies directly, through the hospital's health system or a local community network, or through a contractual arrangement or joint venture with another community provider. On- and off-site services received equal credit. Data are from the Pediatric Hospital Survey. The values for this measure were based on specialty-specific mixes of technology as listed in **Table 7**. Definitions can be found in the glossary in **Appendix A**.

Table 7. Technologies by Specialty

Specialty	Technologies
Cancer (7 technologies)	<ul style="list-style-type: none"> • PET or PET/CT scanning • Intraoperative magnetic resonance imaging (ioMRI) • 3-Tesla magnetic resonance imaging (3T MRI) • Image-guided radiation therapy (IGRT) • Intensity-modulated radiation therapy (IMRT) • Bone scan • Linac or other linear particle accelerator, Gamma knife, Cyber knife, or other shaped-beam stereotactic radiation therapies
Diabetes & Endocrinology (8)	<ul style="list-style-type: none"> • PET or PET/CT scanning • Diagnostic radioisotope scan • Therapeutic radioiodine treatment for Graves disease • Therapeutic radioiodine treatment for thyroid cancer • Fine needle aspiration of thyroid nodule • Thyroidectomy • Dual-energy x-ray absorptiometry (DXA) scans using pediatric software and normative data • Endocrine testing and infusion studies
Gastroenterology (9)	<ul style="list-style-type: none"> • PET or PET/CT scanning • Magnetic resonance cholangiopancreatography • CT enterography • DXA scan • Capsule endoscopy • Endoscopic band ligation • Esophageal impedance monitoring • Endoscopic retrograde cholangiopancreatography • Antroduodenal and full colonic motility studies
Heart & Heart Surgery (5)	<ul style="list-style-type: none"> • CT angiography • Cardiac MRI • Three-dimensional mapping • Cryoablation • Radiofrequency ablation
Kidney (1)	<ul style="list-style-type: none"> • PET or PET/CT scanning
Neonatology (5)	<ul style="list-style-type: none"> • PET or PET/CT scanning • Continuous EEG monitoring with pediatric neurology support • Un-sedated MRI (e.g., MRI-compatible neonatal transporter) • Molecular diagnostic/virology laboratory • Specialized chemistry laboratory with tandem mass spectroscopy
Neurology & Neurosurgery (5)	<ul style="list-style-type: none"> • PET or PET/CT scanning • 3T MRI • Neurophysiological intraoperative monitoring • Magnetoencephalography • Quantitative neurosensory testing

(continued)

Table 7. Technologies by Specialty (continued)

Specialty	Technologies
Orthopedics (3)	<ul style="list-style-type: none"> • PET or PET/CT scanning • Bone scan • Remote retrieval of test results, images, and medical records
Pulmonology (1)	<ul style="list-style-type: none"> • PET or PET/CT scanning
Urology (2)	<ul style="list-style-type: none"> • PET or PET/CT scanning • Urodynamic equipment onsite

Volume of Patients

Unless noted otherwise, volume measures indicate the number of unique patients in the past 12 months who had the specified diagnoses or conditions or who received the specified procedures or treatments. If data were unavailable for the most recent year, hospitals were instructed to use data from the most recent 12 months.

Points were assigned based on the distribution of volume across all hospitals. Hospitals with no volume or that did not respond received 0 points. Hospitals with volume in the lowest one-third of the distribution for all hospitals received 1 point; hospitals with volume in the middle one-third received 2 points, and hospitals with volume in the highest one-third received 3 points. The points at the high end of the range were used to cap these measures to ensure that outliers did not significantly affect scoring. For items with extremely low volume, such as cardiac hybrid procedures, the measure was divided into low and high only for a maximum of 2 points. *Table 8* identifies the volume measures used by specialty and the points assigned to volume scores within a certain range.

Table 8. Specialty-Specific Volume Measures

Cancer Volume Measures	Low Volume (1 point)	Medium Volume (2 points)	High Volume (3 points)
<i>New-patient volume for past 2 years</i> (max points=3)	1-199	200-399	400+
<i>Patient volume</i> (max points=9)			
• Acute lymphocytic leukemia	1-399	400-799	800+
• Brain tumors	1-399	400-799	800+
• Solid tumors	1-399	400-799	800+
<i>Surgical procedures volume</i> (max points=6)			
• Brain tumors	1-149	150-299	300+
• Solid tumors	1-299	300-599	600+

(continued)

Table 8. Specialty-Specific Volume Measures (continued)

Diabetes & Endocrinology Volume Measures	Low Volume (1 point)	Medium Volume (2 points)	High Volume (3 points)
Patient volume (max points=18)			
• Type 1 primary care diabetes outpatients	1-299	300-799	800+
• Type 2 primary care diabetes outpatients	1-149	150-299	300+
• Type 1 primary care diabetes inpatients	1-149	150-299	300+
• Type 2 primary care diabetes inpatients	1-24	25-49	50+
• Nondiabetes endocrine disorders outpatients	1-1,999	2,000-3,999	4,000+
• Nondiabetes endocrine disorders inpatients	1-149	150-299	300+
Nonsurgical procedure volume (max points=18)			
• Diagnostic radioisotope	1-39	40-79	80+
• Therapeutic radioiodine for Graves disease	1-5	6-10	11+
• Therapeutic radioiodine for thyroid cancer	1-5	6-10	11+
• Fine needle aspiration of thyroid nodule	1-8	9-14	15+
• Thyroidectomy	1-8	9-14	15+
• Dual-energy x-ray absorptiometry (DXA) scans	1-39	40-79	80+

Gastroenterology Volume Measures	Low Volume (1 point)	Medium Volume (2 points)	High Volume (3 points)
Patient volume (max points=57)			
• Intestinal rehabilitation	1-44	45-89	90+
• Cystic fibrosis treatment	1-99	100-199	200+
• Total parenteral nutrition support	1-299	300-599	600+
• Pediatric intensive feeding	1-299	300-599	600+
• Multidisciplinary childhood obesity	1-299	300-599	600+
• Inflammatory bowel	1-299	300-599	600+
• Foreign body	1-49	50-99	100+
• Rectal bleeding	1-149	150-299	300+
• Hematemesis	1-39	40-79	80+
• Melena	1-149	150-299	300+
• Pseudoobstruction	1-12	13-24	25+
• Short bowel syndrome	1-29	30-59	60+
• Hepatic failure	1-69	70-139	140+
• Chronic pancreatitis	1-34	35-69	70+
• Biliary atresia	1-19	20-39	40+
• Portal hypertension	1-19	20-39	40+
• Failure to thrive	1-399	400-799	800+
• Crohn's disease	1-199	200-399	400+
• Ulcerative colitis	1-74	75-149	150+

(continued)

Table 8. Specialty-Specific Volume Measures (continued)

Gastroenterology Volume Measures (continued)	Low Volume (1 point)	Medium Volume (2 points)	High Volume (3 points)
<i>Nonsurgical procedure volume*</i> (max points=15)			
• Capsule endoscopy	1-19	20-39	40+
• Endoscopic band ligation	1-9	10-19	20+
• Esophageal impedance monitoring	1-49	50-99	100+
• Endoscopic retrograde cholangiopancreatography	1-29	30-59	60+
• Antroduodenal and full colonic motility studies	1-19	20-39	40+
<i>Surgical volume</i> (max points=15)			
• Hepatopertoenterostomy or Kasai procedure	1-4	5-9	10+
• Bowel lengthening	1-3	4-6	7+
• Heller myotomy	1-2	3-4	5+
• Laparoscopic fundoplication	1-19	20-39	40+
• Bariatric surgery	1-3	4-6	7+

*volume represents procedures, not patients

Heart & Heart Surgery Volume Measures	Low Volume (1 point)	Medium Volume (2 points)	High Volume (3 points)
<i>Catheter procedure volume*</i> (max points=21)			
• Balloon angioplasty procedures	1-39	40-79	80+
• Stent implantation procedures	1-19	20-39	40+
• Transcatheter occlusion of cardiac shunt procedures	1-69	70-139	140+
• Atrial tachycardia procedures	1-19	20-39	40+
• Supraventricular tachycardia procedures	1-39	40-79	80+
• Ventricular tachycardia procedures	1-4	5-8	9+
• Aortic and/or pulmonary catheter-based valvuloplasty procedures	1-6	7-12	13+
<i>Hybrid patient volume</i> (max points=10)			
• Stage 1 for hypoplastic left heart syndrome (HLHS)	1-2	3+	NA
• Stenting of a ductus during an open chest surgery	1-2	3+	NA
• Peripheral pulmonary artery stenting during surgery	1-2	3+	NA
• Device closure of septal defect during surgery	1-2	3+	NA
• Other hybrid procedures	1-2	3+	NA
<i>Norwood patient volume</i> (max points=6)			
• HLHS patients receiving Norwood Stage 1	1-8	9-16	17+
• Non-HLHS patients receiving Norwood Stage 1	1-3	4-6	7+
<i>Surgical volume</i> (max points=9)			
• Risk adjusted classification for congenital heart surgery (RACHS-1), Level 3	1-69	70-139	140+
• RACHS-1 Level 4	1-19	20-39	40+
• RACHS-1 Level 5 & 6	1-9	10-19	20+

*volume represents procedures, not patients

(continued)

Table 8. Specialty-Specific Volume Measures (continued)

Kidney Volume Measures	Low Volume (1 point)	Medium Volume (2 points)	High Volume (3 points)
<i>Catheter placement volume*, 2 years</i> (max points=17)			
• Permanent hemodialysis vascular central venous catheters placed in children <5 years of age)	1-14	15-29	30+
• Permanent hemodialysis vascular central venous catheters placed in children, 5-19 years of age.	1-26	27-51	52+
• Hemodialysis arteriovenous (AV) fistula/graft access placements in children <5 years of age.	1	2+	n/a
• Hemodialysis AV fistula/graft access placements in children, 5-19 years of age.	1-6	7-12	13+
• Peritoneal dialysis catheters placed in children <5 years of age.	1-10	11-20	21+
• Peritoneal dialysis catheters placed in children and adolescents, 5-19 years of age.	1-10	11-20	21+
<i>Dialysis volume, 2 years</i> (max points=12)			
• Hemodialysis with children <5 years of age	1-4	5-7	8+
• Hemodialysis with children 5-19 years of age	1-24	25-49	50+
• Peritoneal dialysis with children <5 years of age	1-8	9-16	17+
• Peritoneal dialysis with children 5-19 years of age	1-24	25-49	50+
<i>Kidney biopsy procedure volume, 2 years</i> (max points=6)			
• Native nontransplant kidney biopsies (2 years)	1-59	60-119	120+
• Nonprotocol kidney transplant biopsies (2 years)	1-32	33-64	65+
<i>Patient volume, 2 years</i> (max points=27)			
• Acute kidney insufficiency	1-149	150-299	300+
• Primary nephrotic syndrome	1-29	30-60	61+
• Membranoproliferative glomerulonephritis	1-8	9-16	17+
• Membranous nephropathy	1-10	11-20	21+
• IgA nephropathy	1-20	21-40	41+
• Henoch-Schönlein purpura	1-29	30-59	60+
• Systemic lupus erythematosus with renal involvement	1-14	15-29	30+
• Hemolytic uremic syndrome	1-10	11-20	21+
• Chronic kidney disease (nontransplant) Stages II–IV	1-39	40-79	80+
<i>Transplant volume, 2 years</i> (max points=6)			
• Deceased-donor kidney transplant patients	1-12	13-24	25+
• Living-donor kidney transplant patients	1-10	11-20	21+

(continued)

Table 8. Specialty-Specific Volume Measures (continued)

Neonatology Volume Measures	Low Volume (1 point)	Medium Volume (2 points)	High Volume (3 points)
<i>Patient volume</i> (max points=18)			
• Cardiac surgeries	1-39	40-79	80+
• Hirschsprung's disease treatment	1-4	5-8	9+
• Hypothermia treatment	1-8	9-16	17+
• Spina bifida treatment	1-7	8-14	15+
• Surgical care of gastroschisis	1-9	10-18	19+
• Tracheoesophageal fistula	1-6	7-12	13+

*volume represents procedures, not patients

Neurology & Neurosurgery Volume Measures	Low Volume (1 point)	Medium Volume (2 points)	High Volume (3 points)
<i>Epilepsy treatment volume*</i> (max points=15)			
• Initial medical evaluations for medically intractable epilepsy	1-299	300-599	600+
• Number of standard EEG evaluations	1-799	800-1,599	1,600+
• Number of video EEG (vEEG) evaluations	1-399	400-799	800+
• Evaluations for surgery related to medically intractable epilepsy	1-79	80-159	160+
• Number of surgical procedures for medically intractable epilepsy	1-34	35-69	70+
<i>New-patient volume</i> (max points=27)			
• Brain tumors	1-69	70-139	140+
• Status epilepticus	1-49	50-99	100+
• Craniosynostosis (nonsyndromic)	1-149	150-299	300+
• Craniosynostosis (syndromic)	1-149	150-299	300+
• Hydrocephalus	1-149	150-299	300+
• Cerebrovascular accidents (stroke)	1-49	50-99	100+
• Vein of Galen malformations	1-12	13-24	25+
• Chiari I malformation/syringomyelia	1-59	60-119	120+
• Chronic headaches	1-749	750-1,299	1,300+
<i>Surgical volume</i> (max points=27)			
• Brain tumors (benign)	1-15	16-30	31+
• Brain tumors (malignant)	1-29	30-59	60+
• Craniosynostosis	1-29	30-59	60+
• Hydrocephalus patient shunt procedures	1-74	75-149	150+
• Implantation of ICP monitors for head trauma	1-9	10-19	20+
• Medically intractable epilepsy	1-19	20-39	40+
• Myelomeningoceles repair	1-12	13-24	25+
• Intracranial procedures for head trauma	1-10	11-20	21+
• Chiari I malformation/syringomyelia	1-16	17-32	33+

*volume represents procedures, not patients

(continued)

Table 8. Specialty-Specific Volume Measures (continued)

Orthopedics Volume Measures	Low Volume (1 point)	Medium Volume (2 points)	High Volume (3 points)
<i>Clinic volume</i> (max points=27)			
• Spina bifida clinic	1-249	250-499	500+
• Spasticity or cerebral palsy clinic	1-699	700-1,399	1400+
• Skeletal dysplasia clinic	1-199	200-399	400+
• Brachial plexus clinic	1-125	125-249	250+
• Neurofibromatosis clinic	1-99	100-199	200+
• Muscular dystrophy clinic	1-149	150-299	300+
• Pain clinic	1-249	250-499	500+
• Sports medicine clinic	1-1,999	2,000-3,999	4,000+
• Scoliosis patients	1-999	1,000-1,999	2,000+
<i>Procedure volume*</i> (max points=39)			
• Motion laboratory evaluations	1-99	100-199	200+
• Developmental dysplasia of the hip	1-39	40-79	80+
• Perthes disease	1-19	20-39	40+
• Slip capital femoral epiphysis	1-29	30-59	60+
• Complex hip surgery, children ages 12–18	1-14	15-29	30+
• Clubfeet—minimally invasive treatment	1-39	40-79	80+
• Clubfeet—more extensive open procedure	1-29	30-59	60+
• Knee injury—anterior cruciate ligament repair	1-49	50-99	100+
• Brachial plexus injury—primary repair with patients < 1 years of age	1-2	3-4	5+
• Brachial plexus injury—secondary procedure with patients ≥ 1 years of age)	1-39	40-79	80+
• Operative reduction and fixation of the supracondylar fracture of the humerus	1-149	150-299	300+
• Operative reduction and fixation of the femur fractures with patients 6–12 years of age	1-29	30-59	60+
• Osteoarticular infections, including MRSA	1-79	80-159	160+

*volume represents procedures, not patients

Pulmonology Volume Measures	Low Volume (1 point)	Medium Volume (2 points)	High Volume (3 points)
<i>Patient volume</i> (max points=18)			
• Asthma inpatients	1-499	500-999	1,000+
• Asthma outpatients	1-3,999	4,000-7,999	8,000+
• CF patients	1-174	175-349	350+
• Lung disease prematurity	1-299	300-599	600+
• Muscular dystrophy	1-74	75-149	150+
• Outpatients on nocturnal non-invasive positive pressure ventilation (NIPPV) support	1-149	150-299	300+

(continued)

Table 8. Specialty-Specific Volume Measures (continued)

Pulmonology Volume Measures (continued)	Low Volume (1 point)	Medium Volume (2 points)	High Volume (3 points)
<i>Nonsurgical procedure volume*</i> (max points=12)			
• 12 channel polysomnographic studies	1-999	1,000-1,999	2,000+
• MSLT studies	1-34	35-69	70+
• Infant pulmonary function testing	1-89	90-179	180+
• Bronchoscopy	1-299	300-699	700+

*volume represents procedures, not patients

Urology Volume Measures	Low Volume (1 point)	Medium Volume (2 points)	High Volume (3 points)
<i>Minimally invasive surgery volume</i> (max points=9)			
• Laparoscopic pyeloplasty	1-24	25-49	50+
• Laparoscopic nephrectomy	1-19	20-39	40+
• Laparoscopic heminephrectomy	1-4	5-8	9+
<i>Patient volume</i> (max points=24)			
• Pediatric urology inpatient admissions	1-199	200-399	400+
• Pediatric urology outpatient visits	1-5999	6,000-11,999	12,000+
• Spina bifida clinic	1-199	200-399	400+
• Voiding dysfunction clinic	1-599	600-1,199	1,200+
• Comprehensive stone program	1-99	100-199	200+
• Prenatal clinic	1-149	150-299	300+
• Disorders of sexual differentiation clinic	1-149	150-299	300+
• Genitourinary reconstructive surgery/exstrophy clinic	1-149	150-299	300+
<i>Nonsurgical procedure volume</i> (max points=15)			
• Shock wave lithotripsy	1-9	10-19	20+
• Utereoscopy	1-24	25-49	50+
• Percutaneously nephrolithotripsy	1-7	8-14	15+
• Biofeedback	1-39	40-79	80+
• Uryodynamic procedures excluding uroflow alone	1-399	400-799	800+
<i>Surgical volume</i> (max points=27)			
• Pediatric urology surgical procedures*	1-1,999	2,000-3,999	4,000+
• Newborn exstrophy closures	1-3	4-6	7+
• Reconstructive procedures for incontinence	1-29	30-69	70+
• Posterior urethral valve ablation	1-9	10-19	20+
• Proximal urethroplasty for hypospadias	1-139	140-279	280+
• Female reconstructive procedures	1-9	10-19	20+
• Laparoscopic varicocelectomy	1-19	20-39	40+
• Laparoscopic orchiopexy	1-29	30-59	60+
• Robotic laparoscopic pediatric surgery	1-24	25-49	50+

*volume represents procedures, not patients

B. Structural Measures (Specialty-Specific)

These measures reflect the extent of care that should be expected from a comprehensive pediatric specialty program.

