Scientific Article

Characteristics of Dental Clinics in US Children's Hospitals

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Abstract: ***Purpose:*** *This study's purpose was to describe the workforce, patient, and service characteristics of dental clinics affiliated with US children's hospitals belonging to the National Association of Children's Hospital and Related Institutions (NACHRI).* ***Methods:*** *A 2-stage survey mechanism using ad hoc questionnaires sought responses from hospital administrators and dental clinic administrators. Questionnaires asked about: (1) clinic purpose; (2) workforce; (3) patient population; (4) dental services provided; (5) community professional relations; and (5) relationships with medical services.* ***Results:*** *Of the 222 NACHRI-affiliated hospitals, 87 reported comprehensive dental clinics (CDCs) and 64 (74%) of CDCs provided data. Provision of tertiary medical services was significantly related to presence of a CDC. Most CDCs were clustered east of the Mississippi River. Size, workload, and patient characteristics were variable across CDCs. Most were not profitable. Medical diagnosis was the primary criterion for eligibility, with all but 1 clinic treating special needs children. Most clinics (74%) had dental residencies. Over 75% reported providing dental care prior to major medical care (cardiac, oncology, transplantation), but follow-up care was variable.* ***Conclusions:*** *Many children's hospitals reported comprehensive dental clinics, but the characteristics were highly variable, suggesting this element of the pediatric oral health care safety net may be fragile. (Pediatr Dent 2011;33:100-6)*
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Approximately 18% (12.5 million) of US children have special health care needs, and numbers continue to rise.[1] A 2002 survey of pediatric dental training programs reported the number of children with special health care needs (**CSHCN**) patients seen annually rose 54% over a 5-year period.[2] The National Health Interview Survey found that approximately 12% of CSHCN were deficient in at least one aspect of health care (medical, dental, vision, and mental health), and the greatest unmet need was dental care, with approximately 8% of CSHCN unable to gain access to the oral health care system.[3]

CSHCN often encounter barriers when accessing dental care. General dentists are often unwilling to treat CSHCN due to medical conditions, the additional time required to obtain a medical history and render treatment, poor reimbursement, and inadequate training in treating CSHCN.[4-8] Consequently, pediatric dentists provide a disproportionate amount of care to this population, but the 5,000 US pediatric dentists are too few to meet the need.[9] Hospital-based dental services provide the only opportunity for many CSHCN to receive dental care. Most pediatric dental training programs are associated with hospital-based dental services, but a 2002 survey of programs suggests that most are stretched beyond capacity, and many children must wait for treatment.[2] Advances in pediatric medicine enable children with chronic diseases to live longer, increasing the need for secondary and tertiary care. Many have complex medical conditions requiring dental treatment in a hospital setting. The importance of oral health and its relationship to systemic health is well documented.[10,11] Many oral conditions have a direct correlation with medical conditions, including cardiovascular disease, stroke, respiratory infection, diabetes, and adverse pregnancy outcome. Invasive dental procedures may cause bacterial endocarditis and infection of joint replacements and complicate organ and bone marrow transplantation.[12] Poor oral health increases the risk of aspiration pneumonia.[13]

Protocols and guidelines for dental treatment for some acute and chronic oral diseases have been suggested and implemented.[14-16] The National Institutes of Health in 1989 recommended that all patients undergoing cancer treatment should receive a dental exam prior to cancer treatment.[17] The American Academy of Pediatric Dentistry strongly encourages pretreatment oral evaluation and continued supportive oral health therapy for cardiac, cancer, and transplant patients.[18]

With the number of CSHCN growing and their care becoming more complex, hospital dental services become the source of care for many of these children. Many children's hospitals operate throughout the United States, but not all provide dental services. For many CSHCN, a hospital setting might be the only opportunity to receive dental care and be provided a "dental home." The current oral health care system has not met this enormous, continually growing need and is

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unlikely to do so in the future unless major changes occur. Children's hospital dental services comprise one component of this current system, but capacity of these programs to meet the needs of this population is uncertain.

The purpose of this study was to characterize children's hospital dental services, including the nature of services provided, types of patients treated, and the workforce available in these hospital-based dental services in the United States.

