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Boston Children's Hospital: Measuring Patient Costs (Abridged)

Our review shows that the current system of health care payment is not always value-based, and health care providers throughout the state are compensated at widely different rates for providing similar quality and complexity of services. … To control cost growth, we must shift how we purchase health care to align payments with value, measured by those factors the health care market should reward, such as better quality.

— Office of the Attorney General Martha Coakley, Commonwealth of Massachusetts[1]

Boston Children's Hospital (BCH) aimed to be a worldwide leader in improving children's health through the provision of high-quality care, cutting-edge research, teaching, and local community outreach. As one of the largest independent pediatric medical centers in the United States, BCH offered a complete range of health care services for children from all over the world (see **Exhibits 1-3**). BCH was also the provider-of-last-resort for children with rare diseases, such as Wiskott Aldrich (blood disease) and Bubble Boy Syndrome (combined immunodeficiency) and had highly-specialized physicians and expensive equipment available at all times. In 2011, *U.S. News & World Report* ranked BCH as the top pediatric hospital in the U.S., with more top-ranked specialties—Heart and Heart Surgery, Neurology and Neurosurgery, Cancer, Orthopaedics, Urology, and Kidney Disorders—than any other pediatric hospital.[2]

Patients made over 500,000 visits to BCH's 228 specialized clinical programs in 2011, and its surgeons performed more than 26,000 procedures. The majority of BCH's care was provided at its main campus in Boston's Longwood Medical Area. It also delivered regional care at six community hospital locations and several specialty care centers in eastern Massachusetts and New Hampshire. BCH treated 90% of the most critically ill children in Massachusetts and was the largest provider for low-income families in the state, with 30% of its patients covered by Medicaid.[3]

BCH also contained the world's largest pediatric hospital-based research center, with $225 million in annual funding and over 1,100 scientists. Its laboratory researchers and physician investigators had identified novel treatments and therapies for a wide range of debilitating pediatric conditions, from Nobel Prize-winning work in polio to the more recent discovery of genetic variants linked to appetite control and obesity.[4]

Professor Robert S. Kaplan, Fellow Mary L. Witkowski, and Research Associate Jessica A. Hohman prepared the original version of this case, "Boston Children's Hospital: Measuring Patient Costs," HBS No. 112-086, with the assistance of Gisele Charron, Ron Heald, and Drs. Von Nguyen, Apurva Shah, and Megan Abbott. This abridged version was prepared by Professor Kaplan. Funding for the development of this case was provided by Harvard Business School, and not by the company. Internal company data in the case have been disguised. HBS cases are developed solely as the basis for class discussion. Cases are not intended to serve as endorsements, sources of primary data, or illustrations of effective or ineffective management.

BCH Physicians were employed by 15 Foundations, not the hospital itself. Each clinical department had a Foundation that ran the physician practices, independently of both the hospital and each other. A Foundation rented clinical space from the hospital and charged patients for the professional services rendered by its physicians, a charge separate from that charged by BCH for non-physician services. While financially and legally distinct, the 15 Foundations were organized into one central Physician's Organization (the "P.O."). The P.O. oversaw collective contracting and shared management initiatives. The P.O. had a defined working relationship with the hospital; P.O. directors served on the hospital's board of directors and hospital executives served on the P.O.'s board.

Local and National Market for Pediatric Care

In 2006, Massachusetts began enacting health reforms that expanded insurance coverage to all residents through a combination of mandates and subsidies. In 2008, the state formed a Special Commission on the Health Care Payment System to address rising health care costs. The commission's final report recommended a transition to risk-adjusted global payments for all providers in the state.[5] Many believed that the health reforms in Massachusetts foreshadowed coverage expansions and new national payment models in response to rising cost pressure.