Cancer

Accreditation for Bone Marrow and Tissue Transplant (1 point). Accreditation indicates that as of March 1, 2010, a hospital met standards set by the Foundation for Accreditation of Cellular Therapy (FACT) for transplantation of cells to treat pediatric cancer, an indication of a high degree of care in handling and using cellular tissue. Programs can be certified as an adult or as a pediatric service provider and as offering two types of transplant services: autologous and allogeneic. For the Cancer specialty, a hospital was awarded 1 point if it was accredited by FACT as a pediatric service provider for allogeneic transplants as of March 1, 2010. Currently accredited facilities are listed at www.factwebsite.org/FacilitySearch.aspx?SearchType=FACT.

BMT Program (6 points). Hospitals received up to 4 points for offering various bone marrow transplant (BMT) services. These programs are critical in treating a variety of cancers. Hospitals received 1 point for each of the following: cord blood cell transplantation, autologous stem cell transplantation, allogeneic (unrelated donor) transplantation, and allogeneic (related donor) transplantation.

Hospitals received up to 2 points for recognition as a transplant center by the National Marrow Donor Program and for membership in the Pediatric Blood and Marrow Transplant Consortium.

Following Best Practices (9 points). Hospitals could receive up to 9 points for following these best practices in their pediatric cancer program.

- One point each for participating in regular morbidity and mortality conferences, participation in one or more tumor registry, participation of non-oncologist pediatric specialists in the Children's Oncology Group
- Up to 3 points based on the percentage of patients presenting with febrile neutropenia who receive intravenous antibiotics within 6 hours of initial triage in the hospital: 1 point for $\geq 50\%$ and 75% ; 2 points for $\geq 75\%$ and $< 90\%$; 3 points for $> 90\%$

- One point for oncologists in the program having a structured/planned time at which they determine whether a central venous catheter/port can be removed
- Up to 2 points based on the percentage of patients actively participating in a formally structured late effects of off-therapy clinic within 2 years after the cessation of active treatment: 1 point for $\geq 50\%$ and 75% ; 2 points for $\geq 75\%$

Palliative Care (3 points). Hospitals received 1 point for offering a qualifying palliative care program. A qualifying program is organized and staffed for children nearing the end of life or living with conditions that limit lifespan or quality of life. Its purpose is to minimize pain and discomfort, provide emotional and spiritual support for children and their families, assist with financial guidance and social services, and support decision making. A program must include at least one physician providing direct patient care; a nurse coordinator; and either a social worker, certified child life specialist, or pastoral counselor. All program staff must have training in palliative care.

Hospitals can earn up to 2 additional points based on the percentage of patients with advanced and refractory cancer referred to the palliative care program as follows: 1 point for $\geq 50\%$ and 75% ; 2 points for $\geq 75\%$.

Specialized Clinics and Programs (7 points). Hospitals received up to 7 points for specialized treatment programs for cancer patients—1 point for each of the following: clinical brain tumor program, clinical bone and soft tissue sarcomas program, clinical leukemia/lymphoma program, comprehensive longer-term survivors program, bone marrow failure program, histiocytosis program, and vascular tumor program.

Diabetes & Endocrinology

Diabetes Treatment Options (5 points). Hospitals received up to 5 points for providing certain treatment options for patients in their pediatric diabetes program. One point was awarded for each of the following: insulin pump, insulin pump plus basal insulin injection, basal insulin injection with rapid-acting insulin analog, neutral protamine hegedorn–based insulin, and premixed insulin.

Following Best Practices (43 points). Hospitals could receive up to 43 points for implementing the following best practices in their pediatric diabetes and endocrine disorders program. Hospitals received 1 point for providing each of the following:

- a mechanism to take urgent phone calls from pediatric patients' families that provides them with access to healthcare providers 24 hours a day
- a formal written transition program to prepare pediatric patients for the transition to adult endocrinology
- a clinical database of attributes of current, active diabetes patients that is used for quality assessment and improvement
- a written plan to review inpatient incidents of insulin-related hypoglycemia requiring IV glucose treatment
- written consensus protocols for: inpatient management of diabetic ketoacidosis, glucagon minidose for families, insulin therapy during illness for families, periodic screening for complications of diabetes in the outpatient clinic, treatment of hyperglycemia in critically ill inpatients, outpatient management of type 2 diabetes patients, and outpatient management of pre-diabetes patients who typically have obesity and insulin resistance
- care review for all inpatients with diabetes at an interdisciplinary care conference prior to discharge
- regularly scheduled interdisciplinary care conferences to discuss diabetes patients with poor control
- point of care Hemoglobin A1c determination that allows the clinician to receive that day's test result before or during each outpatient visit
- patient education materials on various conditions in written form or on the hospital website
- discussion of thyroid cancer patient cases in active treatment at a Tumor Board at least once a quarter

Hospitals received up to 3 points for each item below based on the percentage of patients meeting each condition: 1 point for $\geq 50\%$ and 75% ; 2 points for $\geq 75\%$ and $< 90\%$; 3 points for $> 90\%$.

- Percentage of inpatients with diabetes admitted to other services who are seen by a clinical member of the pediatric diabetes program
- Percentage of patients who received a summary of the findings and treatment plan at the conclusion of their last outpatient visit

- Percentage of diabetes outpatients with documentation of blood pressure test results
- Percentage of diabetes outpatients with documentation of hemoglobin A1c test results
- Percentage of diabetes outpatients who attended four or more clinic visits in the last calendar year
- Percentage of diabetes outpatients who have been trained in the use of continuous glucose monitors
- Percentage of primary care Type 1 diabetes outpatients whose daily blood glucose measurements for the past 2 weeks were available for review by the attending physician
- Percentage of diabetes patients over 10 with documentation of microalbumin screening
- Percentage of diabetes patients over 10 with documentation of non-mydriatic camera examination

Specialized Clinics and Programs (8 points). Hospitals received up to 4 points for specialized treatment programs for endocrine patients—1 point for each of the following: lipid disorders, hypertension, comprehensive weight management, and Turner syndrome. Hospitals received up to 3 points for specialized clinics for diabetes patients—1 point for each of the following: outpatients with type 2 diabetes, outpatients with pre-diabetes, and adolescents and young adults with diabetes. Hospitals received an additional point for offering patient and/or family support groups for Turner Syndrome.

Gastroenterology

Liver Transplant Program (4 points). Hospitals received 1 point for having a liver transplant program recognized by UNOS, and up to 3 additional points based on the number of unique patients who received a liver transplant in the past 2 years: 1 point for 1-9 patients; 2 points for 10-19 patients; 3 points for 20+ patients.

Specialized Clinics and Programs (6 points). Hospitals received up to 6 points for offering various interdisciplinary treatment programs for gastrointestinal disorders. One point was awarded for each of the following programs: intestinal rehabilitation, cystic fibrosis treatment, total parenteral nutrition (TPN), pediatric intensive feeding, multidisciplinary childhood obesity management, and inflammatory bowel disease.

Heart & Heart Surgery

Adult Congenital Heart Program (10 points). Hospitals received 1 point for providing an organized adult congenital heart program. Hospitals received 1 additional point if the program was provided in-house. Hospitals could also receive 1 additional point if the program was listed with the Adult Congenital Heart Association. These programs are often provided by pediatric heart centers, which often have the most expertise in inherited or congenital heart disorders.

Up to 6 additional points were awarded if the adult congenital heart program provided the following: a formal plan to transition patients from the pediatric to adult congenital heart program; joint participation from adult and pediatric cardiologists; participation from cardiothoracic surgeons, cardiothoracic interventionalists, and cardiothoracic electrophysiologists who have specialty expertise in the care of adults with congenital heart disease; and specialty care for high-risk obstetrics for patients with congenital heart disease.

Hospitals received 1 point for having at least 1 surgeon who has performed 20 or more cardiac surgical procedures on patients 18+ in the last 2 calendar years.

Congenital Heart Program (12 points). Hospitals were rewarded for tracking and reporting data for their congenital heart surgery program:

- Hospitals received 2 points for providing Stage 1 Norwood procedure data that was reported to the Society for Thoracic Surgeons (STS) or 1 point for providing data reported to the Children's Health Corporation of America (CHCA).
- Hospitals received 2 points for providing RACHS data reported to the STS or 1 point for reporting it from the CHCA.
- Hospitals received up to 2 points for actively tracking 1-year survival rates and post-discharge mortality rates for patients undergoing Stage 1 Norwood procedures.

Hospitals were also rewarded for the volume and type of congenital heart surgeries offered:

- Hospitals received 1 point for having at least one congenital heart surgeon who performed 100 or more congenital heart procedures in the last calendar year.
- Hospitals received 1 point for having the capability to perform hybrid procedures.

- Hospitals received up to 2 points based on the number of unique patients treated with a Berlin heart or other ventricular assist device: 1 point for 1-4 patients and 2 points for 5 or more patients.
- Hospitals received up to 2 points based on the number of cardiac surgical procedures performed in the operating room in the last calendar year: 1 point for 100-249 surgeries and 2 points for 250 or more surgeries

Following Best Practices (7 points). Hospitals received up to 3 points for each of the following best practices: participation in regular morbidity and mortality conferences, active home surveillance program for infants after Stage 1 palliation for hypoplastic left heart syndrome, and a follow-up program for children with or at risk for adverse neurodevelopmental outcomes.

Hospitals received up to 4 points for engaging in the following surgical safety procedures: conventional pre-procedural “time-out,” pre-procedural briefings, post-procedural debriefings, and implementation of a hand-off protocol or briefing.

Heart Transplant Program (5 points). Hospitals received 2 points for being a UNOS-recognized heart or heart-lung transplant program or 1 point for being affiliated with a UNOS-recognized heart or heart-lung transplant program. Hospitals received up to 3 additional points based on the number of unique patients who received heart transplants in the past 2 years: 1 point for 1-2 transplants, 2 points for 3-9 transplants, and 3 points for 10 or more transplants.

Specialized Clinics and Programs (8 points). Hospitals received 1 point for each of the following catheter procedures offered to at least one patient in the past calendar year: balloon angioplasty; stent implantation; transcatheter occlusion of cardiac shunts; transcatheter arrhythmia ablations; ablations for atrial tachycardia, supraventricular tachycardia, and ventricular tachycardia; aortic and pulmonary catheter-based valvuloplasty.

Kidney

Following Best Practices (2 points). Hospitals received up to 2 points for implementing best practices in pediatric nephrology, which included participating in regular interdisciplinary clinical conferences for urology/uroradiology and renal pathology to review and coordinate the care of patients.

Transplanting Dialysis Patients (12 points). The measure evaluates the percentage of patients receiving maintenance dialysis who received kidney transplants within 2 years. Four

groups of patients were evaluated: children under 5 receiving hemodialysis, children aged 5-19 receiving hemodialysis, children under 5 receiving peritoneal dialysis, and children aged 5-19 receiving peritoneal dialysis. For each group, hospitals received up to 3 points for having a higher percentage of patients receiving transplants as follows: 1 point if $\geq 30\%$ and $< 50\%$; 2 points if $\geq 50\%$ and $< 75\%$; 3 points if $\geq 75\%$.

Neonatology

ECMO Services (4 points). ECMO technology involves a pump that circulates blood through an artificial lung back into the bloodstream of a very ill neonate, essentially providing heart-lung bypass support outside the child's body. A hospital received 1 point if an ECMO program was available 24 hours a day and an additional 1 point for designation as a Center for Excellence by ELSO. Hospitals received 1 additional point for having a specialized, multidisciplinary ECMO team and 1 additional point for having a neonatal-specific transport team capable of transporting high-risk pre-ECMO patients between hospitals.

Following Best Practices (11 points). Hospitals received up to 10 points for implementing best practices in neonatal care. Hospitals received points as follows

- One point for an average patient load per neonatologist of 31 or more patients, 2 points for an average patient load of 20-30, and 3 points for an average patient load of less than 20
- One point for providing a percutaneous intravenous central catheter (PICC) team with specialized training to place and maintain PICC lines in NICU patients
- One point for providing a simulation/training laboratory with NICU procedures or code simulation programs and up to 5 additional points for offering the following protocols in the laboratory: neonatal code response, chest tube placement, intubation, line placement, and other protocol
- One point for using a standardized hand-off tool to inform clinical staff during team transitions between shifts in the NICU

Specialized Clinics and Programs (7 points). Hospitals received up to 7 points for providing specialized treatment teams/clinics to deal with particularly challenging conditions. Hospitals received 1 point for each of the following: craniofacial team, spina bifida team, comprehensive retinopathy of prematurity program, metabolic team, home TPN team, home enteral tube feeding team, and home ventilator management team.

Neurology & Neurosurgery

Epilepsy Treatment Services (4 points). Hospitals received 1 point for offering a pediatric epilepsy treatment center. Hospitals could receive up to 3 additional points for offering the following services within the center: neurosurgical epilepsy treatment, sleep laboratory accredited by the American Academy of Sleep Medicine, and an EEG laboratory accredited by the American Board of Registration of Electroencephalographic and Evoked Potential Technologists (see: <http://abret.org/>).

Following Best Practices (5 points). Hospitals received up to 4 points for implementing best practices in neurology and neurosurgery. Hospitals received 1 point for tracking 30-day post-admission outcomes for patients with various illnesses. Hospitals received up to 3 points for conducting pre- and post-surgical neuropsychological evaluations for surgical patients with the following diagnoses: benign brain tumors, malignant brain tumors, and medically intractable epilepsy.

Headache Treatment Services (6 points). Hospitals received 1 point for offering a headache clinic that includes a designated medical director and a nursing coordinator, and an additional point if the clinic is certified by the United Council for Neurological Subspecialties. Hospitals could receive up to 4 additional points if the clinic provides the following services: psychologists who specialize in headache treatment, biofeedback treatment, abortive therapy for individual headaches, and preventive therapy.

Specialized Clinics and Programs (11 points). Hospitals received up to 11 points for access to specialized treatment clinics or programs for pediatric neurological disorders. To receive credit, a hospital had to have an organized program that included a medical director and nursing coordinator. One point was awarded for each of the following clinics or programs: brain tumor, cerebrovascular accident, craniofacial surgical, movement disorders, neurofibromatosis, neuromuscular, neurooncology, spina bifida, tuberous sclerosis, brachial plexus, and white matter.

Orthopedics

Following Best Practices (4 points). Hospitals received up to 4 points for offering best practices in orthopedics. Hospitals received 1 point for each of the following: providing a pediatric imaging center that implements pediatric protocols to reduce radiation exposure; providing a pediatric imaging center with ultrasonographers with specialized training to perform

hip exams, participating in a Tumor Board, and participating in regular, multidisciplinary morbidity and mortality conferences.

Specialized Clinics and Programs (8 points). Hospitals received up to 8 points for providing specialized treatment clinics or programs to treat significant conditions. To receive credit, the clinic had to be regularly attended by the pediatric orthopedic service. Hospitals received 1 point for each of the following clinics or programs: spina bifida, spasticity, skeletal dysplasia, brachial plexus, neurofibromatosis, muscular dystrophy, pain, and sports medicine.

Pulmonology

Asthma Management (9 points). Hospitals received up to 9 points for management of asthma patients based on the percentage of patients following specific protocols. The protocols evaluated were the percentage of inpatients with documentation of a personalized asthma management plan, percentage of outpatients with documentation of a personalized asthma management plan, and percentage of outpatients who had a documented assessment of asthma control. For each protocol, up to 3 points were awarded for the percentage of patients following the protocol: 1 point for $\geq 50\%$ and $< 75\%$; 2 points for $\geq 75\%$ and $< 90\%$; 3 points for $> 90\%$.

Following Best Practices (6 points). Hospitals received up to 6 points for implementing best practices in respiratory disorders, which included having written consensus protocols for the following conditions: asthma exacerbations, bronchiolitis, croup, CF, pneumonia, and tracheostomy or ventilator-dependent patients.

Lung Transplant Program (3 points). Hospitals received 1 point for offering a lung transplant program recognized by UNOS. Hospitals could receive an additional 1 point for providing one lung transplant in the past 2 years or 2 additional points for providing two or more lung transplants in the past 2 years.

Managing Lung Disease of Prematurity (9 points). This measure included three items based on the percentage of patients less than 24 months of age in treatment for lung disease of prematurity, the percentage of patients receiving respiratory syncytial virus (RSV) prophylaxis, and the percentage of patients given all of their recommended injections for the season. Hospitals received up to 3 points for each item as follows: 1 point for $\geq 50\%$ and $< 75\%$; 2 points for $\geq 75\%$ and $< 90\%$; 3 points for $> 90\%$.

Muscular Dystrophy Management (6 points). The measure is composed of two items: the percentage of muscular dystrophy patients 5 or older who had pulmonary function testing in

the last calendar year and the percentage of muscular dystrophy patients undergoing general anesthesia who had pulmonary function testing within 90 days prior to the procedure. Hospitals received up to 3 points for each item based on the percentage of patients as follows: 1 point for $\geq 50\%$ and $< 75\%$; 2 points for $\geq 75\%$ and $< 90\%$; 3 points for $> 90\%$.