Methods

This study was a 2-stage survey using an ad hoc questionnaire developed by the authors using previous literature for question content. The study was given exempt status by the Institutional Review Board of Baylor College of Dentistry, Dallas, Texas.

Sample. The sample was drawn from hospitals and institutes affiliated with the National Association of Children's Hospitals and Related Institutions (**NACHRI**), a nonprofit membership organization promoting the well-being of all children and their families and working to ensure all children access to health care through clinical care, research, training, and advocacy. The initial sample was NACHRI's 222 member institutions, drawn from the NACHRI Web site and then culled from a final sample representing only those who provided dental services as a result of responses from the first questionnaire.[19]

Survey procedure. The sequential 2-survey process first determined institutions with dental services and then characterized the nature of their services. The first survey targeted hospital administrators (**HAs**) to determine: (1) presence of a comprehensive dental clinic at that facility; (2) a point of contact for that dental service; and (3) medical services provided in the hospital, specifically cancer treatment, cardiac surgeries, and transplantation services. This initial survey was mailed to the chief executive officer of the 222 NACHRI affiliates with instructions to complete the survey or to pass it on to an administrator who could respond. After 3 weeks, a follow-up survey was mailed to non-respondent HAs. Those who did not respond to either mailing were surveyed via telephone by 1 author who asked only the 3 questions mentioned previously.

A comprehensive dental clinic was defined as one providing preventive, routine, and some specialized dental care, excluding those clinics providing only surgical and orthodontic care such as cleft lip and palate (**CL/P**) clinics. If a CL/P clinic provided comprehensive dental care to patients, that dental service was included. If a comprehensive dental clinic was not located within the children's hospital, but was affiliated with the hospital, it was also included in the sample. If a dental clinic treated adult patients as well as children, the request was made to consider only the pediatric population when completing the survey. Those hospitals determined to have a comprehensive dental service became the subsample to receive the second survey targeted at dental clinic administrators (**DAs**).

DA questionnaire. The second 18-question survey was mailed to the HA-identified DA of the dental service. Eight survey questions pertained to demographics of the hospital dental clinic, including: purpose; size and workload; patient eligibility; profitability; and longevity of the dental clinic.

Three questions on the DA survey pertained to: (1) types of patients being treated; (2) presence or absence of a comprehensive service; and (3) availability of dentistry while the patient is undergoing tertiary care. DAs were asked to approximate the dental clinic patient population according to 4 defined categories: (1) neurologic/developmental disabilities; (2) severe medical conditions other than neurologic/developmental disabilities; (3) craniofacial anomalies; and (4) healthy children. DAs were queried about provision of dental care to tertiary care patients by asking the timeframes in which patients receive dental treatment while undergoing extensive medical treatments such as oncology procedures, transplantations, and cardiac surgeries. Choices included: pretreatment care; immediate short-term care; long-term follow-up care; no treatment; or not available if the medical service was not provided within the hospital.

Eight questions pertained to workforce distribution, including: number of dentists, specialists, dental hygienists, and dental residents working in the hospital; the extent of specialty services provided; and the type of affiliation the dentists had with the hospital.

After 3 weeks, dental services not responding received a follow-up survey. If no response was received after the second mailing, each dental service was surveyed via telephone by 1 author.

Statistics. Responses were analyzed using SPSS 13 (SPSS Inc, Chicago, Ill). Descriptive statistics and frequency analyses were performed. The chi-square test and cross-tabulations were used for correlations, and a significance level was set a priori $P<.05$. Significant differences noted in results use this value.