BCH, the only freestanding pediatric hospital in Boston, had historically reported higher costs (and prices) than local pediatric wards embedded within adult hospitals (see **Exhibit 4**). One local alternative, Tufts' Floating Hospital for Children, a unit embedded within the much larger Tufts' Medical Center in downtown Boston, had been recognized for charging prices 50% lower than BCH's while producing comparable outcomes.[a,6] Floating Hospital had seen its volume and revenue from pediatric care grow significantly over the last few years. Payors, reacting to BCH's higher prices, began excluding BCH from certain offerings while simultaneously increasing cost sharing in their tiered/limited network plans that still included BCH. In 2012, these tiered/limited network plans represented almost 15% of the Massachusetts market.[7]

BCH executives clearly saw the challenge of sustaining its industry-leading ranking and research agenda amidst the intense local and national pressure to reduce costs. They knew that their prices were comparable to other free-standing pediatric hospitals around the country, and suspected that the costs reported by pediatric wards within full service hospitals might be under-reported due to cross-subsidies from more lucrative adult departments. They knew, however, that BCH did incur higher costs to fulfill its substantial research and teaching missions and to care for a significantly more complex and resource-intensive patient population.

BCH had been experimenting with new reimbursement approaches and, in 2012, became the first pediatric hospital to enter into an Alternative Quality Contract (AQC) with Blue Cross Blue Shield of Massachusetts. This three-year AQC signaled a shift from fee-for-service reimbursement to fixed payments with additional rewards based on savings generated and quality targets reached. The contract specified no rate increases for 2012 and modest increases below inflation for the remainder of the agreement. Other public and private payors were also approaching BCH to negotiate bundled payments that would cover whole episodes of care that would replace traditional fee-for-service reimbursements.

[a] Tufts network estimated an average of $6,000 lower per comparable admission. Martha Coakley's 2008 report estimated that BCH was paid almost twice as much per patient as Floating for similar care; but these figures are averages not adjusted for the complexity of patients

Amidst these private insurer initiatives, financially-pressured state and local governments had been reducing their reimbursements to medical care providers. BCH's contract with New Hampshire's Medicaid program had recently lapsed, and the state was unsure whether it could continue to afford to send patients to BCH. If other states made similar decisions, fewer low-income patients would have access to BCH facilities and care.

Dr. John Meara, Chair of the Department of Plastic and Oral Surgery, had been conducting a pilot project in his department to better measure costs and outcomes. Meara was convinced that the care provided at BCH was outstanding:

> Our outcomes are superior to those of our competitors, and even though we may have higher unit prices for individual procedures, we believe that our total medical expenses for a particular condition are lower over the full care cycle. We treat patients more efficiently with fewer complications and fewer visits than other providers.

He knew, however, that more accurate cost information would help him define and negotiate bundled payments with payors. BCH management wondered whether Meara's costing initiative could provide additional insight into the drivers of cost at BCH and help BCH further improve its care delivery processes and create forward-looking value-based reimbursement mechanisms.

Cost Measurement at BCH

Not all physician foundations used a costing system. Those that did, such as the Department of Plastic and Oral Surgery and the Department of Orthopaedic Surgery, used the Ratio-of-Cost-to-Charges (RCC) approach.[b] RCC was a simple and easy to use cost system for hospital departments and physician practices. First developed in the 1960s, the RCC approach assumed that costs were proportional to charges, which allowed financial managers to use readily available charge data to calculate costs.

The RCC method first collected all the charges produced by a revenue-producing clinical department, such as Orthopaedic Surgery. It then aggregated all the department's traceable expenses, such as the costs of personnel compensation, equipment, supplies, information systems, and billing. To these, it added the hospital's allocations of shared costs—such as for utilities, space, and housekeeping—to the department. The method divided the sum of all departmental traceable and allocated costs by the department's total charges to calculate the department's RCC rate. To calculate the cost of any particular departmental procedure or intervention, it multiplied the procedure's charge by the department's RCC rate. For example, a department with total costs of $4.2 million and total annual charges of $7.0 million would have an RCC of 0.6. The cost of any single billable event was estimated by multiplying the procedure's charge, say $800, by the RCC (for a cost of $480).

The charges in the RCC calculation came from physician practices' charge masters, in effect, the "list prices" for these services, which were based on physician fee schedules established by the Centers for Medicare and Medicaid Services (CMS) (see **Exhibit 5**).

[b] Many hospital units also used the RCC method to assign departmental costs to procedures and services. Some used a more sophisticated and complex allocation method based on internally-derived Relative Value Units (RVUs).