Urology

Specialized Clinics and Programs (6 points). Hospitals received up to 6 points for each of the following specialized treatment clinics or programs to treat significant urological conditions: spina bifida, voiding dysfunction, comprehensive stone program, prenatal intervention, disorders of sexual differentiation, and genitourinary reconstructive surgery/exstrophy.

C. Standardization and Weighting

Standardization was performed on the structural measures to ensure that the data were distributed normally with a mean of zero. This step was necessary to prepare the data for factor analysis, restoring balance so that trimmed and untrimmed measures had the same influence on the final score.

To combine the structural variables from the Pediatric Hospital Survey and external databases, the elements were weighted to create a composite measure, worth 40% of the overall score. Using factor analysis, we reduced the number of variables to force a one-factor solution. Factor analysis is a statistical technique used to identify underlying similarities among the structural variables. Variables strongly associated with one another receive lower factor loadings than those that have a unique distribution. The factor loading for each measure was divided by the total of the factor loadings to derive a weight. Each measure's weight was applied to reduce the effect of multiple variables that, because of their strong association, may measure the same concept. *Table 9* shows the weight of each measure on the total structural score for that specialty. The sum of the weights for each special totals 40, which reflects the weight of the structural component in the overall score.

Table 9. Weight (%) of Structural Measures by Specialty

Measure	Cancer	Diabetes & Endocrinology	Gastroenterology	Heart & Heart Surgery	Kidney	Neonatology	Neurology & Neurosurgery	Orthopedics	Pulmonology	Urology
Accredited for bone marrow and tissue transplant	2.3									
Adult congenital heart program				1.5						
Advanced clinical services	2.2	2.8	3.1	2.4	3.2	2.5	2.6	3.1	2.7	2.5
Asthma management									1.7	.
Availability of pediatric specialists	2.2	2.5	2.5	2.3	2.6	2.8	2.4	3.0	2.7	3.0
BMT program	2.5									
Catheter procedure volume				2.2	2.1					
Clinical research	2.7	2.5	2.5	2.3	2.4	3.1	2.6	2.1	2.4	2.5
Clinical support services	1.8	1.8	1.8	1.4	1.8	1.7	1.6	2.4	2.0	1.9
Congenital heart program				2.4						
Diabetes treatment options		2.5								
Dialysis volume					2.6					
ECMO services						3.0				
Epilepsy treatment services							1.9			
Epilepsy treatment volume							2.4			
Fellowship training programs	2.2	2.1	2.6	1.9	2.4	2.4	2.4	1.1	2.0	2.4
Following best practices	2.1	2.8		2.1	2.1	3.1	2.4	2.8	2.8	
Headache treatment services							2.0			
Health information technology	1.3	1.7	1.8	1.4	1.7	1.4	1.4	2.0	1.9	1.9
Heart transplant program				2.0						
Infection-preventing activities	1.8	1.9	2.2	1.8	1.9	1.7	2.2	2.4	2.4	1.6
Kidney biopsy volume					2.8					
Liver transplant program			2.6							
Lung transplant program									1.1	
Managing lung disease of prematurity									1.5	
Minimally invasive surgery volume										2.6
Muscular dystrophy management									1.8	
Nonsurgical procedure volume		2.5	2.6						2.6	3.3
Nurse Magnet hospital	0.3	0.6	0.5	0.7	0.3	0.4	0.6	1.2	0.8	0.6
Nurse-patient ratio	1.0	2.2	0.4	1.1	1.0	1.7	0.3	2.4	0.7	1.0
Palliative care	1.4									
Parent and family involvement	2.2	1.8	2.0	1.4	1.7	1.8	1.7	2.5	2.1	1.6
Patient and family services	1.8	1.3	1.7	1.3	2.0	2.8	1.1	2.3	2.1	1.1
Patient volume (Hybrid)				1.6						
Patient volume (Norwood)				1.9						
Procedure volume								2.6		

(continued)

Table 9. Weight (%) of Structural Measures by Specialty (continued)

Measure	Cancer	Diabetes & Endocrinology	Gastroenterology	Heart & Heart Surgery	Kidney	Neonatology	Neurology & Neurosurgery	Orthopedics	Pulmonology	Urology
Quality improvement activities	2.5	2.8	2.7	2.0	2.7	2.6	2.6	2.7	2.8	2.7
Specialized clinics and programs	2.1	2.9	2.9	1.8		3.1	2.9	2.7		2.9
Surgical volume	1.9		2.8	2.4			2.6			3.3
Technology	1.6	2.4	2.4	2.1	0.4	2.9	2.3	2.3	1.2	2.1
Transplant volume					2.8					
Transplanting dialysis patients					0.7					
Volume of new patients	1.4						2.0			
Volume of Patients	2.3	2.9	3.1		2.8	2.9		2.5	2.8	3.0
Total	40	40	40	40	40	40	40	40	40	40

V. Outcomes

Patient outcomes from hospital care can be measured in a variety of ways. For the adult specialty rankings in Best Hospitals, we use risk-adjusted mortality 30 days after admission as an outcome measure of the quality of hospital care. Other measures now used by healthcare researchers as quality indicators^{††} include readmissions following surgical or hospital discharge, patient functional status (or improvement), infection rates, and medical complications.

Because of the absence of comprehensive national sources of pediatric outcomes data comparable to the MedPAR data used in the adult rankings, outcomes-related data were obtained directly from pediatric hospitals through the Pediatric Hospital Survey. Such data included bloodstream infection rates, transplant survival rates, mitigation of adverse events, and surgical outcomes. Other outcomes measures will be added over time to address the need for relevant outcomes and provide a more complete picture of pediatric hospital care. Measures for the 2010 rankings were developed from recommendations by expert advisory panels, as previously described. Details on specific outcomes measures, how they were calculated, and how they were scored are provided below. **Table 10** indicates the outcome measures used in each specialty.

^{††} For more information on hospital quality measures and updates on national quality of hospital care initiatives, please see reports from the Agency for Healthcare Research and Quality (AHRQ) at <http://www.qualitymeasures.ahrq.gov/> and the Joint Commission at <http://www.jointcommission.org/PerformanceMeasurement/PerformanceMeasurement/Current+NHQM+Manual.htm>.

Table 10. Outcomes Measures by Specialty

Outcomes Measures	Cancer	Diabetes & Endocrinology	Gastroenterology	Heart & Heart Surgery	Kidney	Neonatology	Neurology & Neurosurgery	Orthopedics	Pulmonology	Urology
ALL Survival	●									
Asthma Inpatient Care									●	
Avoiding Biopsy Complications					●					
Avoiding Surgical Complications								●		●
Hypothyroid Management		●								
Managing Cystic Fibrosis									●	
Managing Diabetes					●					
Managing Diabetic Patients		●								
Norwood Surgery Survival				●						
Preventing Bloodstream Infections	●	●	●	●	●	●	●	●	●	●
Surgical Mortality				●			●			
Transplant Survival	●		●	●	●				●	
Total Elements	3	3	2	4	4	1	2	2	4	2

● Indicates a measure included in the index for that specialty.

A. Outcomes Measures (all specialties)

Preventing Bloodstream Infections (2-4 points). The rate of central line bloodstream infections in intensive care units is considered a good benchmark of patient safety and outcome, because such infections in hospital-based care should be minimal. The rate is calculated as the number of bloodstream infections per 1,000 central-line days during the previous 12 months. Hospitals were rewarded for lower rates. This measure was used in all specialties except for Neonatology. For this specialty, hospitals could receive up to 2 points for the number of bloodstream infections per 1,000 central line days for NICU patients only.

For the Cancer specialty, hospitals could receive an additional 2 points for lower numbers of bloodstream infections per 1,000 central line days for hematology/oncology patients.

B. Outcomes Measures (Specialty-Specific)

The measures used in each specialty, along with scoring rules used to assign points to hospitals for these outcomes, are described below. For all outcomes measures, a higher number of points indicates better outcomes (e.g., higher survival, lower mortality, fewer complications).

Cancer

ALL Survival (3 points). This measure evaluated the percentage of pediatric patients with standard risk acute lymphoblastic leukemia (ALL) who were event-free survivors (EFS) after 5 years of treatment in the pediatric cancer program. Hospitals could receive up to 3 points for having a high percentage of 5-year EFS patients.

Stem Cell Transplant Survival (6 points). This measure evaluated the 100-day and 1-year survival percentages for patients with a malignant disease who received donated stem cells from cord blood or bone marrow (allogeneic transplant). Hospitals could receive up to 3 points for having higher 100-day survival rates and up to 3 points for higher 1-year survival rates. Both 100-day and 1-year survival percentages were used because they provide somewhat different information about short-term and longer-term survival.

Diabetes & Endocrinology

Hypothyroid Management (4 points). Hospitals received up to 4 points based on two indicators of hypothyroid management: the percentage of treated hypothyroid patients receiving thyroid-stimulating hormone (TSH) lab measurements whose most recent TSH measurement fell between the normal range of 0.5 and 4.0 mcIU/ml; and the percentage of new congenital hypothyroidism patients less than 3 months of age who began thyroid hormone therapy before 21 days of age.

Managing Diabetes (16 points). This measure evaluates the adverse events and median hemoglobin levels in primary care type 1 diabetes outpatients. Diabetes-related adverse events can result from lapse of care. Such events included calls to the emergency department for diabetes-related reasons, inpatient admissions for diabetes-related reasons, serious diabetes-related morbidity, severe hypoglycemic events, and diabetes-related mortality. Hospitals received up to 10 points, with more points for better performance (i.e., lower levels of adverse events). Median hemoglobin A1c percentages were evaluated for three sets of patients: 0-5 years of age, 6-12 years of age, and 13-19 years of age. Increases in A1c values increase the risk of

microvascular complications in patients. Hospitals received up to 6 points for maintaining lower median A1c values.

Gastroenterology

Liver Transplant Survival (3 points). Hospitals received up to 3 points each for higher 3-year survival rates for patients who received liver transplants from the pediatric liver transplant program.

Heart & Heart Surgery

Heart Transplant Survival (6 points). Hospitals received up to 3 points for higher 1-year and 3-year survival rates for patients who received heart transplants from the pediatric heart transplant program. Both 1- and 3-year survival are used here because they provide somewhat different information about short-term and longer-term survival.

Norwood Surgery Survival (6 points). Hospitals received up to 6 points based on survival rate of patients who received the Norwood Stage 1 procedure. Survival was calculated separately for patients who received the procedure for Hypoplastic Left Heart Syndrome (HLHS) or for patients who received the procedure for non-HLHS conditions. Up to 3 points were awarded for ratios approaching one (i.e., fewer deaths following surgery).

Surgical Survival (3 points). This measure represents the rate of patient deaths following moderately complex to very difficult heart surgery procedures (RACHS-1^{‡‡} categories 3 to 6) at pediatric hospitals in the last year. To receive points, a hospital had to perform at least one RACHS-1 category 5 or 6 procedure. For each RACHS-1 category (3, 4, and 5 and 6 combined), a weighted aggregate mortality rate (i.e., the number of deaths divided by the total number of patients) was computed. Finally, the number of deaths was divided by the product of the number of patients in each RACHS-1 category and the aggregate mortality ratio for each RACHS-1 category. Hospitals received greater points for having a lower rate of death following surgery.

Kidney

Avoiding Biopsy Complications (2 points). The item measures the percentage of patients receiving kidney biopsy procedures who had to stay longer or be readmitted after discharge because of a complication. Hospitals receive more points for having lower complication rates.

^{‡‡} For more information on classifying cardiac surgical procedures into RACHS-1 categories, see <http://jtcs.ctsnetjournals.org/cgi/content/abstract/123/1/110>.

Dialysis Management (18 points). This measure evaluates outcomes for patients on maintenance dialysis during the past 2 calendar years. Hospitals could receive up to 3 points for higher percentage of patients with these favorable outcomes: monthly Kt/V values of >1.2 for patients who received hemodialysis three times a week, percentage of total Kt/V values of ≥ 1.8 for patients receiving peritoneal dialysis, and percentage of patients who had an average Hb between 10g/dl and 13g/dl at least once on record in the past 12 months. Points are awarded separately for 2008 and 2009 for each of the 3 submeasures.

Kidney Transplant Survival (24 points). Hospitals received up to 8 points for higher 1- and 3-year survival rates for tissue grafts and for patients who received kidney transplants from the pediatric kidney transplant program. A total of eight sets of rates, each worth up to 3 points, were included: 1- and 3-year graft survival (deceased-donor) rates, graft survival (living-donor) rates, patient survival (deceased-donor) rates, and patient survival (living-donor) rates. Both 1- and 3-year survival were used because they provide somewhat different information about short-term and longer-term survival.

Neonatology

There were no additional outcomes measures.

Neurology & Neurosurgery

Surgical Survival (18 points). Hospitals received up to 18 points for surgical survival rates for nine significant neurological disorders or procedures, including benign and malignant brain tumors, craniosynostosis, hydrocephalus patient shunts, implantation of intracranial pressure monitors for head trauma, medically intractable epilepsy, myelomeningoceles repair, intracranial procedures for head trauma, and chiari I malformation/syringomyelia. Higher survival rates indicate better performance (i.e., a lower rate of death following surgery) and were awarded more points.

Orthopedics

Avoiding Scoliosis Surgical Complications (6 points). The measure evaluated the rate of adverse outcomes for patients who received surgical correction for scoliosis. Such events included returns to the emergency department, returns to the operating room for equipment or mechanical issues, or a length of stay greater than 10 days. Hospitals received up to 2 points for each of the three measures, with more points for better performance (i.e., lower levels of adverse events.)

Pulmonology

Asthma Inpatient Care (6 points). This measure represented care for asthma patients. It includes the following three items: mean length of stay for asthma inpatients, percentage of inpatient deaths attributable to asthma, and percentage of asthma inpatients readmitted within 7 days for exacerbation of asthma-related symptoms. Hospitals were rewarded for shorter lengths of stay and lower percentages of inpatient deaths and readmissions.

Lung Transplant Survival (3 points). Hospitals received up to 3 points for higher 3-year survival rates for lung transplant recipients. Higher points indicate better outcomes.

Managing Cystic Fibrosis (9 points). This measure represents success in improving the functional status of cystic fibrosis patients. It includes a composite of three items representing lung function and nutritional status: mean body mass index, mean forced expiratory volume (FEV₁) for patients 6-17 years of age, and mean FEV₁ for patients 18 years of age and older. Higher points indicate better outcomes (or better functional status) for patients.

Urology

Avoiding Surgical Complications (18 points). This measure evaluated a number of complications and adverse outcomes in patients who received urologic surgical procedures. Complications included pyeloplasty failure, hypospadias complications, and orchiopexy failure. Adverse events included unplanned hospital admissions for urologic issue within 30 days of discharge, hospital admission following an ambulatory procedure, and unplanned reoperation for a urologic issue within 48 days of surgery. Hospitals received up to 18 points total for the six measures, with more points awarded for better performance (i.e., lower complication rates).

C. Scoring for Outcomes Measures

Scoring for outcomes measures was based on data distribution. Cutoff points and scoring were established based on scores that differentiated among hospitals. A description for each measure appears in **Table 11**, along with scoring rules.

Table 11. Scoring Rules for Outcomes Measures

Specialty Measure		Description	Scoring Rules
All Specialties	Preventing bloodstream infections	BSIs per 1,000 central-line days: PICU (all specialties), hematology/oncology patients (Cancer only), and NICU (Neonatology only)	Score equals 1 if 4-6 infections 2 if 0-3 infections
Cancer	ALL survival	Percentage of ALL patients who were event-free survivors	Score equals 1 if ≥ 50 and $< 75\%$ 2 if ≥ 75 and $< 90\%$ 3 if $\geq 90\%$
	Stem cell transplant survival	100-day survival rates for allogeneic stem cell transplant	Score equals 1 if ≥ 50 and $< 75\%$ 2 if ≥ 75 and $< 90\%$ 3 if $\geq 90\%$
1-year survival rates for allogeneic stem cell transplant			
Diabetes & Endocrinology	Hypothyroid management	Percentage of patients with normal TSH measurements	Score equals 1 if $\geq 50\%$ and $< 75\%$ 2 if $\geq 75\%$
		Percentage of patients beginning therapy < 21 days	
	Managing diabetes	Percentage of adverse diabetes-related events (5 items)	Score equals 1 if $> 10\%$ and $\leq 25\%$ 2 if $\leq 10\%$
		Median hemoglobin A1c % values for patients (3 items)	Score equals 1 if $> 8\%$ and $\leq 10\%$ 2 if $\geq 4\%$ and $\leq 8\%$
Gastro-enterology	Liver transplant survival	3-year liver transplant survival rate	Score equals: 1 if $\geq .50$ and $< .80$ 2 if $\geq .80$ and $< .90$ 3 if $\geq .90$
Heart & Heart Surgery	Heart transplant survival	1-year heart transplant survival rate	Score equals: 1 if $\geq .70$ and $< .80$ 2 if $\geq .80$ and $< .90$ 3 if $\geq .90$
		3-year heart transplant survival rate	
	Norwood surgery survival	Survival rate of HLHS patients receiving Norwood Stage 1 procedure	Score equals 1 if $\geq .65$ and $< .80$ 2 if $\geq .80$ and $< .90$ 3 if $\geq .90$
		Survival rate of non-HLHS patients receiving Norwood Stage 1 procedure	
Surgical survival	Ratio of pediatric deaths to the number of RACHS-1 category 3-6 surgical procedures. More points for fewer deaths.	Score equals 1 if ≥ 1.5 2 ≥ 0.5 and < 1.5 3 < 0.5	

(continued)

Table 11. Scoring Rules for Outcomes Measures (continued)

Specialty Measure		Description	Scoring Rules
Kidney	Avoiding biopsy complications	Percentage of patients experiencing biopsy complications	Score equals: 1 if >1% and ≤5% 2 if ≤1%
	Dialysis management	2008 and 2009 percentage of patients with desired outcomes (3 items)	Score equals: 1 if ≥50% and <80% 2 if ≥80% and <90% 3 if ≥90%
	Kidney transplant survival	1-year and 3-year survival rates (8 items)	Score equals: 1 if ≥.50 and <.80 2 if ≥.80 and <.90 3 if ≥.90
Neurology & Neurosurgery	Surgical survival	Survival rate for neurological conditions and procedures (9 items)	Score equals: 1 if ≥.975 and <.99 2 if ≥.99
Orthopedics	Avoiding scoliosis surgical complications	Percentage of adverse events for patients receiving surgical correction for scoliosis	Score equals: 1 if >.01 and ≤.03 2 if ≤.01
Pulmonology	Asthma inpatient care	Mean length of stay for asthma inpatients	Score equals 1 if 4-5 days 2 if <3 days
		Percentage of asthma inpatient deaths	Score equals: 1 if >.01 and ≤.03 2 if <.01
		Percentage of asthma inpatient readmitted	Score equals: 1 if >.01 and ≤.05 2 if <.01
	Managing cystic fibrosis	Mean BMI	Score equals: 1 if <45% 2 if ≥45% and <50% 3 if >50%
		Mean FEV ₁ (patients 6-17)	Score equals: 1 if <90% 2 if ≥90% and <100% 3 if ≥100%
		Mean FEV ₁ (patients 18+)	
	Lung transplant survival	3-year lung-transplant survival rate	Score equals: 1 if ≥.50 and <.80 2 if ≥.80 and <.90 3 if ≥.90

(continued)

Table 11. Scoring Rules for Outcomes Measures (continued)

Specialty Measure		Description	Scoring Rules
Urology	Avoiding surgical complications	Rate of complications following surgical procedure (3 items)	Score equals: 1 if $>.05$ and $\leq.10$ 2 if $>.01$ and $\leq.05$ 3 if $\leq.01$
		Rate of occurrence of adverse events following surgical procedure (3 items)	

D. Standardization and Weighting

As with the structural measures, standardization was performed on the outcomes measures to ensure that the data were distributed normally with a mean of zero. The outcomes measures in each specialty are worth 25% of the overall score. Using factor analysis, we reduced the number of variables to force a one-factor solution. **Table 12** shows the weight of each measure on the total structural score for that specialty. The sum of the weights for each special totals 25, which reflects the weight of the outcomes component in the overall score.