Results

HA questionnaire. All 222 NACHRI members were contacted either by written survey or telephone, resulting in a 100% response rate for the HA questionnaire. Responses indicated that 87 children's hospitals have comprehensive dental clinics. Medical services in the hospitals are depicted in Figure 1, with: 79% (176/222) offering oncology service; 55% (123/222) offering transplantation services (bone

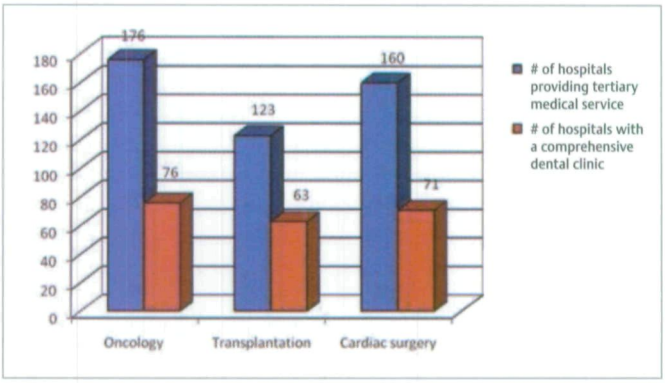

Figure 1. No. of positive responses of hospital administrators to the questions: "Do you have the medical services of transplantations, cardiac surgery, and oncology in your hospital?"; and "Do you have a dental clinic in your hospital?"

marrow or other organ); and 72% (160/222) offering cardiac surgeries. Of hospitals providing oncology services, 43% (76/176) had a comprehensive dental clinic. Over half of hospitals (51%) providing transplantations (63/123) and 44% (71/160) providing cardiac surgeries had a comprehensive dental clinic.

On average, fewer than half of hospitals providing major tertiary medical care had dental clinics. The presence of tertiary services provided by the hospital was significantly associated with the presence of a comprehensive dental clinic within the hospital ($P<.002$), with 70% (N=60) of hospitals offering 3 tertiary services having a hospital-based dental clinic, while only 11% (N=10) of hospitals without tertiary services having a dental clinic.

DA questionnaire. Sixty-four of 87 DAs surveyed returned questionnaires or were reached by telephone, for a response rate of 74%. The locations of the 222 NACRI-listed children's hospitals and 87 hospital dental clinics were mapped for regional differences (Figure 2). Thirty-four of the 50 states plus the District of Columbia have at least 1 children's hospital with a dental clinic. Seven states (California, Missouri, New Jersey, New York, Ohio, Pennsylvania, and Texas) combine to have 49% (43/87) of the total number of clinics. Excluding California and Texas, only 17 children's hospital dental clinics are located west of the Mississippi River.

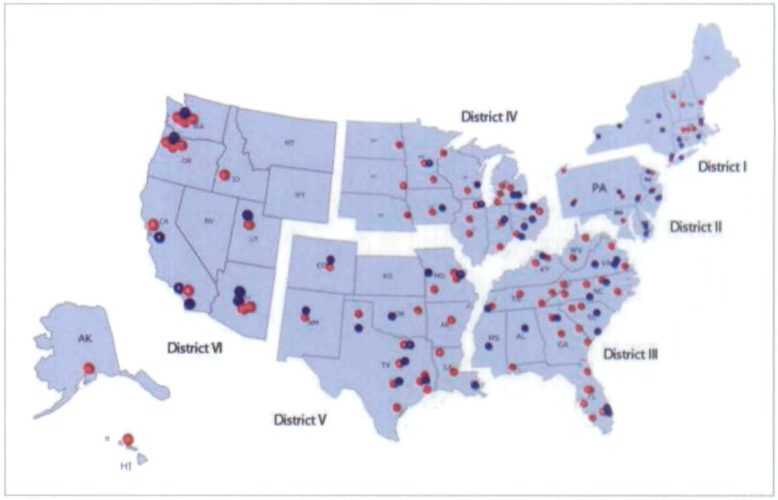

Figure 2. Distribution of children's hospitals and hospital-based dental clinics by American Academy of Pediatric Dentistry Districts. Blue dot= presence of a children's hospital with a dental clinic; red dot= presence of a children's hospital.