Department of Plastic and Oral Surgery

BCH's Department of Plastic and Oral Surgery (DPOS) provided comprehensive care for a wide variety of congenital and acquired conditions. As one of the largest pediatric plastic and oral surgery centers in the country, it performed over 3,000 surgical procedures and handled more than 14,000 outpatient visits each year. The DPOS also had a comprehensive research program, and continually translated the knowledge gained in its scientific laboratories into improved clinical care.[8]

Dr. John Meara, Chief of the DPOS, had joined BCH in 2006 after spending several years practicing in Australia where he had also earned his MBA. Anticipating the potential introduction of new reimbursement models at the state and national level, Meara had attended Professor Michael Porter's value-based health care delivery course at Harvard Business School (HBS) in 2009. Inspired by the course, Meara launched a project aimed at measuring clinical outcomes and costs in his sub-specialty, cleft and craniofacial surgery. Meara felt that more accurate cost information would help him re-design care processes and improve the pricing for DPOS services.

Meara used the DPOS Foundation's RCC system and BCH's Hospital Cost RVU-based costing system to examine the costs of providing care to patients with cleft palates and several other conditions treated in the department. He was surprised to learn that 40% of the costs of the first 18 months of care for certain cleft palate patients were incurred during the few days they spent in the ICU after surgery. Meara described his reaction:

> Even before I started the project, I knew that a complex patient who went to the ICU cost more. However, I had no idea how much more and what was driving that. For a majority of patients, I was fairly certain that we could get the same quality and safety of care in a "step-down" ward with just a few areas of increased surveillance. I needed to know this kind of information if I were to do anything about reducing costs.

In the midst of this study, Meara received a phone call from Porter inquiring as to whether Meara would be interested in testing a new costing approach, time-driven activity-based costing (TDABC), which he and a colleague were initiating in health care. Meara agreed, and he quickly assembled a team to begin the pilot. Dr. Megan Abbott, a resident who had had been working on the project as a research fellow and had also attended the value-based health care delivery course with Meara, agreed to head the new costing project. Meara asked Dr. Von Nguyen, an Internal Medicine physician with an MPH and experience at a major consultancy, to join the team, and Ronald Heald, the department's program administrator and financial manager, to contribute analytical leadership and access to the Foundation's financial information.

Meara decided to test the new costing approach in a simple setting, a new patient visit to a plastic surgeon. He selected three conditions encountered in normal practice that represented the full range of potential patient care needs: primary care, simple surgery, and complex surgery (see **Exhibit 6**).

1. Deformational or positional **plagiocephaly** was a common disorder characterized by a flattening of the head or face, typically caused by placing an infant in the same position (e.g., on the infant's back) for long periods of time. Plagiocephaly had no known medical repercussions and typically resolved with non-invasive interventions such as observation/support, positional advice, or a simple molding helmet.[9]

2. **Benign neoplasms** of the skin were harmless cutaneous growths that included common skin lesions such as skin cysts, benign skin tumors, and congenital nevi (moles). Physicians typically monitored the appearance and growth patterns of these lesions; but they removed

particularly large and bothersome skin growths, as well as nevi that looked suspicious for malignancy. This was done in the office or in the operating room using a simple surgical procedure called an excision.[10]

3. **Craniosynostosis** was a deformity that arose when one or more sutures (the fibrous connections that separate the bones of an infant's skull) fused earlier than normal. To the untrained eye, the physical deformity seen in craniosynostosis looked similar to plagiocephaly, but it was actually a far more serious condition that could result in developmental delays and cognitive impairment, as well as secondary neurological complications from high pressure inside the skull. Surgeons usually performed a complex surgical procedure to correct the deformity and reduce intracranial pressure.[11]

Despite the variation in treatment complexity for these three conditions, the initial office visit for each was typically coded in the CMS system as a "level-3 visit," carrying a uniform charge of $350.[c] Meara believed, however, that the clinical and administrative work required for patients with craniosynostosis was much greater than for those with plagiocephaly. He felt that the system failed to capture significant nuances in the intensity of care provided for each:

> Plagiocephaly is a primary care diagnosis—a service that we provide for the local and regional community. It is not a diagnosis upon which to build an academic craniofacial department. Craniosynostosis, on the other hand, is a complex condition requiring a multidisciplinary approach. As an academic surgeon, these are the types of procedures that fascinate us clinically, provide us with challenging research questions, and allow us to teach residents and fellows.