Table 12. Weight (%) of Outcomes Measures by Specialty

Measure	Cancer	Diabetes & Endocrinology	Gastroenterology	Heart & Heart Surgery	Kidney	Neonatology	Neurology & Neurosurgery	Orthopedics	Pulmonology	Urology
ALL survival	9.9									
Asthma inpatient care									8.6	
Avoiding biopsy complications					4.2					
Avoiding scoliosis surgery complications								12.5		
Avoiding surgical complications										12.5
Dialysis management					7.9					
Heart-transplant survival				5.4						
Hypothyroid management		10.2								
Kidney-transplant survival					7.7					
Liver-transplant survival			12.5							
Lung transplant survival									6.7	
Managing cystic fibrosis									8.4	
Managing diabetes		10.6								
Norwood surgery survival				6.2						
Preventing bloodstream infections	9.1	4.2	12.5	6.3	5.2	25.0	12.5	12.5	1.3	12.5
Stem cell transplant survival	5.9									
Surgical survival				7.1			12.5			

VI. Process

The process component in Best Children's Hospitals is represented by reputation with pediatric specialists. It can be viewed as a form of peer review of the hospital's capabilities across a wide variety of processes related to quality of care. For the six specialties ranked since 2008, reputational scores were based on responses to the 2008, 2009, and 2010 physician surveys. For the four pediatric specialties introduced in 2009 (Diabetes & Endocrinology, Kidney, Orthopedics, and Urology), scores were based on responses to the 2009 and 2010 physician survey. In the future, scores in all specialties will be based on the most recent 3 years of responses.

The 2010 survey sample consisted of 1,500 board-certified pediatric specialists selected from the American Board of Medical Specialties (ABMS). Stratifying by census region (http://www.census.gov/geo/www/us_regdiv.pdf) and by specialty within region, we selected a probability (i.e., random) sample of 150 specialists for each of the 10 specialty areas. The final sample included federal and nonfederal medical and osteopathic physicians in all 50 states and the District of Columbia.

A. Eligibility Requirements

To define a probability sample of physicians who properly represented the 10 specialty groupings, we used (1) a mapping between the 10 *U.S. News* specialties and the 23 ABMS member boards and (2) a mapping between the ABMS specialty and specialty boards. For two subspecialties that were not available from the ABMS, physicians were selected from the American Medical Association Masterfile. Physicians who designated a primary specialty in one of the areas listed were eligible for the survey. **Table 13** displays the association among the specialty listed in Best Children's Hospitals and the corresponding member board.

Table 13. Physician Sample Mapping

Best Hospitals Specialty	American Board of	Subspecialties
Cancer	Pediatrics	Pediatric Hematology-Oncology
Gastroenterology	Pediatrics	Pediatric Gastroenterology
		Pediatric Transplant Hepatology
Diabetes & Endocrinology	Pediatrics	Pediatric Endocrinology
Heart & Heart Surgery	Pediatrics	Pediatric Cardiology
	Congenital Heart Surgery	Congenital Heart Surgeon Society*

(continued)

Table 13. Physician Sample Mapping (continued)

Best Hospitals Specialty	American Board of	Subspecialties
Kidney	Pediatrics	Pediatric Nephrology
Neonatology	Pediatrics	Neonatal-Perinatal Medicine
Neurology & Neurosurgery	Pediatrics	Neuro-developmental Disabilities
		Sleep Medicine
	Psychiatry and Neurology	Child Neurology
	Pediatric Neurological Surgery	Pediatric Neurological Surgery
Orthopedics	Orthopedics	Pediatric Orthopedics**
Pulmonology	Pediatrics	Pediatric Pulmonary
Urology	Urology	Pediatric Urology
		Urology

*These specialists were selected from the Congenital Heart Surgeons Society membership list

**These specialists were selected from the American Medical Association Masterfile as self-designated specialists.

B. Survey Procedure

Materials

Each year, sampled physicians in each specialty were mailed a one-page, single-sided questionnaire containing a single nomination element. Respondents were asked to supply the names of up to five hospitals in their specialty that provide the best care to patients with serious conditions, without considering location or expense (see *Appendix B*). Along with the questionnaire, physicians were sent a cover letter, a business reply envelope, and a \$2 bill (a token incentive used since the first set of Best Hospitals rankings in 1990).

Mailings

The physician survey mailings were conducted in stages over several weeks at the beginning of 2010. The initial mailing was sent via U.S. Postal Service (USPS) First Class metered mail. Two weeks after the initial survey mailing, a replacement survey and new cover letter were sent to the sampled physicians. Two weeks following the reminders, we sent a USPS Priority mailing to nonresponders, along with another copy of the questionnaire, a new cover letter, and a business reply envelope. Two weeks after the second survey was sent, a third survey mailing was sent either by USPS Priority or overnight via Federal Express to the remaining nonresponders; the packet included the questionnaire, a cover letter, and a business reply envelope. (See *Table 14* for a simplified schedule of the physician survey mailing.)

Table 14. Physician Survey Mailing Schedule

Materials Mailed	Sent via	Sent to	Date
1st copy of physician survey	USPS, First Class mail	Full physician sample	January 5, 2010
2nd copy of physician survey	USPS, First Class mail	Sample members who did not respond	January 21, 2010
3rd copy of physician survey	USPS, Priority mail	Sample members who did not respond	February 4, 2010
4th copy of physician survey	USPS, Priority mail, or Federal Express	Sample members who did not respond	February 19, 2010

Response Rates

Of the 1,500 physicians sampled for this year's report, 132 were deemed ineligible after determining that they were no longer actively practicing. Of the remaining 1,368 physicians, more than half (869) returned the completed questionnaire by the deadline of March 31, 2010. The final response rate was 63.5%, using American Association for Public Opinion Research standard response rate 6 (standard definitions are located on the Web at http://www.aapor.org/uploads/Standard_Definitions_07_08_Final.pdf), which treats undeliverables as ineligible cases. *Table 15* shows the response rate for 2010 by region and specialty.

Table 15. Response Rates, by Region and Specialty, 2010

Specialty	Midwest	Northeast	South	West	Total
	%	%	%	%	%
Cancer	66.7	52.9	62.5	48.6	57.5
Diabetes & Endocrinology	80.0	72.7	58.4	58.8	67.7
Gastroenterology	57.1	50.0	60.0	51.6	54.8
Heart & Heart Surgery	81.1	76.7	67.6	61.8	71.9
Kidney	53.1	61.1	57.6	58.3	57.7
Neonatology	56.3	62.9	45.7	57.6	55.6
Neurology & Neurosurgery	63.9	61.1	63.6	51.5	60.1
Orthopedics	69.7	61.8	62.9	67.6	65.5
Pulmonology	76.5	54.3	60.6	60.0	62.8
Urology	77.8	78.4	81.1	85.7	80.7
Total	68.5	63.1	62.1	60.3	63.5

C. Survey Response Weighting

The physician survey was stratified by specialty and census region (Midwest, Northeast, South, and West). Weights were constructed and applied to each physician’s survey response to make nominations representative at the national level. Weights were based on probability of selection within each unique specialty-region combination, adjusting to account for nonresponders.

D. Log Transformation

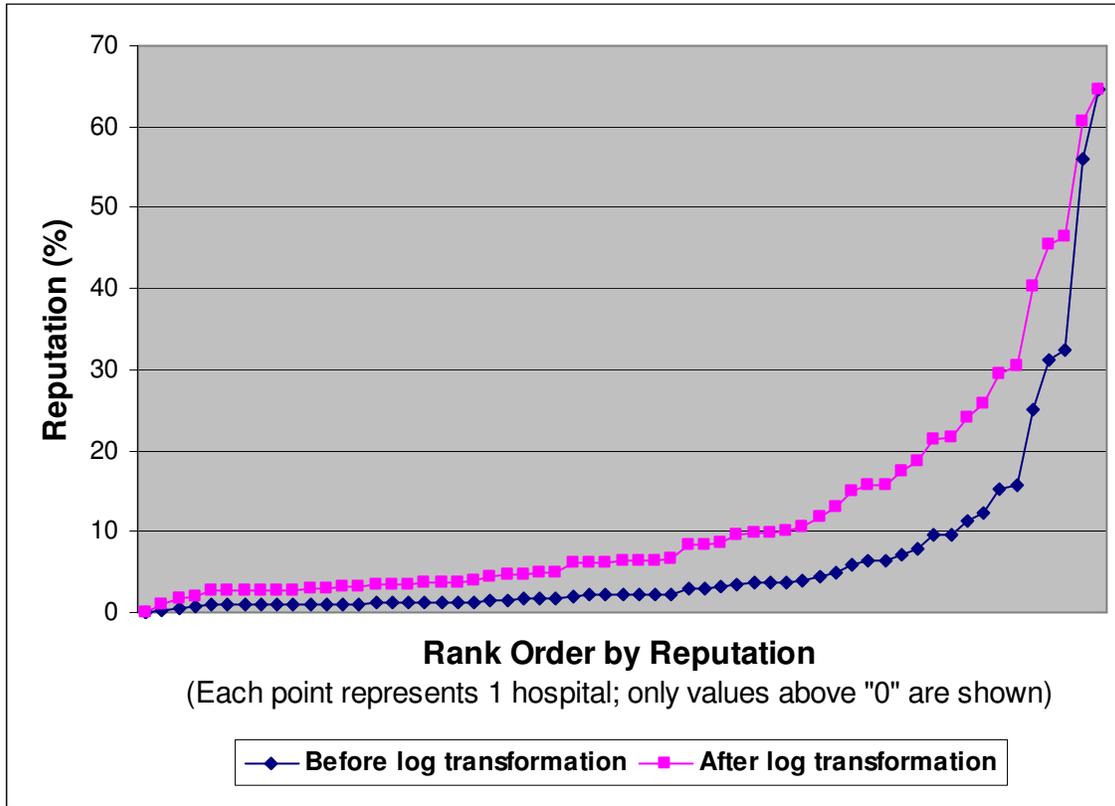
For 2010, we added a step to the analysis of the reputation data obtained from physicians' hospital nominations. By its nature, a survey that solicits recommendations for “best hospitals” will result in data that is not normally distributed—relatively few hospitals will receive even one “best” recommendation. Of the hospitals recommended, moreover, a small number will receive many nominations, producing a highly skewed distribution. Since the other ranking components, such as structural measures and mortality, are not skewed to this degree, reputation can have a somewhat larger than intended impact on the final rankings. To address this issue, we implemented a log transformation of the reputation data. The transformation reshapes the distribution, reducing the skew (flattening the distribution) of the reputation data. In this way, the distribution of reputation data more closely matches those of the other components in the rankings. *Figure 1* demonstrates the impact of this step on reputation data, using a set of simulated values. As is evident, once the log transformation has been applied, the relative position of each hospital on this variable remains the same but the distance between the values is reduced. Due to the reduced variance, the impact of the reputation score on hospitals' final standing in the rankings is slightly diminished. As with the other components, the reputation data is standardized before being combined in the Index of Hospital Quality.

VII. U.S. News Score

In calculating the *U.S. News* ranking scores, structural measures received 40% of the weight, the process measure received 35%, and outcome measures received 25% of the weight.

Although each measure represents a specific aspect of quality, a single score provides a result that is easy to use and understand and that portrays overall quality more accurately than any of the three elements would individually. The rankings for the top 30 hospitals in each of the pediatric specialties by *U.S. News* Score are shown in *Appendix C*.

Figure 1. Comparison of reputation data prior to and after log transformation.



The formula for calculating the *U.S. News* score is in Equation (1). The score can be thought of as a simple weighted sum of structural, process, and outcome measures. Please note that this formula is meant for illustrative purposes only; it **cannot** be used to directly calculate a score for an individual hospital. Standardized data values were adjusted based on distribution of measures across the eligible universe, which consisted of many more than 30 hospitals.

$$(1) \text{ Score} = \left\{ \begin{aligned} &w_s \times \left(\sum_1^{n_s} F + \sum_1^{n_o} F \right) \times \left[(S_1 \times F_{1_s}) + (S_2 \times F_{2_s}) + K + (S_n \times F_{n_s}) \right] + w_p \times \left[P \times \left(\sum_1^{n_s} F + \sum_1^{n_o} F \right) \right] \\ &+ w_o \times \left(\sum_1^{n_s} F + \sum_1^{n_o} F \right) \times \left[(O_1 \times F_{1_o}) + (O_2 \times F_{2_o}) + K + (O_n \times F_{n_o}) \right] \end{aligned} \right\},$$

where

Score = *U.S. News* score for pediatrics,

w_s = weight assigned to structure measures

w_p = weight assigned to process measures

w_o = weight assigned to outcomes measures

S_n = standardized value for structural indicator n (STRUCTURE),

F_{n_s} = factor loadings for structural indicator n_s ,

F_{n_o} = factor loadings for outcomes indicator n_o ,

P = standardized nomination score (PROCESS), and

O_n = standardized value for mortality indicator n (OUTCOMES),

For presentation purposes, we transformed the raw *U.S. News* scores to a scale that assigns a score of 100 to the top hospital. The formula for the transformation:

Equation (2) $(Raw\ U.S.\ News\ score_i - minimum_i) / range_i$.

VIII. Pediatric Honor Roll

This year, 62 different hospitals were ranked in at least one pediatric specialty. The Children's Hospitals Honor Roll, established in 2009, recognizes excellence across a broad range of pediatric specialties. To be listed, a hospital must be ranked in all 10 pediatric specialties. For 2010, 8 hospitals qualified for listing. *Appendix D* lists 2010 Honor Roll hospitals in alphabetical order.

IX. Future Improvements

In the coming years, we plan to further refine the measures used in the current pediatric specialties and add new measures and specialties. Specifically, we anticipate the following improvements.

- **Develop additional outcome measures.** For example, we plan to explore alternatives for collecting additional mortality data, infection rates, patient functional measures, and complications rates.
- **Explore risk adjustment.** We will continue to investigate methods for risk-adjusting pediatric mortality data to better reflect hospital-to-hospital differences in patient mix, severity, and comorbidities. These efforts are complicated by the fact that currently there are no national databases which cover all pediatric health care in the United States. However, organizations such as the Child Health Corporation of America, the Children's Hospital Neonatal Consortium, and the Society for Thoracic Surgeons are seeking to make some specialty-specific data available for the majority of pediatric institutions across the country. As these databases are developed and further

expanded to include more pediatric facilities, we will explore their possible use in creating risk-adjusted outcomes and performance measures of healthcare.

- **Identify additional structural measures.** External certifications of hospital quality, excellence in specialty areas, and awards for high-quality care will be considered for incorporation in the rankings. Additional technologies, teams, and practices that define high-quality pediatric services also will be evaluated.
- **Conduct more extensive review and field testing of the Pediatric Hospital Survey.** Testing will be designed to fine-tune the survey and reduce the response burden on participating hospitals and ensure that questions are appropriately measuring hospital performance.
- **Evaluate different weighting schemes.** As additional measures are included in the rankings, the weights used to calculate the final score will continue to be evaluated and revised to better reflect high-quality pediatric care. In general, the goal will be to increase the weight of outcome measures as more viable measures are available for use in the rankings.

The project team will continue to work with expert advisory panels of physicians, nurses, hospital quality experts, and other healthcare professionals. RTI and *U.S. News* are grateful to these volunteer experts, who have provided invaluable recommendations and advice.

X. Contact Information

We welcome suggestions and questions. Readers and users of the rankings are encouraged to contact the Best Hospitals research team at BestHospitals@rti.org. This report and methodology reports for the adult rankings can be viewed or downloaded online in their entirety from the RTI International Web site at <http://www.rti.org/besthospitals>.