Clinic demographics. Responses to the 8 demographic questions about the hospital dental clinic yielded the following results:

1. Size—Dental clinics ranged from 2 to 25 operatory chairs (mean=8.4). Most responding clinics had more than 5 operatory chairs; 51% (N=31) of the dental clinics had 6 to 10 chairs, while clinics having 11 to 15 dental chairs comprised 21% (N=13) of the clinics surveyed.
2. Workload—Defined as the number of dental cases treated in the operating room plus total number of patient visits to the dental clinic, workload was highly variable. Total operating room cases varied from 0 to 1,800 annually (mean=355; median=200). Total dental clinic patient visits ranged from 150 to 38,000 annually (mean=10,424; median=8,000).
3. Purpose—Respondents used a Likert-type scale to rank importance of 4 potential purposes of their dental service. Meeting the oral health care needs of CSHCN patients and patients from tertiary care services in the hospital were ranked important or very important at 100% and 97%, respectively. Meeting the needs of low-income, underserved patients in the community was rated important or very important less frequently (90%), but still appeared to be a major purpose of the dental service. Profit was identified as important or very important by only 40% of respondents (Table 1).
4. Profitability—Respondents were asked to indicate the profitability of their dental clinic in the previous year. Almost half (46%, N=29) reported that clinical expenses exceeded revenue, 13% (N=8) indicated that expenses met revenue, and 32% (N=20) reported revenue exceeded expenses. In 6% (N=4) of clinics, dental services were not billed to any payer source. Profitability was negatively impacted when dental clinics had a CSHCN patient population of greater than 40% ($P>.04$).
5. Eligibility—When asked about criteria to determine eligibility for treatment, 56% of responding dental services had them. Their rank-ordering of a list of criteria gave medical diagnosis priority for patient eligibility most frequently (64%). Clinic case load, behavior management, and medical diagnosis shared second priority, and behavior of the patient ranked third (59%; Figure 3).
6. Longevity—55 dental clinics (86%) had been in operation for greater than 20 years, suggesting that once a clinic is established, it generally remains functional. Fewer than 5% (N=3) had existed less than 5 years.

Table 1. RESPONSES TO QUESTION: "RATE THE PURPOSES GIVEN FOR THEIR IMPORTANCE IN THE GOALS FOR THE DENTAL SERVICE IN YOUR HOSPITAL"

Purpose	Very important N (%)	Important N (%)	Not important N (%)
To meet the needs of low-income, underserved patients in the community (N=60)	37 (62)	17 (28)	6 (10)
To meet oral health care needs of patients with special health care needs (N=64)	57 (89)	7 (11)	0 (0)
To meet oral health care needs of patients from tertiary care services in the hospital (N=64)	47 (73)	15 (23)	2 (3)
For profit (N=60)	7 (12)	17 (28)	36 (60)

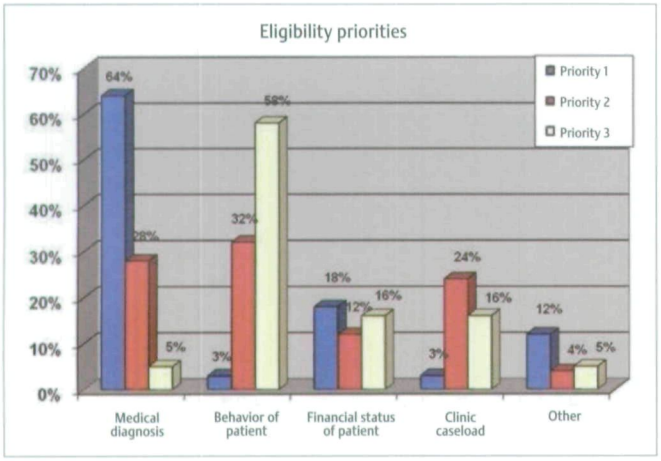

Figure 3. Dental clinic administrator responses to the question: "List, in order of priority with 1 being the most important, the criteria for patient acceptance for treatment."