The project team collected the data to verify the costing done by the Foundation's existing RCC system. In 2011, the total charges for all plastic surgery patient encounters were $12,449,500, with actual reimbursements considerably lower at approximately $7,967,680. Total clinical and administrative costs for the department (excluding the costs of the surgeons' research and teaching time) were $7,469,700.

The Time-Driven Activity-Based Costing (TDABC) Approach

The TDABC approach required a project team to map out every administrative and clinical process involved in the treatment of a medical condition (e.g., craniosynostosis or cleft palate) over a complete care cycle. The care cycle started when the patient first presented for treatment and extended through surgery, recovery, and discharge. The DPOS project's initial focus, however, was only on the initial clinical visit. They wanted to complete the costing quickly and easily so they could compare the TDABC costs of the visits with the RCC cost estimates.

The team invited Doris Quinn, a Ph. D. who served as the Director of Process Improvement and Quality Education at MD Anderson Cancer Center (another hospital introducing TDABC for cost measurement), to travel to Boston to train them on how to create condition-specific process maps. The team appended, to each process step, the job classification of the person performing the step and the time required to complete it. **Exhibit 7** shows the process maps for the three types of new office visits.

[c] All charge and cost numbers found in this case have been created artificially by the HBS case writers for illustrative purposes only and do not represent actual data at BCH.

TDABC also required an estimate of the cost per minute for the clinical and administrative personnel involved in the care process. This ratio, called the capacity cost rate, was obtained by dividing an individual's annual compensation and support costs, such as attributable supervision, HR, IT and occupancy costs) by the total number of minutes per year that the person was available to work with patients. Heald collected data on office expenses and compensation for DPOS's clinical and administrative personnel (see **Exhibit 8)**.

Abbott developed a survey to gather information about the number of minutes that physicians had available for patient-related work (see **Exhibit 9**). She obtained the following data from personnel interviews and surveys:

1. DPOS surgeons had four weeks of vacation, plus ten holiday days and another ten days for professional conferences and training.

2. DPOS surgeons generally worked five days per week and ten hours per day. About 1.2 hours (72 minutes) were taken up with non-clinical meetings and breaks. Of the remaining time, about 25% was for research and teaching, leaving 75% for clinical work.

3. Non-physician personnel had two weeks of vacation, ten holiday days, five days for sick and personal leave, and five training days.

4. Non-physician personnel worked eight-hour days, with an average of 1.5 hours per day used for breaks and training.

She summarized her interview and survey results in **Exhibit 10.**

The Way Forward

Meara met with his project team to review the findings from the TDABC pilot project, which showed considerable differences between the costs and margins calculated by the TDABC approach and those produced by the Foundation's existing cost systems. Dr. Meara and his team wondered about the causes of the discrepancies. Meara re-stated his belief that innovative payment models could not be implemented with poor costing information:

> With reimbursement models, such as bundled payments, you will be burned if you don't know your costs. How can you offer a bundled all-in price if you don't know what your procedures truly cost and what drives those costs?

As he prepared for an upcoming meeting of the Enterprise Costing Workgroup, a multidisciplinary team representing multiple hospital and clinical departments, Meara considered what to recommend.

Exhibit 1 Boston Children's Hospital: Statement of Operations

	2011	2010
	(In Thousands, $)	
Revenues		
Net patient services revenue	1,000,371	1,008,566
Research grants and contracts	162,851	144,016
Recovery of indirect costs on grants and contracts	58,786	52,311
Other operating revenue	35,561	31,087
Medical Center support for mission-related activities	18,000	16,343
Unrestricted contributions, net of fundraising expenses	7,243	5,132
Net assets released from restrictions used for operations	45,282	42,855
Total revenues	1,328,094	1,300,310
Expenses		
Salaries and benefits	551,349	547,062
Supplies and other expenses	401,275	410,391
Direct research expenses of grants	162,851	144,016
Provision for uncollectible accounts	24,094	17,751
Health Safety Net Trust assessment	8,925	9,964
Depreciation and amortization	88,522	90,942
Interest and net interest rate swap	29,625	27,577
Total expenses	1,266,641	1,247,703
Gain from current operations	61,453	52,607
Changes in estimates of prior year third-party settlements	4,970	10,413
Gain from current operations	66,423	63,020

Source: Company documents.