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Appendix A
Glossary of Terms

Computer tomography (CT) enterography. CT enterography allows for visualization of the small bowel wall and lumen by combining a CT scan with large amounts of ingested contrast material.

Continuous EEG monitoring with pediatric neurology support. EEG is a technology for measuring electrical activity produced by the brain, as recorded from electrodes placed on the scalp. EEG monitoring provides the ability to collect the brain's electrical activity continuously to help detect and diagnose neurological problems.

Cryoablation. This process uses cooled, thermally conductive gases and fluids circulated through hollow needles (cryoprobes) that are inserted adjacent to diseased tissue in order to kill the tissue.

Genetic testing/counseling. A genetic testing/counseling service is equipped with the appropriate laboratory facilities and is directed by a physician qualified to advise parents and prospective parents on potential problems in cases of genetic defects. A genetic test is the analysis of human DNA, RNA, chromosomes, proteins, and certain metabolites in order to detect heritable disease-related genotypes, mutations, phenotypes, or karyotypes for clinical purposes. Genetic tests can have diverse purposes, including the diagnosis of genetic diseases in newborns, children, and adults; the identification of future health risks; the prediction of drug responses; and the assessment of risks to future children.

Image-guided radiation therapy (IGRT). IGRT is an automated system that produces high-resolution x-ray images to pinpoint tumor sites, adjust patient positioning, and generally make treatment more effective and efficient.

Intensity-modulated radiation therapy (IMRT). IMRT is a three-dimensional radiation therapy that improves the targeting of treatment delivery in a way that is likely to decrease damage to normal tissues and allows for varying intensities.

Intraoperative magnetic resonance imaging (ioMRI). ioMRI uses a uniform magnetic field and radio frequencies to study tissue and structure of the body. It enables visualization of biochemical cellular activity in vivo without the use of ionizing radiation, radioisotopes, or ultrasound.

Magnetic resonance cholangiopancreatography (MRCP). MRCP is a noninvasive approach for imaging the biliary and pancreatic ducts using magnetic resonance imaging.

Magnetic resonance spectroscopy (MRS). MRS differs from MRI in that MRS uses a continuous band of radio wave frequencies to analyze the chemical composition of proton (hydrogen)-hydrogen based molecules in a variety of chemical compounds. This technology evaluates the chemical composition and integrity of functioning upper-motor neurons in the brain.

Molecular diagnostic/virology laboratory. This is a diagnostic laboratory that supports the NICU by conducting culture and tissue studies to determine the nature of biological and virological conditions.

Multidisciplinary pediatric acute pain/sedation service (available onsite 24 hours a day).

This service provides monitored anesthesia care and sedation within the hospital (but not within an operating room or PICU), as well as emergency airway management and acute and chronic pain management for neonates and pediatric patients on a 24-hour basis. A qualified program must have at least an identified medical director (e.g., general pediatrician, pediatric subspecialist, or anesthesiologist) with documented education in conscious sedation and an RN coordinator (or pain management clinical nurse specialist).

Neonatal intensive care unit (NICU). A NICU provides mechanical ventilation, neonatal surgery, and special care for the sickest infants, including those with the lowest birth weights (below 1,500 grams), who are born in the hospital or transferred from another institution. The NICU is separate from the newborn nursery. A full-time neonatologist serves as director.

Non-sedate MRI (e.g. MRI-compatible neonatal transporter). This is an MRI-compatible incubator system with integrated coils to support imaging that includes a trolley to facilitate safe intrahospital transport of neonates.

Pediatric anesthesia program (available onsite 24 hours a day). This team provides anesthesia care for children before, during, and after surgery (or other medical procedures). The team provides 24-hour coverage by board-certified anesthesiologists who specialize in pediatric anesthesia.

Pediatric infectious disease program (available onsite 24 hours a day). This program provides consultation and treatment for children with severe illnesses that are infectious in origin. The team provides 24-hour on-site coverage by physicians board-certified in pediatric infectious diseases.

Pediatric intensive care unit (PICU). A PICU is staffed with specially trained personnel and has monitoring and specialized support equipment for treating pediatric patients who, because of shock, trauma, or other life-threatening conditions, require intensified, comprehensive observation and care.

Pediatric pain management program (available onsite 24 hours a day). Administered by specially trained physicians and other clinicians, this is a recognized clinical service or program providing specialized medical care, drugs, or therapies for the management of acute or chronic pain and other distressing symptoms among children suffering from an acute illness of diverse causes.

PET/computed tomography scanning (PET/CT). PET/CT combines the capabilities of PET and CT scanning into a single integrated device, which provides metabolic functional information for monitoring chemotherapy, radiotherapy, and surgical planning.

Positron emission tomography (PET) scanning. PET scanning is a computerized nuclear medicine imaging technology that uses radioactive (positron-emitting) isotopes created in a cyclotron or generator to produce composite images of the brain and heart activity. The scans are sectional images depicting metabolic activity or blood flow rather than anatomy.

Radiofrequency ablation. This procedure involves placing probes that emit radiofrequency energy into the heart using a catheter. The radiofrequency energy is then used to destroy abnormal electrical activity in the heart tissue.

Rapid response team (available onsite 24 hours a day). A rapid response team, also known as a medical emergency team, is distinct from the hospital “code” team. The team of appropriately trained individuals is available 24 hours a day and has three essential characteristics: (1) The team creates tools and provides staff education for recognizing an acute deterioration in patient condition. (2) The team follows the SBAR method (for situation, background, assessment, recommendation) to communicate such a change in condition effectively and efficiently (i.e., escalation policy). (3) The team responds to the change in condition with the goal of reducing/eliminating preventable “codes.”

Reverse isolation/infection control facilities. Reverse isolation/infection control facilities are a controlled environment that protects patients from getting an infection caused by bacteria, viruses, or fungus that may be in the environment or carried by staff and visitors.

Specialized chemistry laboratory with tandem mass spectroscopy. This specialized diagnostic laboratory has the ability to use tandem mass spectroscopy and other advanced techniques to aid in the diagnosis of medical conditions in NICU patients.

Surgical intensive care unit (SICU) or dedicated beds in a NICU or PICU for surgical patients. A SICU is a specialized unit designed to meet the needs of pediatric surgical patients who require intensive care services following surgery. If you do not have a SICU, having dedicated surgical intensive care beds in your PICU is acceptable.

Therapeutic meta-iodine-benzyl-guanidine (I-131 MIBG) I-131MIBG is a functional imaging agent used to help locate and diagnose tumors of adrenergic tissues, such as neuroblastoma and pheochromocytoma.

Three-dimensional mapping. This includes the use of three-dimensional imaging systems, such as MRI or ultrasound, to guide ablation probes.

3 Tesla magnetic resonance imaging (3T MRI). 3T MRI is a higher-powered version of MRI that offers improved morphological and functional studies of the brain compared with the more common field strength of 1.5T.

Appendix B

2010 Sample Physician Questionnaire



America's Best Children's Hospitals

Your nominations will be reflected in the 2010 *U.S. News & World Report pediatric cancer rankings.*

Without considering location or expense, list up to five U.S. hospitals (and/or affiliated medical schools) that in your opinion provide the best care for the most complex or difficult medical conditions or surgical procedures associated with pediatric cancer.

	Hospital and/or affiliated medical school	City	State
a.	<input type="text"/>	<input type="text"/>	<input type="text"/>
b.	<input type="text"/>	<input type="text"/>	<input type="text"/>
c.	<input type="text"/>	<input type="text"/>	<input type="text"/>
d.	<input type="text"/>	<input type="text"/>	<input type="text"/>
e.	<input type="text"/>	<input type="text"/>	<input type="text"/>

Please send your response in the enclosed postpaid envelope or by fax (800) 476-9721.



Conducted by:

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Appendix C
2010 Pediatric Rankings

Pediatric Rankings 2010--Cancer

Rank	Hospital Name	U.S. News Hospital Score	Reputation with physicians	Stem cell transplant survival	ALL survival	Preventing bloodstream infections	Infection-preventing activities	Volume of cancer patients	Volume of new cancer patients	Surgical volume	Nurse-patient ratio	Nurse Magnet hospital	BMT program	Accredited for bone marrow and tissue transplant	Palliative care	Advanced clinical services	Clinical support services	Technology	Specialized clinics and programs	Patient and family services	Parent and family involvement	Quality improvement activities	Following best practices	Health information technology	Availability of pediatric specialists	Fellowship training programs	Clinical research
1	St. Jude Children's Research Hospital, Memphis	100.0	59.2	3	3	4	17	9	3	5	5.7	0	6	1	2	10	10	7	7	8	6	7	9	8	13	2	8
2	Children's Hospital of Philadelphia	99.7	68.4	5	3	2	15	9	3	4	3.3	1	6	1	1	11	10	7	7	8	6	7	7	8	13	2	8
3	Children's Hospital Boston	99.6	67.5	5	3	3	12	8	3	2	4.9	1	6	1	3	11	10	7	7	8	6	7	9	8	13	2	8
4	Cincinnati Children's Hospital Medical Center	91.8	31.7	4	3	4	14	6	2	4	3.8	1	6	1	3	11	10	7	7	8	6	7	9	8	13	2	8
5	Texas Children's Hospital, Houston	91.1	33.4	4	2	3	11	9	3	5	2.8	1	6	1	1	10	10	6	7	8	6	7	9	5	13	2	8
6	Children's Hospital Los Angeles	86.1	19.3	4	2	4	9	9	3	6	3.1	1	6	1	1	11	10	6	7	7	6	7	9	8	13	2	7
7	Seattle Children's Hospital	84.3	18.2	5	2	2	13	7	2	6	2.4	1	6	1	3	9	10	6	7	8	6	7	7	8	13	2	7
8	Memorial Sloan-Kettering Cancer Center, New York	81.7	20.9	5	NR	NR	9	7	3	6	2.0	0	5	1	2	10	10	7	7	8	5	7	9	6	12	1	8
9	Johns Hopkins Children's Center, Baltimore	81.0	17.9	3	3	4	10	5	2	2	3.3	1	6	1	3	10	10	7	7	8	6	6	9	6	13	1	7
10	Children's Memorial Hospital, Chicago	78.7	7.5	6	3	4	15	9	2	5	2.6	1	6	1	3	11	10	6	7	8	6	7	9	8	13	2	8
11	Children's Hospital, Denver	77.9	10.2	6	3	3	12	7	2	3	2.5	1	6	1	3	11	10	6	7	8	6	7	9	8	13	1	8
12	M.D. Anderson Children's Cancer Hospital, Houston	73.4	7.7	4	3	4	10	6	3	5	2.5	1	6	1	1	10	10	7	7	8	6	6	9	1	13	1	8
13	Children's Healthcare of Atlanta	73.0	7.0	4	2	3	13	7	3	3	2.6	0	6	1	2	11	10	7	7	8	6	7	8	8	13	1	8
14	Children's National Medical Center, Washington, D.C.	71.7	5.6	4	3	4	9	5	2	5	2.6	1	6	1	3	11	10	7	7	8	6	7	9	8	13	1	8
15	Lucile Packard Children's Hospital at Stanford, Palo Alto, Calif.	71.0	8.6	4	NR	3	15	6	1	4	3.3	0	6	1	1	9	10	6	6	8	6	6	9	8	12	1	7
16	Children's Medical Center Dallas	69.4	4.6	5	3	2	12	9	2	2	2.2	1	6	1	1	11	10	6	7	8	6	7	9	8	13	2	8
17	St. Louis Children's Hospital-Washington University	64.4	3.0	6	3	4	15	4	1	3	2.4	1	6	1	3	11	10	7	4	8	6	7	9	8	13	2	7
18	Duke Children's Hospital and Health Center, Durham, N.C.	64.3	4.5	5	3	4	12	5	1	2	2.3	1	6	1	3	11	10	6	7	8	5	6	8	6	13	1	3
19	NY-Presby. Morgan Stanley-Komansky Children's Hospital, N.Y.	64.1	2.7	5	2	3	12	4	3	6	3.1	0	6	1	2	11	10	7	7	8	6	7	9	8	13	1	8
20	Mattel Children's Hospital UCLA, Los Angeles	63.3	2.9	6	2	4	13	4	3	2	2.6	1	6	1	3	11	10	6	7	8	6	7	9	5	13	2	5
21	UCSF Children's Hospital, San Francisco	63.2	4.3	6	3	2	7	4	1	3	3.6	0	6	1	3	8	10	7	7	8	5	7	8	1	13	1	7
22	Nationwide Children's Hospital, Columbus, Ohio	61.6	2.6	3	3	4	10	6	1	2	2.4	1	6	1	3	11	10	7	7	8	6	7	7	8	13	2	5
23	Children's Hospital of Pittsburgh of UPMC	61.5	2.3	4	2	4	11	6	1	5	3.1	0	6	1	3	11	10	7	7	8	6	7	7	8	13	2	5
24	University of Minnesota Amplatz Children's Hospital	61.5	3.3	2	3	1	9	3	2	2	2.6	1	6	1	3	10	10	7	6	8	6	7	9	8	13	1	7
25	University of Michigan C.S. Mott Children's Hospital, Ann Arbor	59.1	2.4	2	2	4	13	3	1	2	2.3	0	6	1	3	11	10	7	7	8	6	7	9	6	13	1	8
26	Rainbow Babies and Children's Hospital, Cleveland	56.4	1.5	5	3	1	8	6	3	4	1.9	1	6	1	3	11	10	7	7	8	6	7	9	5	13	1	6
27	Children's Hospital Cleveland Clinic	56.1	1.7	6	2	4	15	8	1	2	2.5	1	5	0	3	10	10	7	7	8	6	7	9	8	13	1	7
28	Doernbecher Children's Hospital, Portland, Ore.	52.6	1.0	5	3	3	10	4	1	6	2.3	0	6	1	3	11	10	7	7	8	6	7	8	8	13	1	6
29	Primary Children's Medical Center, Salt Lake City	51.9	0.7	3	3	3	12	7	3	4	4.6	0	6	1	3	11	10	6	7	8	6	7	9	3	13	2	8
30	Riley Hospital for Children Clarian Health Partners, Indianapolis	51.7	1.0	3	2	3	14	6	2	2	2.8	1	6	1	3	11	10	6	7	8	6	7	9	3	13	1	8

Rankings are based on all of the above measures. NR: not reported.

Pediatric Rankings 2010--Diabetes & Endocrinology

Rank	Hospital Name	U.S. News Hospital Score	Reputation with physicians	Managing diabetes	Hypothyroid management	Preventing bloodstream infections	Infection-preventing activities	Volume of diabetes & endocrinology patients	Nonsurgical procedure volume	Nurse-patient ratio	Nurse Magnet hospital	Diabetes treatment options	Advanced clinical services	Clinical support services	Technology	Specialized clinics and programs	Patient and family services	Parent and family involvement	Quality improvement activities	Following best practices	Health information technology	Availability of pediatric specialists	Fellowship training programs	Clinical research
1	Children's Hospital of Philadelphia	100.0	58.9	13	4	1	16	14	16	3.3	1	5	18	10	8	6	8	6	7	35	8	10	1	1
2	Children's Hospital Boston	96.2	38.7	14	3	1	12	15	17	4.9	1	5	19	10	8	8	8	6	7	37	8	10	1	1
3	Children's Hospital of Pittsburgh of UPMC	87.2	20.9	13	4	2	8	16	11	3.1	0	5	18	10	8	7	8	6	7	36	8	10	1	1
4	Children's Hospital, Denver	85.1	24.7	11	3	2	11	11	4	2.5	1	5	19	10	4	8	8	6	7	32	8	10	1	1
5	Cincinnati Children's Hospital Medical Center	85.0	20.9	13	2	2	12	11	14	3.8	1	5	17	10	8	6	8	6	7	24	8	10	1	1
6	Children's Hospital Los Angeles	84.3	22.4	15	2	2	9	14	6	3.1	1	5	19	10	6	6	7	6	7	28	8	10	1	1
7	Yale-New Haven Children's Hospital, New Haven, Conn.	82.8	15.3	16	4	2	8	10	16	2.1	0	5	17	10	8	6	8	6	7	35	8	10	1	1
8	Johns Hopkins Children's Center, Baltimore	82.3	18.1	15	3	2	13	9	11	3.3	1	5	18	10	8	3	8	6	6	37	6	10	1	1
9	NY-Presby. Morgan Stanley-Komansky Children's Hospital, N.Y.	79.6	12.4	15	3	2	12	11	8	3.1	0	5	19	10	8	6	8	6	7	35	8	10	1	1
10	Texas Children's Hospital, Houston	75.7	11.2	10	0	2	11	14	15	2.8	1	5	16	10	8	5	8	6	7	22	5	10	1	1
11	Mattel Children's Hospital UCLA, Los Angeles	75.6	6.6	14	4	2	12	9	17	2.6	1	5	19	10	8	8	8	6	7	41	5	10	1	1
12	Shands Children's Hospital at the University of Florida, Gainesville	73.3	10.0	4	4	2	7	9	11	1.6	1	5	17	9	8	5	8	6	7	35	4	10	1	1
13	Rainbow Babies and Children's Hospital, Cleveland	70.9	5.6	13	4	1	8	13	8	1.9	1	5	18	10	8	8	8	6	7	36	5	10	1	1
14	UCSF Children's Hospital, San Francisco	70.7	13.1	13	0	1	11	8	6	3.6	0	4	17	10	5	4	8	5	5	33	1	10	1	1
15	Riley Hospital for Children Clarian Health Partners, Indianapolis	69.9	5.0	10	3	2	13	12	12	2.8	1	5	19	10	8	7	8	6	7	35	3	10	1	1
16	Massachusetts General Hospital for Children, Boston	69.0	5.1	13	3	2	13	7	9	2.0	1	5	19	10	8	6	8	6	7	35	8	10	1	1
17	Mayo Eugenio Litta Children's Hospital, Rochester, Minn.	68.0	5.2	12	4	2	11	6	8	3.2	1	5	18	10	8	7	8	6	7	27	4	10	1	1
18	Children's Hospital Cleveland Clinic	67.5	2.9	11	3	2	15	15	12	2.5	1	5	18	10	8	8	8	6	7	43	8	10	1	1
19	Lucile Packard Children's Hospital at Stanford, Palo Alto, Calif.	67.5	7.5	12	3	1	14	7	3	3.3	0	4	16	10	8	1	8	6	7	31	8	9	1	1
20	Children's Healthcare of Atlanta	63.2	3.4	6	0	2	15	12	13	2.6	0	5	19	10	8	5	8	6	7	31	8	10	1	1
21	University of Chicago Comer Children's Hospital	61.3	3.2	14	0	2	12	6	11	2.1	1	3	18	10	8	6	7	6	7	36	8	10	1	1
22	Schneider Children's Hospital, New Hyde Park, N.Y.	60.5	2.6	11	4	2	13	9	9	2.8	0	5	18	10	8	5	8	5	7	33	5	10	1	1
23	North Carolina Children's Hospital at UNC, Chapel Hill	60.5	3.0	13	4	2	12	7	11	2.1	0	5	18	10	8	5	7	6	4	30	6	9	1	1
24	Holtz Children's Hospital at UM-Jackson Memorial Hospital, Miami	60.1	2.5	14	4	2	7	8	13	3.1	0	5	17	10	8	5	8	5	6	32	6	10	1	1
25	Children's Mercy Hospitals and Clinics, Kansas City, Mo.	58.4	1.7	13	3	2	15	12	5	3.0	1	5	19	10	8	7	8	6	7	31	8	10	1	1
26	University of Michigan C.S. Mott Children's Hospital, Ann Arbor	58.3	1.6	12	4	2	13	9	11	2.3	0	5	19	10	8	8	8	6	7	34	6	10	1	1
27	St. Louis Children's Hospital-Washington University	57.6	1.9	12	2	2	12	10	9	2.4	1	5	19	10	8	6	8	6	7	26	8	10	1	1
28	Wolfson Children's Hospital, Jacksonville, Fla.	57.6	1.9	14	2	2	13	9	13	2.8	1	5	16	10	8	5	8	6	6	30	6	10	1	1
29	Duke Children's Hospital and Health Center, Durham, N.C.	57.1	1.7	13	3	2	12	11	7	2.3	1	5	19	10	8	7	8	5	6	34	6	10	1	1
30	Rady Children's Hospital, San Diego	57.0	1.3	15	4	2	15	11	8	3.2	0	5	19	10	8	7	8	6	7	39	7	10	1	1

Rankings are based on all of the above measures. NR: not reported.