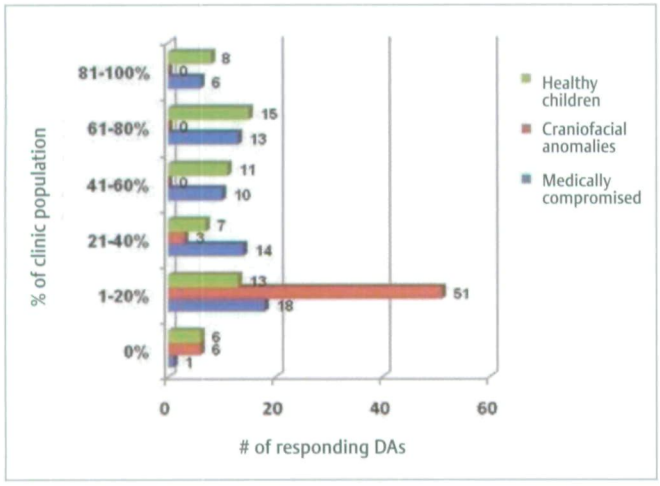

Figure 4. Distribution of patients' diagnoses treated in the hospital-based dental clinic (N=60 responding dental clinic administrators).

Clinic patient population. Respondents were asked to approximate distribution of their dental clinic patient population across 4 defined categories of neurologic/developmental disabilities, severe medical conditions other than neurologic/developmental disabilities, craniofacial anomalies, and healthy children. Responses for the categories neurologic/developmental disability and severe medical conditions were combined to represent CSHCN. Hence, data are reported for 3 categories: (1) healthy children; (2) CSHCN; and (3) children with craniofacial anomalies. The latter were maintained as a single category, rather than be grouped into CSHCN, because they require a group of specialists dedicated to treating their specific needs and almost always include dentists in the team.

Healthy patients and CSHCN were evenly distributed in their representation among percentage intervals reported. Patients with craniofacial anomalies were reported by 51 (91%) responding DAs to represent between 1% to 20% of their patient population, and no clinic reported them to constitute more than 40% of their patients. Only 1 clinic reported no CSHCN patients, while 6 reported that no healthy children or patients with craniofacial anomalies were treated at their clinic (Figure 4).

Children's hospital dental clinic workforce. Three questions addressed workforce in hospital-based dental clinics. The first had respondents indicate the number of dentists, residents, and dental hygienists who worked each half day of a typical week. Usable responses were obtained from 58 questionnaires. The majority (60%) of hospitals have dental staff coverage of 4 to 11 dentists per half day. Twenty-one clinics averaged 4 to 7 dentists and/or residents per each half day, and 14 clinics averaged 8 to 11 dentists and/or residents per half day. Most (74%) dental clinics were supported by dental residents (Table 2). Tallied responses revealed that each clinic averaged 1.8 dentists (nonresident), 3.8 dental residents, and 1.3 hygienists—suggesting that two-thirds of all dental treatment within responding children's hospital dental clinics is performed by dental residents.

Respondents also specified presence of specialists, general dentists, and residents in their dental clinic. Specialists provided services in 89% (N=55) of hospital dental clinics, while specialists other than pediatric dentists provided services within 77% (N=48) of the clinics. Orthodontists provided services in 59% (N=35) of dental clinics, while 50% (N=29) of clinics had oral surgeons providing services. According to responding DAs, periodontists (45%, N=26) and endodontists (43%, N=25) provided services within the hospital with equal frequency.

Approximately 1 in 10 (11%, N=7) dental clinics did not have any specialty care, including pediatric dentistry, with all dental services being provided by general practitioners (**GPs**). Conversely, 59% (N=31) of the dental clinics were staffed only with specialists and did not have any GPs providing care.

The last workforce-related question asked respondents whether community dentists provided consultations, emergency services, and operating room services. Community dentists provide consultations (22%) and treat patients in the operating room (50%), while oral surgeons (30%) and other dentists (25%) from the community provide emergency services for the hospital. The second part of this question asked if any dental residencies were present and whether the hospital had a CL/P and/or oral surgery clinic within their hospital. A CL/P clinic was located in 70% (45/64) of children's hospitals with a dental clinic. According to responding DAs, pediatric dental and general dental practice residencies were present in 53% and 41% of hospitals, respectively.