Exhibit 2 Breakdown of Payors, Boston Children's Hospital

Payor Type	2011
	(Percentage, %)
Blue Cross	30.7
Harvard Pilgrim	10.9
Tufts	6.7
Other commercial and self-pay	19.6
Government (Medicaid, Managed Medicaid, etc.)	32.2
Total	100

Source: Company documents.

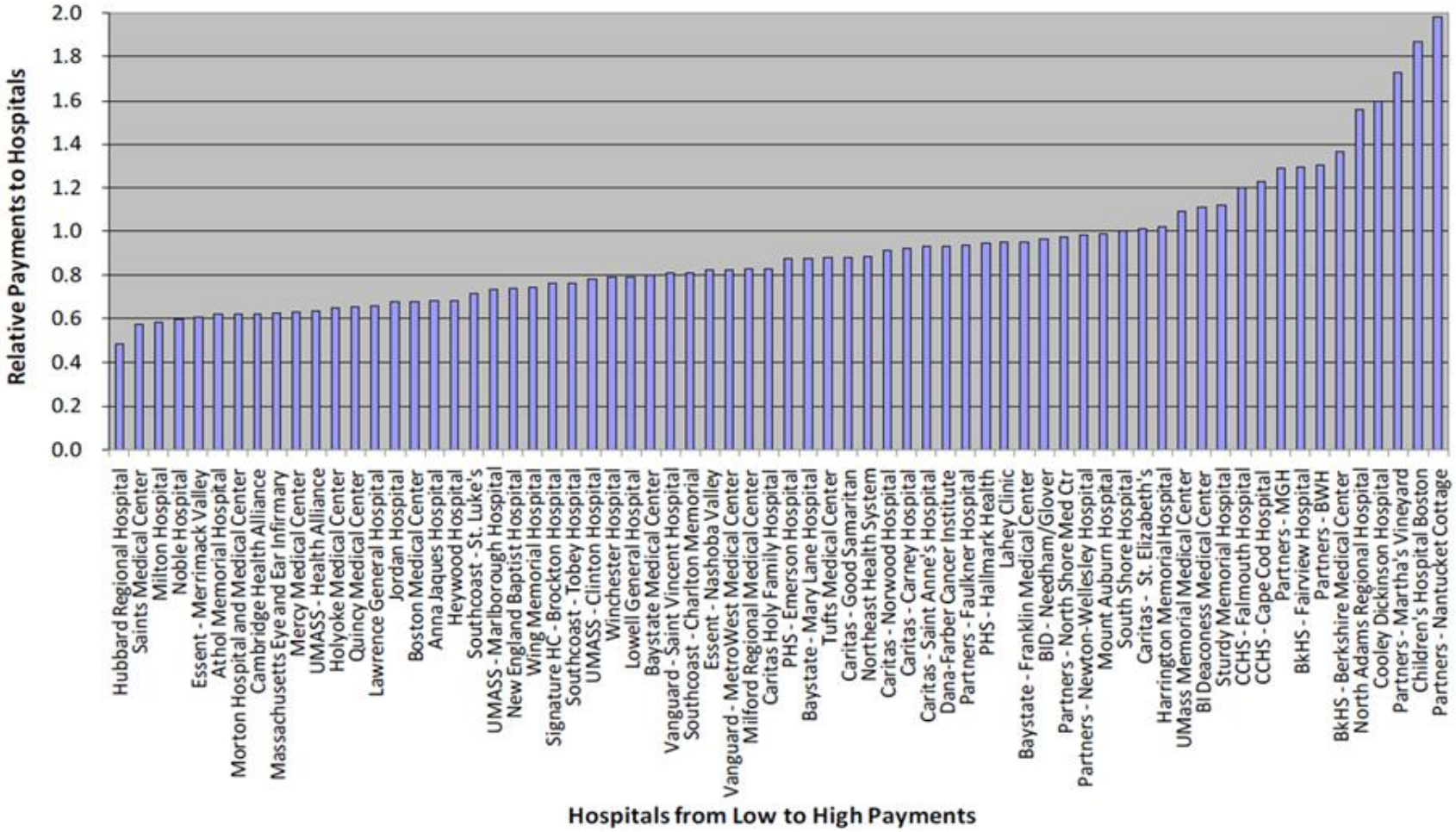
Exhibit 3 Facilities Profile, Boston Children's Hospital