Pediatric Rankings 2010-- Gastroenterology

Rank		<i>U.S. News Hospital Score</i>	<i>Reputation with physicians</i>	<i>Liver-transplant survival</i>	<i>Preventing bloodstream infections</i>	<i>Infection-preventing activities</i>	<i>Volume of gastroenterology patients</i>	<i>Surgical volume</i>	<i>Nonsurgical procedure volume</i>	<i>Nurse-patient ratio</i>	<i>Nurse Magnet hospital</i>	<i>Liver-transplant program</i>	<i>Advanced clinical services</i>	<i>Clinical support services</i>	<i>Technology</i>	<i>Specialized clinics and programs</i>	<i>Patient and family services</i>	<i>Parent and family involvement</i>	<i>Quality improvement activities</i>	<i>Health information technology</i>	<i>Availability of pediatric specialists</i>	<i>Fellowship training programs</i>	<i>Clinical research</i>
1	Cincinnati Children's Hospital Medical Center	100.0	71.7	2	2	17	48	12	10	3.8	1	4	8	9	9	6	8	6	7	8	8	1	1
2	Children's Hospital of Philadelphia	98.5	64.0	3	1	15	51	11	11	3.3	1	4	8	9	9	6	8	6	7	8	8	1	1
3	Children's Hospital Boston	97.8	62.8	3	1	18	47	7	13	4.9	1	4	8	9	9	6	8	6	7	8	8	1	1
4	Texas Children's Hospital, Houston	90.5	31.1	2	2	19	39	10	14	2.8	1	4	7	9	9	6	8	6	7	5	8	1	1
5	Children's Hospital, Denver	86.4	24.3	2	2	15	37	11	10	2.5	1	3	8	9	8	6	8	6	7	8	8	1	1
6	Children's Hospital of Pittsburgh of UPMC	85.4	22.9	3	2	12	48	7	8	3.1	0	4	8	9	8	6	8	6	7	8	8	1	1
7	Mattel Children's Hospital UCLA, Los Angeles	78.5	12.6	2	2	17	33	7	9	2.6	1	4	8	9	9	6	8	6	7	5	8	1	1
8	Nationwide Children's Hospital, Columbus, Ohio	77.6	15.7	0	2	13	34	9	9	2.4	1	0	8	9	9	6	8	6	7	8	8	1	1
9	Children's Hospital Los Angeles	74.5	7.4	3	2	10	43	8	10	3.1	1	4	8	9	9	6	7	6	7	8	8	1	1
10	Children's Memorial Hospital, Chicago	74.3	7.3	3	2	19	41	7	6	2.6	1	4	8	9	9	6	8	6	7	8	8	1	1
11	Johns Hopkins Children's Center, Baltimore	73.6	9.6	1	2	10	40	6	9	3.3	1	3	8	9	9	6	8	6	6	6	8	1	1
12	Lucile Packard Children's Hospital at Stanford, Palo Alto, Calif.	73.0	7.3	3	1	19	30	11	7	3.3	0	4	8	9	9	5	8	6	7	8	7	1	1
13	Children's Healthcare of Atlanta	72.8	6.7	2	2	12	52	9	6	2.6	0	4	8	9	8	6	8	6	7	8	8	1	1
14	Children's Hospital of Wisconsin, Milwaukee	71.8	7.2	3	2	11	31	7	11	2.0	1	2	7	9	9	6	8	6	7	8	8	1	1
15	NY-Presby. Morgan Stanley-Komansky Children's Hosp., N.Y.	69.6	4.4	3	2	14	40	12	8	3.1	0	4	8	9	8	6	8	6	6	8	8	1	1
16	St. Louis Children's Hospital-Washington University	67.5	5.2	2	2	12	32	5	5	2.4	1	4	8	9	9	6	8	6	7	8	8	1	1
17	UCSF Children's Hospital, San Francisco	66.4	7.5	3	1	7	33	6	4	3.6	0	4	6	9	8	6	8	5	6	1	7	1	1
18	Monroe Carell Jr. Children's Hospital at Vanderbilt, Nashville	65.0	3.5	3	1	10	32	9	9	2.9	1	3	8	9	9	6	8	6	7	8	8	1	1
19	Massachusetts General Hospital for Children, Boston	61.4	3.6	3	2	14	27	7	4	2.0	1	2	7	9	7	4	8	6	7	8	8	1	1
20	Alfred I. duPont Hospital for Children, Wilmington, Del.	60.9	2.9	3	2	15	27	8	2	2.8	0	3	8	9	9	5	8	6	7	8	8	1	1
21	Children's Hospital Cleveland Clinic	60.3	1.8	2	2	19	48	9	9	2.5	1	2	7	9	9	6	8	6	7	8	8	1	1
22	Riley Hospital for Children Clarian Health Partners, Indianapolis	59.4	2.1	1	2	16	37	5	12	2.8	1	3	8	9	9	6	8	6	7	3	8	1	1
23	Seattle Children's Hospital	58.7	2.0	2	1	19	44	8	5	2.4	1	4	6	9	6	6	8	6	7	8	8	1	1
24	Mayo Eugenio Litta Children's Hospital, Rochester, Minn.	58.2	2.3	3	2	12	31	6	9	3.2	1	2	8	9	9	4	8	6	7	4	8	1	1
25	Mount Sinai Kravis Children's Hospital, New York	55.7	2.6	3	0	13	23	7	3	1.5	1	4	6	9	5	3	8	6	7	8	8	1	1
26	Yale-New Haven Children's Hospital, New Haven, Conn.	55.6	2.2	3	2	8	20	5	3	2.1	0	4	8	9	7	4	8	6	7	8	8	1	1
27	Children's Medical Center Dallas	55.5	1.3	1	1	16	52	4	8	2.2	1	4	8	9	9	6	8	6	7	8	8	1	1
28	Children's Mercy Hospitals and Clinics, Kansas City, Mo.	54.7	1.2	3	2	15	37	6	8	3.0	1	3	6	9	9	6	8	6	7	8	8	1	1
29	Primary Children's Medical Center, Salt Lake City	53.8	1.4	2	2	13	38	8	5	4.6	0	3	8	9	8	6	8	6	7	3	8	1	1
30	Duke Children's Hospital and Health Center, Durham, N.C.	51.8	1.4	1	2	18	30	8	6	2.3	1	3	7	9	9	6	8	5	6	6	8	0	1

Rankings are based on all of the above measures. NR: not reported.

Pediatric Rankings 2010--Heart & Heart Surgery

Rank	Hospital Name	U.S. News Hospital Score	Reputation with physicians	Surgical survival	Heart-transplant survival	Norwood surgery survival	Preventing bloodstream infection	Infection-preventing activities	Surgical volume	Catheter procedure volume	Nurse-patient ratio	Nurse Magnet hospital	Congenital heart program	Adult congenital heart program	Heart transplant program	Patient volume	Patient volume (Norwood surgery)	Advanced clinical services	Clinical support services	Technology	Specialized clinics and programs	Patient and family services	Parent and family involvement	Quality improvement activities	Following best practices	Health information technology	Availability of pediatric specialties	Fellowship training programs	Clinical research
1	Children's Hospital Boston	100.0	86.9	2	4	4	1	18	9	20	4.9	1	12	10	5	5	7	18	9	5	8	8	6	6	7	8	12	2	7
2	Children's Hospital of Philadelphia	96.7	85.1	2	4	4	1	17	9	16	3.3	1	10	10	5	6	2	18	9	5	8	8	6	6	7	8	12	1	7
3	Texas Children's Hospital, Houston	90.3	44.2	2	4	4	2	14	9	16	2.8	1	12	10	5	4	7	17	9	4	8	8	6	6	7	5	12	2	4
4	University of Michigan C.S. Mott Children's Hospital, Ann Arbor	90.0	47.8	1	1	4	2	17	9	15	2.3	0	11	10	5	5	6	17	9	5	8	8	6	6	6	6	12	2	4
5	Lucile Packard Children's Hospital at Stanford, Palo Alto, Calif.	84.3	36.3	2	6	4	1	18	7	15	3.3	0	7	10	5	3	0	17	9	5	8	8	6	6	7	8	11	1	5
6	NY-Presby. Morgan Stanley-Komansky Children's Hosp., N.Y.	80.9	14.2	2	4	6	2	14	9	16	3.1	0	12	10	5	5	3	15	9	5	8	8	6	6	7	8	11	2	7
7	Children's Healthcare of Atlanta	78.5	11.1	3	4	5	2	19	9	15	2.6	0	7	9	5	6	2	18	9	5	8	8	6	6	7	8	12	2	6
8	Children's Hospital of Wisconsin, Milwaukee	77.7	13.3	2	4	4	2	14	8	11	2.0	1	12	9	5	4	3	17	9	5	8	8	6	6	7	8	12	1	6
9	Cincinnati Children's Hospital Medical Center	75.0	12.9	1	1	2	2	17	5	10	3.8	1	10	9	4	1	3	18	9	5	8	8	6	6	7	8	12	2	7
10	Children's Hospital Los Angeles	74.4	8.3	1	6	3	2	15	9	14	3.1	1	11	9	4	6	1	15	9	5	8	7	6	6	7	8	12	2	6
11	Nationwide Children's Hospital, Columbus, Ohio	73.5	7.4	2	4	6	2	15	6	13	2.4	1	10	10	4	4	9	18	9	5	8	8	6	6	7	8	12	2	3
12	Children's Hospital of Pittsburgh of UPMC	67.2	3.6	3	5	6	2	15	6	10	3.1	0	12	10	5	5	4	18	9	5	8	8	6	6	7	8	11	2	5
13	Miami Children's Hospital	67.1	5.4	2	NA	6	2	14	5	14	2.4	1	12	9	1	3	6	18	9	5	8	8	6	6	7	8	12	1	4
14	St. Louis Children's Hospital-Washington University	65.4	2.9	3	4	4	2	15	6	17	2.4	1	12	10	5	3	3	18	9	4	8	8	6	6	7	8	12	2	6
15	Children's National Medical Center, Washington, D.C.	65.3	4.7	1	3	3	2	16	6	17	2.6	1	10	10	1	5	1	16	9	5	8	8	6	6	7	8	12	1	4
16	Mayo Eugenio Litta Children's Hospital, Rochester, Minn.	64.4	5.1	3	5	5	2	18	4	8	3.2	1	6	10	4	2	6	18	9	4	8	8	6	6	7	4	11	1	2
17	Mattel Children's Hospital UCLA, Los Angeles	64.3	4.9	1	4	2	2	16	4	11	2.6	1	8	10	5	2	3	15	9	5	8	8	6	6	7	5	12	2	3
18	Children's Memorial Hospital, Chicago	63.8	4.6	3	6	3	2	18	5	5	2.6	1	10	9	5	2	1	18	9	5	8	8	6	6	7	8	11	1	2
19	Children's Hospital, Denver	62.7	3.4	1	3	4	2	13	6	14	2.5	1	11	10	5	4	1	17	9	4	8	8	6	6	7	8	12	1	4
20	Med. Univ. of South Carolina Children's Hosp., Charleston	62.2	2.8	3	6	6	1	17	6	14	2.8	0	10	10	5	2	4	17	9	5	8	8	5	6	7	3	11	1	6
21	UCSF Children's Hospital, San Francisco	62.1	4.4	3	NA	6	1	10	7	17	3.6	0	6	10	0	3	8	16	9	5	8	8	5	6	5	1	12	1	3
22	Children's Hospital Cleveland Clinic	61.7	4.6	2	5	0	2	18	3	9	2.5	1	6	10	4	0	0	17	9	5	8	8	6	6	7	8	12	2	3
23	Seattle Children's Hospital	61.3	2.2	2	5	4	1	16	6	14	2.4	1	11	10	5	4	8	14	9	5	8	8	6	6	5	8	12	2	3
24	Duke Children's Hospital and Health Center, Durham, N.C.	61.2	2.2	2	4	5	2	17	5	17	2.3	1	11	10	4	3	5	18	9	5	8	8	5	5	7	6	12	1	6
25	Children's Medical Center Dallas	61.0	2.5	2	3	5	1	17	6	11	2.2	1	11	8	5	3	4	18	9	4	8	8	6	6	6	8	11	2	4
26	Monroe Carell Jr. Children's Hospital at Vanderbilt, Nashville	60.4	2.2	1	4	1	1	9	8	16	2.9	1	9	10	5	5	1	17	9	5	8	8	6	6	7	8	11	2	5
27	Primary Children's Medical Center, Salt Lake City	57.4	1.6	2	5	4	2	11	6	13	4.6	0	11	9	5	5	2	18	9	4	8	8	6	6	5	3	12	2	7
28	Children's Hospital of Michigan, Detroit	57.3	2.4	1	6	3	0	11	5	15	2.2	1	12	10	5	2	3	14	9	5	8	8	6	6	4	8	11	1	4
29	Riley Hospital for Children Clarian Health Partners, Indianapolis	55.1	1.4	3	6	5	2	17	6	10	2.8	1	7	10	4	2	0	18	9	5	8	8	6	6	7	3	12	2	4
30	Arnold Palmer Medical Center, Orlando, Fla.	51.2	1.7	3	6	5	2	13	4	10	2.2	0	9	9	3	4	2	14	6	4	8	5	5	5	6	6	12	0	3

Rankings are based on all of the above measures. NR: not reported.