Table 2. RESPONSES TO QUESTION: "DESCRIBE THE NUMBERS OF EACH TYPE OF INDIVIDUAL WHO WORK IN YOUR DENTAL CLINIC EACH HALF DAY FOR AN AVERAGE WORK WEEK"

Workforce (range of no. of dentists and residents per half day)	No. of clinics (%)	No. of clinics utilizing dental residents (%)
1-3	17 (29)	7 (12)
4-7	21 (36)	18 (31)
8-11	14 (24)	13 (22)
12-19	6 (10)	5 (9)

Administrators indicated that over 80% of the dental clinics provide regular preventive, restorative, and emergency care. Orthodontics was the least reported service and not available in 30% of clinics. Oral surgery was available to all patients who required that service in 64% of the clinics. Periodontic and prosthodontic services were similarly distributed among clinics and routinely provided in greater than 40% of the clinics. Endodontic services were available to all patients in less than one third of the dental clinics, but on a limited basis in greater than one half of the clinics.

Most clinics (58%) have academic affiliations. Most dentists who work in clinics (58%) were paid by the hospital. Other payment methods were distributed equally (14-19%) by a dental school, university, contract services, fee for service, and volunteerism. Affiliations and methods of payment did not have a significant effect on the clinic's profitability.

Tertiary medical services and temporal provision of dental care. Provision of dental care to patients undergoing medical treatments (oncology procedures, transplantations, and cardiac surgeries) within the timeframes of pretreatment care, immediate short-term care, and long-term follow-up care had no significant differences among the 3 medical services for pretreatment provision of dental care. Over 75% of responding DAs indicated they provide dental treatment to patients prior to extensive medical treatment, but fewer (52-67%) reported providing follow-up dental care (data not shown).

Over 70% of responding DAs indicated that hospital physicians routinely or frequently consult with the dental department prior to patients undergoing extensive medical treatment, while fewer answered that physicians routinely or frequently recommended routine dental care following medical treatment. There were no significant differences among the 3 tertiary services regarding requesting pretreatment dental care, but cardiac surgery services were less likely (49%) to request follow-up dental care for their patients than oncology (69%) or transplant services (56%; data not shown).

Discussion

The ideal oral health care system for CSHCN should be accessible, affordable, and staffed by knowledgeable, well-educated providers. Casamassimo proposed a solution to the problems of access and quality of care by significantly increasing the number of pediatric dentists and the capacity of the dental care infrastructure within regional and academic centers (hospital services).[9] The literature reports that too few hospital dental clinics across the country meet the demands of CSHCN, but no reports have attempted to quantify the capacity of the current system.[20, 21] This investigation intended to profile dental services and workforce within children's hospitals.

Without such objective data, it is difficult to: determine the capacity of the system; develop policy; plan for the future; or lobby administrators, legislators, and policymakers. In this era of health care reform, this information is crucial to ensure care options for CSHCN.

This project was unique at the time of completion. Subsequently, a study by The Advisory Board Company, Washington, DC, profiled 3 hospital dental services.[22] Their study addressed similar concepts, including size and workload, presence of dental residencies, and types of patients seen, but had a very limited sample. Interestingly, all 3 hospitals reported financial profitability as unimportant. Proficiency of the dental clinics was only measured by the completion of educational/residency requirements rather than patient care indicators such as number of patients seen daily, length of appointment, productivity per visit, and wait times. Their project and ours demonstrate the importance of residencies on hospital dental services, but ours provides a far more complete national perspective of all children's hospitals and a broader perspective of the current system than the Advisory Board's findings.

Hospital dental clinics meet many criteria for the ideal oral health care system for CSHCN and provide a "dental home" for this population. According to our findings, however, over 60% of children's hospitals do not have a dental clinic.[23] Further, large regional gaps exist in locations of dental clinics. The findings that just 7 states have almost half the dental clinics and only 17 children's hospital dental clinics exist west of the Mississippi River (excluding California and Texas) should be alarming. Large geographical areas are underserved. In addition, several states (Tennessee and Florida) with large areas designated as dental health profession shortage areas by the Health Resources Service Administration have children's hospitals without dental clinics.[6] The methods by which CSHCN and children from underserved areas are having their dental needs met, if they are being met at all, warrant further research.