Employed Staff			
Full-Time Staff		**Part-Time Staff**	
Physicians and dentists*	203	Physicians and dentists*	75
Registered nurses	1,596	Registered nurses	685
Licensed practical nurses	0	Licensed practical nurses	0
Faculty personnel	1,077	Faculty personnel	N/A

Overview Statistics			
Admissions	18,242	Inpatient surgeries	7,163
Outpatient visits	604,967	Emergency room visits	61,631
Births	0	Number of beds	396

Source: Company documents; American Hospital Association, July 2011.

Exhibit 4 Relative Costs of Massachusetts Hospitals using Tufts Health Plan Data, 2009



Source: Office of Massachusetts Attorney General Martha Coakley, "Examination of Health Care Cost Trends and Cost Drivers," Report for Annual Public Hearing Under G.L.C. 118g, § 6½(b), June 22, 2011, (Boston, MA), p. 16.

Exhibit 5 Setting Physician Charges

At BCH, the Physician's Organization (P.O.) derived the charges for clinical services from the Medicare fee schedule.

In order to recommend prices that physicians should charge for their work, CMS had developed a schedule of fees for the market. In the early 1990s, CMS switched from a system based on historical charges[a] to the Resource-Based Relative Value Scale (RBRVS) for determining physician reimbursements.[b] The RBRVS system based the charges for a particular physician procedure or service on three categories of costs, each estimated by a "Relative Value Unit" (RVU). The three components of the CMS Physician Charge RVUs were as follows:

1. Physician Work RVU (Work) had four factors: time, mental effort and judgment, technical skill and physical effort, and stress of the tasks performed by the physicians.[c]

2. Physician Practice Expense RVU (PE) estimated the cost of running the physician's practice, including the non-physician clinical and non-clinical labor of the practice as well as the cost of space and equipment

3. Malpractice Insurance RVU (MP) included the cost of coverage for malpractice insurance

CMS conducted surveys of physicians, within each specialty, to estimate the RVUs based on level of resource use and complexity associated with a particular service. For example, the survey asked physicians to estimate the necessary time, mental effort, judgment, technical skill, physical effort, stress, and training associated with the services they performed. A panel of 3-5 experts within each specialty validated the survey results. The RVUs were then adjusted to reflect differences in costs by geographical area by using a geographical practice cost index (GPCI).

One special subset of charges, E&M Codes, applied to Evaluation and Management visits. E&M codes reimbursed for office visits and were independent of the clinical specialty or experience level of the clinical resource (physician or nurse). An E&M visit was rated on a 1:5 scale, with the rating based on visit time and complexity of the discussion. A Level 4 or 5 visit required longer visit times and conversations about multiple organ systems. E&M visits represented 30% of BCH physician charges.

Source: Casewriter.

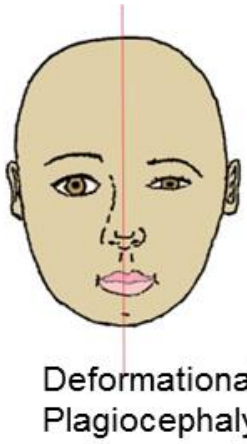
[a] Historically physicians were paid based on "usual, customary and reasonable charges." William C. Hsiao, Peter Braun, Douwe Yntema, and Edmund R. Becker, "Estimating Physician's Work for a Resource-Based Relative-Value Scale," *The New England Journal of Medicine* 319, no. 13 (September, 1988): 835- 841. This system used historical charges to set current pricing with occasional adjustments made.

[b] William C. Hsiao, Peter Braun, Daniel Dunn, and Edmund R. Becker, "Resource-Based Relative Values. An Overview," *The Journal of the American Medical Association* 260, no. 16 (October 1988): 2347-2353.

[c] Hsiao, Braun, Yntema, and Becker, "Estimating… Relative-Value Scale."