Pediatric Rankings 2010--Kidney

Rank		U.S. News Hospital Score	Reputation with physicians	Dialysis management	Kidney-transplant survival	Avoiding biopsy complications	Preventing bloodstream infections	Infection-preventing activities	Volume of kidney patients	Catheter procedure volume	Dialysis volume	Kidney biopsy volume	Transplant volume	Nurse-patient ratio	Nurse Magnet hospital	Transplanting dialysis patients	Advanced clinical services	Clinical support services	Technology	Patient and family services	Parent and family involvement	Quality improvement activities	Following best practices	Health information technology	Availability of pediatric specialist	Fellowship training programs	Clinical research
1	Children's Hospital Boston	100.0	46.6	18	22	2	1	31	18	7	5.0	4	4	4.9	1	4	18	9	1	8	6	7	2	8	8	1	1
2	Seattle Children's Hospital	97.7	35.1	14	22	2	1	27	20	8	10.0	5	4	2.4	1	2	18	9	1	8	6	7	1	8	8	1	1
3	Cincinnati Children's Hospital Medical Center	95.0	40.6	10	22	0	2	24	15	9	5.0	3	3	3.8	1	0	19	9	1	8	6	7	2	8	8	1	1
4	Texas Children's Hospital, Houston	94.7	26.3	12	21	2	2	25	13	11	9.0	5	4	2.8	1	2	20	9	1	8	6	7	2	5	8	1	1
5	Lucile Packard Children's Hospital at Stanford, Palo Alto, Calif.	91.5	23.2	14	24	0	1	22	9	9	6.0	5	6	3.3	0	7	16	9	1	8	6	7	2	8	7	1	1
6	Children's Hospital of Philadelphia	91.3	26.2	10	22	2	1	36	14	5	6.0	4	3	3.3	1	2	18	9	1	8	6	7	2	8	8	1	1
7	Mattel Children's Hospital UCLA, Los Angeles	90.6	16.2	14	24	2	2	32	20	13	4.0	4	6	2.6	1	1	21	9	1	8	6	7	2	5	8	1	1
8	Children's Hospital at Montefiore, New York	82.6	5.9	17	24	2	2	37	24	12	11.0	3	6	1.8	0	3	21	9	1	8	6	7	2	8	8	1	1
9	University of Minnesota Amplatz Children's Hospital	82.0	8.6	12	23	2	1	23	15	8	7.0	5	5	2.6	1	5	18	9	1	8	6	7	2	8	8	1	1
10	Children's Memorial Hospital, Chicago	81.3	6.9	13	23	2	2	35	19	10	8.0	4	4	2.6	1	3	21	9	1	8	6	7	2	8	8	1	1
11	Johns Hopkins Children's Center, Baltimore	80.7	14.9	17	21	2	2	28	9	5	3.0	2	2	3.3	1	1	16	9	1	8	6	6	2	6	8	1	1
12	Children's Hospital of Pittsburgh of UPMC	78.9	5.9	18	20	1	2	32	23	8	8.0	4	4	3.1	0	4	19	9	1	8	6	7	2	8	8	1	1
13	Children's Mercy Hospitals and Clinics, Kansas City, Mo.	78.9	6.9	16	24	2	2	37	21	4	5.0	4	3	3	1	1	22	9	1	8	6	7	2	8	8	1	1
14	UCSF Children's Hospital, San Francisco	78.5	6.6	16	22	2	1	7	21	11	8.0	5	5	3.6	0	2	20	9	1	8	5	7	2	1	8	1	1
15	Children's National Medical Center, Washington, D.C.	74.6	5.6	12	22	2	2	28	13	4	5.0	5	3	2.6	1	0	21	9	1	8	6	7	2	8	8	1	1
16	Children's Hospital Los Angeles	73.8	5.1	9	23	2	2	15	17	10	9.0	2	6	3.1	1	4	20	9	1	7	6	7	2	8	8	0	1
17	Children's Medical Center Dallas	71.1	2.2	15	24	2	1	33	26	12	12.0	4	4	2.2	1	1	21	9	1	8	6	7	2	8	8	1	1
18	NY-Presby. Morgan Stanley-Komansky Children's Hosp., N.Y.	71.0	6.0	17	21	1	2	35	17	2	3.0	3	3	3.1	0	0	19	9	1	8	6	7	2	8	8	0	1
19	University of Michigan C.S. Mott Children's Hospital, Ann Arbor	70.5	5.5	12	21	0	2	28	11	7	4.0	3	3	2.3	0	5	17	9	1	8	6	7	1	6	8	1	1
20	St. Louis Children's Hospital-Washington University	70.2	4.1	13	21	1	2	34	16	5	4.0	3	3	2.4	1	3	19	9	1	8	6	7	2	8	8	1	1
21	Mayo Eugenio Litta Children's Hospital, Rochester, Minn.	70.1	7.0	18	23	2	2	23	13	5	4.0	2	3	3.2	1	8	16	9	1	8	6	4	1	4	7	0	1
22	Children's Hospital of Alabama at UAB, Birmingham	68.2	2.7	18	22	0	2	17	15	7	4.0	5	5	2.6	1	2	22	9	1	8	6	7	2	7	8	1	1
23	Rainbow Babies and Children's Hospital, Cleveland	66.4	5.4	14	22	2	1	24	15	5	4.0	2	2	1.9	1	0	18	9	1	8	6	7	1	5	8	0	1
24	Mount Sinai Kravis Children's Hospital, New York	66.4	3.0	18	21	2	0	33	19	4	3.0	2	4	1.5	1	3	20	9	1	8	6	7	2	8	8	1	1
25	Nationwide Children's Hospital, Columbus, Ohio	65.7	2.8	16	24	2	2	26	9	7	5.0	2	3	2.4	1	1	21	9	1	8	6	7	2	8	8	1	1
26	Children's Hospital Cleveland Clinic	65.6	2.8	17	18	2	2	35	19	8	4.0	2	5	2.5	1	0	18	9	1	8	6	7	2	8	8	0	1
27	Children's Healthcare of Atlanta	64.2	1.4	6	22	2	2	18	27	10	9.0	5	5	2.6	0	1	20	9	1	8	6	7	2	8	8	1	1
28	Children's Hospital, Denver	62.8	2.8	14	23	2	2	26	18	10	6.0	2	3	2.5	1	0	20	9	1	8	6	7	2	8	8	0	0
29	Primary Children's Medical Center, Salt Lake City	62.7	2.9	10	22	2	2	25	17	6	6.0	2	4	4.6	0	4	19	9	1	8	6	7	1	3	8	0	1
30	Children's Memorial Hermann Hospital, Houston	62.1	2.7	16	24	0	2	23	18	2	3.0	2	2	2	0	9	19	9	1	7	2	7	2	7	8	1	1

Rankings are based on all of the above measures. NR: not reported.

Pediatric Rankings 2010--Neonatology

Rank	Hospital Name	U.S. News Hospital Score	Reputation with physicians	Preventing bloodstream infections	Infection-preventing activities	Volume of neonatology patients	Nurse-patient ratio	Nurse Magnet hospital	ECMO services	Advanced clinical services	Clinical support services	Technology	Specialized clinics and programs	Patient and family services	Parent and family involvement	Quality improvement activities	Following best practices	Health information technology	Availability of pediatric specialists	Fellowship training programs	Clinical research
1	Children's Hospital of Philadelphia	100.0	53.5	1	13	18	3.5	1	4	3	7.0	5	7	15	6	6	11	8	16	14	5
2	Children's Hospital Boston	94.8	35.4	2	13	14	3.9	1	4	3	7.0	5	7	15	6	6	11	8	16	15	4
3	Cincinnati Children's Hospital Medical Center	91.9	29.6	2	11	12	3.4	1	4	3	7.0	5	7	15	6	6	10	8	15	14	5
4	Rainbow Babies and Children's Hospital, Cleveland	89.3	31.9	2	10	7	2.3	1	4	3	7.0	5	7	15	6	6	11	5	15	9	4
5	NY-Presby. Morgan Stanley-Komansky Children's Hosp., N.Y.	85.4	18.9	2	11	13	2.6	0	4	3	7.0	5	7	15	6	6	10	8	15	10	5
6	Lucile Packard Children's Hospital at Stanford, Palo Alto, Calif.	83.9	21.6	2	10	10	3.2	0	4	2	7.0	3	6	14	6	6	11	8	14	10	5
7	Texas Children's Hospital, Houston	80.7	15.4	1	11	11	2.4	1	3	2	7.0	5	7	13	6	6	11	5	16	14	5
8	Children's National Medical Center, Washington, D.C.	77.5	9.5	2	9	17	3	1	4	3	7.0	5	7	15	6	6	10	8	16	9	4
9	Children's Hospital, Denver	77.3	12.2	1	10	11	1.1	1	3	3	7.0	4	7	15	6	6	10	8	15	11	5
10	Johns Hopkins Children's Center, Baltimore	76.0	10.2	2	10	9	2.6	1	4	3	7.0	5	7	13	6	5	9	6	16	12	4
11	Monroe Carell Jr. Children's Hospital at Vanderbilt, Nashville	74.7	7.2	2	6	17	2.9	1	4	3	7.0	5	7	15	6	6	10	8	15	11	5
12	St. Louis Children's Hospital-Washington University	74.3	7.5	2	12	10	2.4	1	3	3	7.0	5	7	15	6	6	11	8	15	13	5
13	Children's Hospital of Pittsburgh of UPMC	73.8	6.6	2	8	15	2.3	0	4	3	7.0	5	7	15	6	6	11	8	16	13	5
14	UCSF Children's Hospital, San Francisco	73.6	9.3	2	10	12	2.8	0	4	2	7.0	5	6	13	5	6	11	1	16	11	4
15	Children's Memorial Hospital, Chicago	73.2	6.3	2	11	13	2.5	1	4	3	7.0	5	7	15	6	6	11	8	15	14	4
16	Miami Children's Hospital	71.3	7.3	2	13	8	2.6	1	4	3	7.0	3	7	15	6	6	10	8	16	4	5
17	Children's Hospital Los Angeles	67.7	4.2	2	9	13	3.9	1	4	3	7.0	5	7	11	6	6	10	8	16	12	5
18	Children's Hospital of Alabama at UAB, Birmingham	67.7	4.8	2	8	13	3.1	1	3	3	7.0	5	7	15	6	6	10	7	15	10	4
19	Duke Children's Hospital and Health Center, Durham, N.C.	67.1	4.7	2	10	13	2.6	1	4	3	7.0	5	7	14	5	5	11	6	16	7	4
20	Riley Hospital for Children Clarian Health Partners, Indianapolis	65.9	4.0	1	11	14	2.2	1	4	3	7.0	5	7	15	6	6	11	3	15	10	5
21	Seattle Children's Hospital	65.5	4.3	1	13	12	3.5	1	4	2	7.0	5	7	14	6	6	9	8	16	15	2
22	University of Michigan C.S. Mott Children's Hospital, Ann Arbor	65.1	3.6	2	10	14	2.9	0	4	3	7.0	5	7	15	6	6	10	6	15	11	4
23	University of Iowa Children's Hospital, Iowa City	65.0	4.4	2	10	7	2.5	1	3	3	7.0	5	7	15	6	6	11	8	15	6	4
24	Nationwide Children's Hospital, Columbus, Ohio	64.3	2.8	2	10	13	3.3	1	4	3	7.0	5	7	15	6	6	11	8	15	15	5
25	Holtz Children's Hospital at UM-Jackson Memorial Hospital, Miami	63.3	4.8	1	8	6	1.2	0	3	3	7.0	5	7	15	5	6	11	6	15	10	3
26	University of Chicago Comer Children's Hospital	61.6	2.8	2	10	13	3.4	1	4	3	7.0	5	7	14	6	6	9	8	15	8	4
27	Rady Children's Hospital, San Diego	60.9	2.3	2	14	10	4.8	0	4	3	7.0	5	7	13	6	6	11	7	16	12	5
28	Children's Hospitals and Clinics of Minnesota, Minneapolis	60.5	2.8	2	12	16	2.7	1	4	2	6.0	4	5	14	6	6	10	8	16	5	5
29	Mattel Children's Hospital UCLA, Los Angeles	59.2	2.7	1	11	10	2.5	1	4	3	7.0	4	7	15	6	6	9	5	16	12	3
30	Children's Hospital of Wisconsin, Milwaukee	58.9	2.4	2	7	15	2.7	1	4	3	7.0	4	7	15	6	6	7	8	15	8	4

Rankings are based on all of the above measures. NR: not reported.

Pediatric Rankings 2010--Neurology & Neurosurgery

Rank	Hospital Name	U.S. News Hospital Score	Reputation with physicians	Surgical survival	Preventing bloodstream infection ^c	Infection-preventing activities	Volume of new patients	Surgical volume	Epilepsy treatment volume	Nurse-patient ratio	Nurse Magnet hospital	Epilepsy treatment services	Headache treatment services	Advanced clinical services	Clinical support services	Technology	Specialized clinics and programs ^c	Patient and family services	Parent and family involvement	Quality improvement activities	Following best practices	Health information technology	Availability of pediatric specialists ^c	Fellowship training programs	Clinical research
1	Children's Hospital Boston	100.0	60.5	18	1	17	16	21	7	4.9	1	4	6	14	9	5	11	8	6	7	4	8	11	2	2
2	Johns Hopkins Children's Center, Baltimore	95.0	41.3	13	2	16	16	19	10	3.3	1	4	6	14	9	4	10	8	6	6	4	6	11	2	2
3	Children's Hospital of Philadelphia	92.8	48.3	15	1	18	15	20	5	3.3	1	4	0	12	9	5	10	8	6	7	3	8	10	2	2
4	Texas Children's Hospital, Houston	89.0	19.4	13	2	17	23	22	12	2.8	1	3	5	12	9	5	11	8	6	7	4	5	11	2	2
5	St. Louis Children's Hospital-Washington University	85.6	17.3	16	2	17	11	18	6	2.4	1	4	5	14	9	5	11	8	6	7	4	8	11	2	2
6	Children's Hospital Cleveland Clinic	85.0	20.4	16	2	15	12	19	11	2.5	1	4	6	12	9	5	11	8	6	7	3	8	10	1	1
7	Primary Children's Medical Center, Salt Lake City	81.5	15.4	12	2	15	18	20	11	4.6	0	3	3	13	9	5	9	8	6	7	4	3	11	2	1
8	Cincinnati Children's Hospital Medical Center	80.2	10.8	18	2	15	11	20	8	3.8	1	4	6	12	9	4	10	8	6	7	4	8	10	2	2
9	NY-Presby. Morgan Stanley-Komansky Children's Hosp., N.Y.	79.3	12.1	12	2	16	14	11	6	3.1	0	4	6	13	9	4	10	8	6	7	4	8	11	2	2
10	Children's Memorial Hospital, Chicago	78.3	9.6	18	2	17	14	16	6	2.6	1	3	5	14	9	4	11	8	6	7	4	8	10	2	2
11	Children's Hospital of Pittsburgh of UPMC	77.9	7.8	13	2	14	13	17	11	3.1	0	4	6	14	9	5	11	8	6	7	4	8	11	2	2
12	Seattle Children's Hospital	77.5	10.4	13	1	18	15	16	9	2.4	1	3	5	10	9	4	9	8	6	7	4	8	10	2	2
13	Mayo Eugenio Litta Children's Hospital, Rochester, Minn.	77.4	10.6	16	2	17	20	12	6	3.2	1	3	6	12	9	4	11	8	6	7	4	4	11	1	2
14	Children's Hospital of Alabama at UAB, Birmingham	76.9	9.0	18	2	12	12	19	6	2.6	1	4	4	12	9	5	11	8	6	7	3	7	11	2	2
15	Children's National Medical Center, Washington, D.C.	76.7	7.7	16	2	14	16	17	11	2.6	1	3	5	14	9	5	11	8	6	7	4	8	11	1	2
16	Miami Children's Hospital	75.1	7.1	17	2	17	17	19	11	2.4	1	4	5	14	9	4	10	8	6	7	4	8	11	1	1
17	Rainbow Babies and Children's Hospital, Cleveland	74.6	8.6	16	1	14	19	11	8	1.9	1	3	5	13	9	5	11	8	6	7	4	5	10	1	2
18	Children's Hospital Los Angeles	74.3	10.1	14	2	14	9	18	7	3.1	1	3	5	12	9	3	9	7	6	7	1	8	10	2	2
19	Mattel Children's Hospital UCLA, Los Angeles	71.8	8.6	12	2	13	16	10	10	2.6	1	4	3	12	9	4	9	8	6	7	4	5	10	1	1
20	Children's Hospital, Denver	71.2	4.4	12	2	15	15	16	11	2.5	1	3	5	13	9	5	11	8	6	7	4	8	10	2	2
21	UCSF Children's Hospital, San Francisco	68.9	9.9	14	1	7	10	9	5	3.6	0	4	3	11	9	5	11	8	5	7	2	1	10	1	2
22	Children's Hospital at Montefiore, New York	68.6	2.7	17	2	19	11	25	10	1.8	0	4	6	13	9	5	11	8	6	7	4	8	11	2	2
23	Lucile Packard Children's Hospital at Stanford, Palo Alto, Calif.	65.1	5.9	13	1	17	9	14	5	3.3	0	4	5	11	9	4	5	8	6	7	4	8	9	1	1
24	University of Chicago Comer Children's Hospital	63.4	2.5	14	2	11	13	11	8	2.1	1	4	5	12	9	5	11	7	6	7	4	8	11	2	2
25	Massachusetts General Hospital for Children, Boston	63.2	4.8	18	2	15	10	9	5	2.0	1	2	0	12	9	5	9	8	6	7	4	8	10	1	1
26	Children's Medical Center Dallas	63.2	2.0	15	1	16	25	17	7	2.2	1	4	5	14	9	4	11	8	6	7	4	8	10	2	2
27	Children's Healthcare of Atlanta	59.5	2.1	8	2	18	27	24	6	2.6	0	3	0	11	9	4	9	8	6	7	3	8	11	1	2
28	Children's Hospital of Wisconsin, Milwaukee	57.5	1.9	16	2	13	13	11	5	2.0	1	4	5	13	9	5	11	8	6	7	4	8	10	1	1
29	Riley Hospital for Children Clarian Health Partners, Indianapolis	56.5	1.6	9	2	15	17	19	5	2.8	1	4	5	14	9	5	11	8	6	7	4	3	10	1	1
30	University of Rochester-Golisano Children's Hospital, N.Y.	55.8	1.8	16	2	18	9	9	5	2.0	1	3	2	11	9	3	10	8	6	7	4	8	9	2	2

Rankings are based on all of the above measures. NR: not reported.