Exhibit 6 DPOS New Office Visits: Medical Condition Depictions

Diagnosis



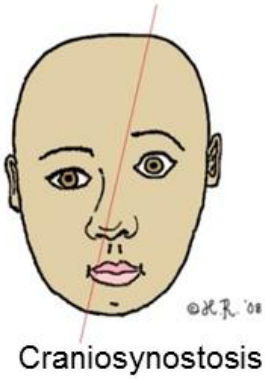
Deformational Plagiocephaly

Treatment

- Sleeping position change
- Exercises
- Molding helmet

Molding helmet for infants over 4 mo.

Diagnosis



Craniosynostosis

6-month-old, pre-operation

Treatment

- Major surgery

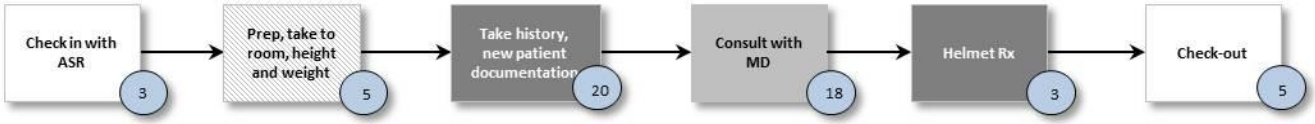
Cranial vault remodeling (Surgical rearrangement of skull bones avoids brain compression associated with Craniosynostosis)

2-year-old, post-operation

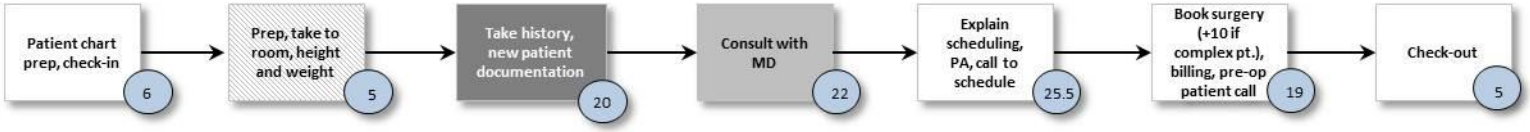
Sources: Dr. John Meara, personal photos; Boston Children's Hospital.

Exhibit 7 Process Maps: Office Visits to Department of Plastic Surgery

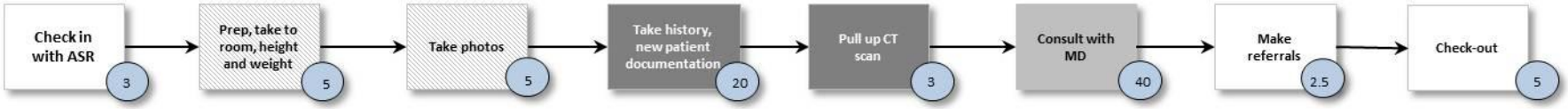
Plagiocephaly



Simple Skin Excision



Craniosynostosis



Key:

Source: Casewriter analysis. Time estimates have been disguised for case purposes and do not represent actual times at BCH.

Exhibit 8 Department of Plastic and Oral Surgery: Cost Analysis

	Surgeon	Ambulatory Service Representative (ASR)	Registered Nurse (RN)	Clinical Assistant (CA)	Total
Compensation: Salary, Fringes and Bonus	$ 5,500,000	$ 390,000	$ 1,098,500	$ 235,300	$ 7,223,800
Malpractice Insurance	220,000	-	-	-	220,000
Billing Services	760,000	-	-	-	760,000
Office expenses: rent, utilities, insurance, supplies	400,000	148,200	247,000	123,500	918,700
Total	$ 6,880,000	$ 538,200	$ 1,345,500	$ 358,800	$ 9,122,500
Research and teaching time	25%	-	-	-	0
Clinical time	75%	-	-	-	0
Surgeon clinical expenses	5,160,000	-	-	-	0
Medical Supplies	67,200	-	-	-	0
Total Clinical Costs	**$ 5,227,200**	**$ 538,200**	**$ 1,345,500**	**$ 358,800**	**$ 7,469,700**
Number of employees	10	6	10	5	31.0
Clinical cost per employee	$ 522,720	$ 89,700	$ 134,550	$ 71,760	

Source: Casewriter analysis. All cost numbers in this case have been created artificially by the case writers for illustrative purposes only and do not represent actual cost data of the organization.

Exhibit 9 Physician Time Sheet

NAME:	**DATE:**
DEPARTMENT: PLASTIC AND ORAL SURGERY	

For each day in a typical work week, please estimate the number of hours spent on the following activities. If in clinic without resident, then place hours under clinic; if in clinic with resident, then place hours under clinic + education; if at grand rounds, then place hours under education.

ACTIVITY:	CLINIC	CLINIC + EDUCATION	SURGERY	SURGERY + EDUCATION	OTHER PATIENT CARE	EDUCATION OUTSIDE CLINIC/OR	RESEARCH	ADMIN
	Mutually exclusive categories							
Monday								
Tuesday								
Wednesday								
Thursday								
Friday								
Saturday								
Sunday								

Number of weeks or days per year on vacation or away at conferences, on average _____

Clinic: Block hours in clinic without resident or medical student

Clinic + Education: Block hours in clinic with resident or medical student

Surgery: Block hours in OR plus time in pre-op or PACU that would not be included in block time (i.e. if you get there early or stay late routinely); without residents or medical students

Surgery + Education: Block hours in OR plus time in pre-op or PACU that would not be in the block time (i.e. if you get there early or stay late routinely); with residents or medical students

Other patient care: Hours spent on any activity, including dictation, notes, e-mail, phone calls (to patients or consulting providers), reading journals/textbooks, that contributes to care of **specific** patients, outside of block time; some consider this as practice management

Education: Hours spent in education outside of block time, including grand rounds attendance, medical school lectures, preparation of talks, mentoring students, etc.

Research: Hours spent thinking/reading about research, discussing research, or performing research

Admin: Hours spent in administrative meetings, deciding and implementing departmental changes, working with non-clinical staff, marketing, paperwork for non-clinical activities, etc.; can average over months or weeks

Source: Company documents.

Exhibit 10 Department of Plastic and Oral Surgery: Available Time Worksheet

Resource	Surgeon	ASR	RN	CA
Weeks per year	52	52	52	52
Less: Vacation & Holidays	6	4	4	4
Less: Training and Leave	2	2	2	2
Available weeks per year	44	46	46	46
Hours per day	10	8	8	8
Less: Breaks, training, meetings	1.2	1.5	1.5	1.5
Available hours per day	8.8	6.5	6.5	6.5
Less: Estimate of Research & Education time (%)	25%	0%	0%	0%
Clinical Hours per day	6.6	6.5	6.5	6.5

Source: Casewriter analysis. All cost numbers found in this case have been created artificially by the case writers for illustrative purposes only and do not represent actual cost data of the organization.

Endnotes

[1] Office of Massachusetts Attorney General Martha Coakley, "Examination of Health Care Cost Trends and Cost Drivers," *Report for Annual Public Hearing Under G.L.C. 118g*, § 6½(b), June 22, 2011, (Boston, MA), http://www.mass.gov/ago/docs/healthcare/2011-hcctd-full.pdf, accessed September 2012.

[2] Boston Children's Hospital, "#1 Ranked Pediatric Hospital Nationwide by U.S. News & World Report," Rankings page, http://www.childrenshospital.org/microsites/Site3412/mainpageS3412P0.html, accessed September 2012.

[3] Ibid., "Children's and Policymakers," The Value of Children's page, http://value.childrenshospital.org/policymakers, accessed September 2012.

[4] The Nobel Foundation, "John F. Enders – Biography," Nobelprize.org Web site, http://www.nobelprize.org/nobel_prizes/medicine/laureates/1954/enders-bio.html, accessed September 2012.

[5] Massachusetts Department of Health and Human Services Division of Health Care Finance and Policy, "Recommendations of the Special Commission on the Health Care Payment System," June 16, 2009, (Boston, MA), http://www.mass.gov/eohhs/docs/dhcfp/pc/final-report/final-report.pdf, accessed September 2012.

[6] Liz Kowalczyk, "Vigorous Recovery for Floating Hospital," Boston Globe, February 9, 2011, http://www.boston.com/lifestyle/health/articles/2011/02/09/patient_influx_lifts_floating_hospital_for_children, accessed September 2012.

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[8] Ibid., "Plastic and Oral Surgery," Plastic and Oral Surgery Homepage, http://www.childrenshospital.org/clinicalservices/Site1935/mainpageS1935P0.html, accessed September 2012.

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