Pediatric Rankings 2010--Orthopedics

Rank	Hospital Name	U.S. News Hospital Score	Reputation with physicians	Avoiding scoliosis surgery complications	Preventing bloodstream infections	Infection-preventing activities	Volume of orthopedics patients	Procedure volume	Nurse-patient ratio	Nurse Magnet hospital	Advanced clinical services	Clinical support services	Technology	Specialized clinics and programs	Patient and family services	Parent and family involvement	Quality improvement activities	Following best practices	Health information technology	Availability of pediatric specialists	Fellowship training programs	Clinical research
1	Children's Hospital Boston	100.0	63.0	5	1	14	17	28	4.9	1	19.0	9	3	8	8	6	7	4	8	11	1	1
2	Children's Medical Center-Texas Scottish Rite Hospital for Children, Dallas	99.7	60.4	2	1	13	23	33	2.2	1	19.0	9	3	8	8	6	7	4	8	11	1	1
3	Children's Hospital of Philadelphia	97.7	57.0	5	1	15	16	20	3.3	1	19.0	9	3	8	8	6	7	4	8	11	1	1
4	Rady Children's Hospital, San Diego	91.6	36.8	4	2	15	16	24	3.2	0	19.0	9	3	8	8	6	7	4	7	11	0	1
5	Cincinnati Children's Hospital Medical Center	83.1	15.9	4	2	13	10	24	3.8	1	19.0	9	3	6	8	6	7	4	8	11	1	1
6	Alfred I. duPont Hospital for Children, Wilmington, Del.	81.9	17.0	3	2	15	8	18	2.8	0	19.0	9	3	8	8	6	7	4	8	10	1	1
7	Children's Hospital Los Angeles	80.3	16.5	3	2	11	13	23	3.1	1	19.0	9	3	7	7	6	7	4	8	11	0	0
8	Children's Healthcare of Atlanta	79.8	10.1	2	2	15	21	27	2.6	0	19.0	9	3	8	8	6	7	4	8	11	1	1
9	Children's Hospital, Denver	76.3	6.9	3	2	12	22	23	2.5	1	19.0	9	3	8	8	6	7	4	8	11	1	1
10	St. Louis Children's Hospital-Washington University	76.2	8.2	4	2	15	11	18	2.4	1	19.0	9	3	8	8	6	7	4	8	11	1	1
11	Johns Hopkins Children's Center, Baltimore	68.2	5.0	4	2	13	11	18	3.3	1	19.0	9	3	7	8	6	5	4	6	11	0	1
12	Texas Children's Hospital, Houston	66.6	4.2	0	2	14	11	17	2.8	1	17.0	9	3	8	8	6	7	4	5	11	1	1
13	University of Michigan C.S. Mott Children's Hospital, Ann Arbor	66.4	5.2	2	2	13	9	18	2.3	0	17.0	9	3	6	8	6	7	4	6	11	0	1
14	Rainbow Babies and Children's Hospital, Cleveland	65.7	3.9	1	1	11	12	22	1.9	1	19.0	9	3	8	8	6	7	4	5	11	1	1
15	Seattle Children's Hospital	64.3	3.1	4	1	16	11	12	2.4	1	18.0	9	3	8	8	6	7	4	8	11	1	1
16	Mayo Eugenio Litta Children's Hospital, Rochester, Minn.	63.8	3.5	2	2	14	12	11	3.2	1	19.0	9	3	8	8	6	7	4	4	11	0	1
17	Gillette Children's Specialty Healthcare, St. Paul, Minn.	63.6	3.0	4	2	11	18	19	3.5	1	16.0	8	3	8	8	6	7	3	1	11	1	1
18	Children's Memorial Hospital, Chicago	63.2	2.3	5	2	14	15	14	2.6	1	18.0	9	3	8	8	6	7	4	8	11	1	1
19	New York-Presbyterian Morgan Stanley-Komansky Children's Hospital	62.8	2.7	5	2	14	12	17	3.1	0	19.0	9	3	8	8	6	7	4	8	11	0	1
20	Primary Children's Medical Center, Salt Lake City	62.2	4.4	6	2	12	4	7	4.6	0	12.0	9	3	3	8	6	7	4	3	10	1	1
21	Children's Hospital Cleveland Clinic	60.9	2.3	4	2	14	15	21	2.5	1	18.0	9	3	8	8	6	7	4	8	11	0	0
22	Mattel Children's Hospital UCLA, Los Angeles	60.2	2.7	4	2	10	12	18	2.6	1	15.0	9	3	7	8	6	6	4	5	11	1	0
23	Children's Hospital of Pittsburgh of UPMC	59.7	2.2	0	2	11	13	23	3.1	0	19.0	9	3	8	8	6	7	4	8	11	0	1
24	University of Iowa Children's Hospital, Iowa City	59.4	2.2	6	1	12	9	11	3	1	19.0	9	3	8	8	6	7	4	8	11	0	1
25	Children's Mercy Hospitals and Clinics, Kansas City, Mo.	55.7	1.3	5	2	15	9	25	3	1	17.0	9	3	6	8	6	7	3	8	11	0	1
26	Monroe Carell Jr. Children's Hospital at Vanderbilt, Nashville	53.9	1.9	4	1	9	8	14	2.9	1	15.0	9	3	5	8	6	7	4	8	11	0	0
27	Connecticut Children's Medical Center, Hartford	52.9	1.8	2	2	12	10	13	2.2	0	15.0	8	3	5	6	6	7	4	4	11	0	1
28	Arnold Palmer Medical Center, Orlando, Fla.	51.0	2.9	0	2	9	6	10	2.2	0	12.0	6	3	3	5	5	4	3	6	11	1	0
29	University of Rochester-Golisano Children's Hospital, N.Y.	50.1	1.1	5	2	12	7	12	2	1	18.0	9	3	5	8	6	4	4	8	11	0	1
30	Children's Hospital of Alabama at UAB, Birmingham	49.4	0.7	5	2	10	12	12	2.6	1	19.0	9	3	8	8	6	7	4	7	11	0	1

Rankings are based on all of the above measures. NR: not reported.

Pediatric Rankings 2010--Pulmonology

Rank	Hospital Name	U.S. News Hospital Score	Reputation with physicians	Asthma inpatient care	Managing cystic fibrosis	Lung transplant survival	Preventing bloodstream infections	Infection-preventing activities	Volume of pulmonology patient-	Nonsurgical procedure volum [△]	Nurse-patient ratio	Nurse Magnet hospital	Asthma management	Lung disease of prematurity management	Muscular dystrophy management	Lung transplant program	Advanced clinical services	Clinical support services	Technology	Patient and family services	Parent and family involvement	Quality improvement activities	Following best practices	Health information technology	Availability of pediatric specialists	Fellowship training programs	Clinical research
1	Children's Hospital of Philadelphia	100.0	53.5	8	7	1	1	29	14	8	3.3	1	5	2	6	3	8	9	1	8	6	7	5	8	9	1	1
2	Cincinnati Children's Hospital Medical Center	95.5	50.4	8	6	0	2	25	14	9	3.8	1	7	4	1	0	7	9	1	8	6	7	5	8	9	1	1
3	Children's Hospital Boston	92.2	38.6	8	6	0	1	18	11	6	4.9	1	4	4	3	3	8	9	1	8	6	7	6	8	9	1	1
4	Texas Children's Hospital, Houston	91.3	46.7	8	4	1	2	12	11	6	2.8	1	3	1	3	3	7	9	1	8	6	7	6	5	9	1	1
5	Children's Hospital, Denver	88.5	38.4	8	4	0	2	18	11	6	2.5	1	3	1	6	0	8	9	1	8	6	7	5	8	8	1	1
6	Children's Hospital of Pittsburgh of UPMC	86.9	17.7	8	6	3	2	26	13	7	3.1	0	6	3	4	1	8	9	1	8	6	7	6	8	9	1	1
7	St. Louis Children's Hospital-Washington University	82.2	18.1	8	4	1	2	16	9	4	2.4	1	7	5	3	3	8	9	1	8	6	7	4	8	9	1	1
8	Seattle Children's Hospital	80.8	20.6	8	6	0	1	14	9	5	2.4	1	3	4	2	0	7	9	1	8	6	7	5	8	9	1	1
9	North Carolina Children's Hospital at UNC, Chapel Hill	80.4	19.5	7	3	3	2	17	7	5	2.1	0	2	6	2	3	7	9	1	7	6	7	5	6	7	1	1
10	Rainbow Babies and Children's Hospital, Cleveland	79.8	18.5	6	3	0	1	23	6	7	1.9	1	9	7	0	0	8	9	1	8	6	7	5	5	9	1	1
11	Johns Hopkins Children's Center, Baltimore	78.4	23.9	7	4	0	2	15	11	3	3.3	1	3	4	0	1	6	9	1	8	6	6	3	6	8	1	1
12	Children's Hospital Los Angeles	75.0	13.0	7	3	1	2	16	10	5	3.1	1	1	4	0	1	6	9	1	7	6	7	6	8	9	1	1
13	Lucile Packard Children's Hospital at Stanford, Palo Alto, Calif.	71.7	5.9	7	5	0	1	24	7	7	3.3	0	2	7	6	3	8	9	1	8	6	7	6	8	8	1	1
14	Riley Hospital for Children Clarian Health Partners, Indianapolis	71.6	5.4	7	5	0	2	29	13	7	2.8	1	7	5	5	0	8	9	1	8	6	7	6	3	9	1	1
15	National Jewish Health, Denver	65.9	14.4	8	3	0	NR	13	3	5	6.8	0	9	0	0	1	5	1	1	7	5	3	4	4	7	1	1
16	NY-Presby. Morgan Stanley-Komansky Children's Hosp., N.Y.	65.7	4.7	4	6	0	2	20	7	4	3.1	0	4	7	6	1	8	9	1	8	6	7	3	8	9	1	1
17	Children's Healthcare of Atlanta	63.8	3.1	8	5	0	2	18	13	6	2.6	0	8	2	3	0	8	9	1	8	6	7	6	8	9	1	1
18	Nationwide Children's Hospital, Columbus, Ohio	63.2	2.7	8	4	3	2	31	11	5	2.4	1	4	3	0	1	8	9	1	8	6	7	5	8	8	1	1
19	Children's Memorial Hospital, Chicago	59.3	2.2	7	6	0	2	29	9	7	2.6	1	4	1	0	0	7	9	1	8	6	7	6	8	9	1	1
20	Duke Children's Hospital and Health Center, Durham, N.C.	58.3	3.0	7	5	0	2	27	7	4	2.3	1	7	4	6	0	5	9	1	8	5	5	2	6	9	1	1
21	Children's Hospital of Alabama at UAB, Birmingham	57.7	2.2	8	4	0	2	12	9	7	2.6	1	7	4	3	1	8	9	1	8	6	7	3	7	8	1	1
22	University of Michigan C.S. Mott Children's Hospital, Ann Arbor	56.3	1.6	8	5	0	2	30	8	5	2.3	0	5	2	6	0	8	9	1	8	6	7	6	6	9	1	1
23	Children's Medical Center Dallas	56.1	1.5	8	3	0	1	26	15	7	2.2	1	4	3	6	0	8	9	1	8	6	7	6	8	9	0	1
24	Children's National Medical Center, Washington, D.C.	55.7	1.3	8	5	0	2	31	7	7	2.6	1	7	2	5	0	6	9	1	8	6	7	6	8	9	1	1
25	University of Iowa Children's Hospital, Iowa City	55.6	1.5	8	6	0	1	21	6	3	3.0	1	9	7	3	0	8	9	1	8	6	7	6	8	8	1	1
26	Kosair Children's Hospital, Louisville, Ky.	54.5	2.2	6	5	0	1	14	8	7	2.2	1	1	6	6	0	7	9	1	7	6	7	4	3	9	0	1
27	Massachusetts General Hospital for Children, Boston	53.2	1.0	8	4	0	2	33	6	7	2.0	1	6	6	6	0	8	9	1	8	6	7	4	8	9	1	1
28	Children's Hospital of Wisconsin, Milwaukee	53.1	1.5	6	6	0	2	17	12	6	2.0	1	2	0	0	0	7	9	1	8	6	7	5	8	9	1	1
29	Cook Children's Medical Center, Fort Worth	52.4	1.1	8	5	0	1	29	9	4	3.5	1	6	5	6	2	5	9	1	8	6	7	6	8	9	0	1
30	Rady Children's Hospital, San Diego	52.0	1.3	8	6	0	2	27	10	3	3.2	0	5	3	0	2	6	9	1	8	6	7	5	7	8	1	1

Rankings are based on all of the above measures. NR: not reported.

Pediatric Rankings 2010--Urology

Rank	Hospital Name	U.S. News Hospital Score	Reputation with physicians	Avoiding surgical complications	Preventing bloodstream infections	Infection-preventing activities	Volume of urology patients	Surgical volume	Nonsurgical procedure volume	Minimally invasive surgery volume	Nurse-patient ratio	Nurse Magnet hospital	Advanced clinical services	Clinical support services	Technology	Specialized clinics and programs	Patient and family services	Parent and family involvement	Quality improvement activities	Health information technology	Availability of pediatric specialists	Fellowship training programs	Clinical research
1	Children's Hospital Boston	100.0	81.2	16	1	11	17	15	15	6	4.9	1	7	9	2	6	8	6	7	8	9	1	1
2	Children's Hospital of Philadelphia	99.6	76.3	16	1	12	19	20	10	6	3.3	1	7	9	2	6	8	6	7	8	9	1	1
3	Riley Hospital for Children Clarian Health Partners, Indianapolis	93.0	52.7	17	2	10	16	17	12	4	2.8	1	7	9	2	6	8	6	7	3	9	1	1
4	Cincinnati Children's Hospital Medical Center	87.7	28.5	15	2	10	16	19	9	5	3.8	1	7	9	2	6	8	6	7	8	9	1	1
5	Children's Memorial Hospital, Chicago	79.4	17.8	15	2	11	12	14	10	4	2.6	1	7	9	2	5	8	6	7	8	9	1	1
6	Monroe Carell Jr. Children's Hospital at Vanderbilt, Nashville	77.8	24.0	17	1	6	13	12	5	2	2.9	1	6	9	2	6	8	6	7	8	9	1	1
7	Johns Hopkins Children's Center, Baltimore	77.2	28.8	16	2	10	11	13	6	2	3.3	1	6	9	2	6	8	6	4	6	9	1	0
8	Seattle Children's Hospital	76.8	18.5	11	1	13	10	15	7	4	2.4	1	6	9	2	6	8	6	7	8	9	1	1
9	Texas Children's Hospital, Houston	72.5	16.2	11	2	11	11	13	6	5	2.8	1	6	9	2	4	8	6	7	5	9	1	0
10	Children's Healthcare of Atlanta	70.4	6.3	16	2	12	13	12	7	9	2.6	0	6	9	2	6	8	6	7	8	9	1	1
11	Children's Medical Center Dallas	68.8	4.3	14	1	10	15	21	11	5	2.2	1	7	9	2	6	8	6	7	8	9	1	1
12	Rady Children's Hospital, San Diego	63.7	5.0	14	2	12	17	9	7	3	3.2	0	6	9	2	6	8	6	7	7	9	1	0
13	NY-Presby. Morgan Stanley-Komansky Children's Hosp., N.Y.	63.1	4.9	17	2	11	10	14	10	3	3.1	0	7	9	2	6	8	6	7	8	9	0	1
14	Children's Hospital at OU Medical Center, Oklahoma City	61.4	3.7	17	2	8	12	16	6	7	2.3	0	7	9	2	5	6	5	7	2	9	1	1
15	Children's Hospital of Pittsburgh of UPMC	60.6	3.1	16	2	8	15	11	6	3	3.1	0	7	9	2	6	8	6	7	8	9	1	1
16	Children's Hospital Los Angeles	60.3	3.3	14	2	8	14	20	4	4	3.1	1	7	9	2	6	7	6	7	8	9	0	1
17	Schneider Children's Hospital, New Hyde Park, N.Y.	59.5	3.2	18	2	10	12	15	9	4	2.8	0	7	9	2	2	8	5	7	5	9	1	1
18	Mayo Eugenio Litta Children's Hospital, Rochester, Minn.	59.2	3.7	3	2	11	14	11	5	6	3.2	1	7	9	2	6	8	6	7	4	9	0	1
19	Children's National Medical Center, Washington, D.C.	58.6	3.0	14	2	9	13	10	6	3	2.6	1	6	9	2	5	8	6	7	8	9	1	1
20	Children's Hospital of Wisconsin, Milwaukee	56.4	2.8	18	2	7	10	12	5	4	2.0	1	7	9	2	3	8	6	7	8	9	1	1
21	Nationwide Children's Hospital, Columbus, Ohio	55.4	1.8	16	2	9	13	11	8	3	2.4	1	6	9	2	6	8	6	7	8	9	1	1
22	St. Louis Children's Hospital-Washington University	54.2	2.7	11	2	12	11	10	7	1	2.4	1	7	9	2	5	8	6	7	8	9	0	1
23	Lucile Packard Children's Hospital at Stanford, Palo Alto, Calif.	52.1	2.1	18	1	11	9	9	6	3	3.3	0	7	9	2	5	8	6	7	8	8	1	1
24	UCSF Children's Hospital, San Francisco	51.4	3.1	13	1	7	9	9	4	2	3.6	0	6	9	2	5	8	5	7	1	9	1	1
25	Children's Mercy Hospitals and Clinics, Kansas City, Mo.	48.7	1.5	16	2	13	12	10	7	3	3.0	1	6	9	2	6	8	6	7	8	9	0	0
26	All Children's Hospital, St. Petersburg, Fla.	48.7	2.8	17	1	10	11	9	7	3	2.0	0	6	9	2	1	7	6	7	5	9	0	0
27	Mattel Children's Hospital UCLA, Los Angeles	48.4	4.2	14	2	9	10	6	2	2	2.6	1	4	9	2	4	8	6	2	5	8	0	0
28	University of Michigan C.S. Mott Children's Hospital, Ann Arbor	48.4	1.8	18	2	10	8	11	5	1	2.3	0	7	9	2	6	8	6	7	6	9	0	1
29	Alfred I. duPont Hospital for Children, Wilmington, Del.	47.8	1.1	16	2	12	11	7	5	4	2.8	0	6	9	2	5	8	6	7	8	9	1	1
30	Children's Hospital Cleveland Clinic	46.8	2.0	18	2	11	9	8	4	3	2.5	1	6	9	2	3	8	6	7	8	9	0	0

Rankings are based on all of the above measures. NR: not reported.

Appendix D

2010 Pediatric Honor Roll

Pediatric Honor Roll 2010

The following hospitals are listed in the honor roll for ranking in the top 30 in all 10 pediatric specialties. Hospitals are listed in alphabetical order.

Hospital
Children's Hospital Boston
Childrens Hospital Los Angeles
Children's Hospital of Philadelphia
Children's Hospital of Pittsburgh of UPMC
Cincinnati Children's Hospital Medical Center
New York-Presbyterian Morgan Stanley-Komansky Children's Hospital
St. Louis Children's Hospital-Washington University
Texas Children's Hospital, Houston