This investigation sought to determine why pediatric hospitals would have in-hospital dental services. Advantages of a dental service within a hospital include one-stop care-seeking, integration of dental and medical services, cost-sharing advantages to compensate for poor reimbursement, expertise and dedication of specialists, and the ability to assist in transition to adult services for older special health care need individuals.

Hospital-based services offer the greatest likelihood of quality with patient and parent satisfaction and ultimately provide a "dental home" for this underserved population.[9] In this investigation, 100% of respondents identified providing dental care to CSHCN and 97% identified meeting the needs of tertiary medical services as the purposes for having a hospital-based dental clinic. Other findings from the questionnaire corroborate this. Our data indicate that most hospital clinics treat a large percentage of CSHCN, and only 1 did not. The need for hospital-based dental services to meet the tertiary needs of the hospitals will increase continuously in the future. Our results indicate that only 5% of hospital-based dental clinics have been established in the past 5 years, raising the question: Where are CSHCN going to receive dental care?

No prior investigations report the availability of dental specialists and dental specialty services associated with hospital dental services. Diversity of specialty services is especially important for CSHCN because their oral health care needs can be complex. It is encouraging that 89% of hospital dental

clinics have dental specialists providing dental care, but the availability and frequency of specialty dental services demonstrated significant variability. Some clinics provided all specialty services to their patients on a regular basis, while others provided only 1 or 2 disciplines.

Orthodontics is the least available dental service in children's hospitals, but paradoxically, orthodontists are the most represented group of specialists within clinics. Our data do not clarify who is providing the dental specialty services. Pediatric dentists and general dentists may well be providing some of the specialty treatment. An interesting but unanticipated finding is that 1 in 10 children's hospital dental clinics are staffed completely by GPs, and over 40% the clinics had GPs as part of the workforce. This finding suggests further study and raises questions about whether pediatric dentists were considered and whether employed generalists had advanced hospital training.

Medically necessary dental care. In 1995, the Institute of Medicine's report, Dental Education at the Crossroads: Challenges and Change, demanded an increase in the integration of medicine and dentistry.[24] The oral and systemic interactions of CSHCN are significant enough to require interdisciplinary medical and dental care.[25] CSHCN are often forced to access 2 separate systems. Current infrastructure often makes it difficult for these patients to access necessary care concurrently, with the result being that many CSHCN lack a dental home.

This investigation revealed that almost 40% of hospitals have a comprehensive dental clinic within the hospital. At least 176 hospitals provide tertiary medical services, but at least 100 of these hospitals do not have a hospital dental clinic, suggesting that their patients' dental needs must be met elsewhere. Of the 3 specific medical treatments known to have treatment outcomes affected by poor oral health that we studied—oncology services, cardiac surgeries, and transplantations—75% to 88% provided dental consultation and/or treatment prior to undergoing medical treatment. This finding is encouraging because it suggests that the medical community recognizes the importance of oral health in medical treatment outcomes.

By contrast, however, only 52% to 67% of patients receive regular follow-up dental care in the hospital clinic. This decrease could be explained by patients returning to their regular dental care provider for follow-up or a lack of emphasis placed on follow-up care by the medical community.

This investigation accomplished many of its objectives, but had several weaknesses. The data gathered were limited by the nature of survey methodology. As with any questionnaire, the participant must answer from the choices provided. For example, many children diagnosed with cancer may have to undergo cancer treatment immediately due to its severity prior to any dental evaluation or treatment. Additionally, many children's hospitals are "hospitals within hospitals," having dental clinics that also treat adults. The DA may have had to estimate the pediatric population.

Furthermore, not all children's hospitals are members of NACHRI, so it is feasible that some hospitals may have dental clinics and not be included in our results. Additionally, some hospitals that are not children's hospitals provide dental services to children. Thus, the capacity of hospital dental services nationally may be greater than expected. Dental schools and community clinics located near children's hospitals may provide dental care for the hospital's patients. Thus, capacity may be greater than our findings indicate. While our results provide the first snapshot of children's hospital dental clinics, further research should address the amount of dental care being provided by dental schools and community clinics for CSHCN.

Conclusions

Based on this study's results, the following conclusions can be made:

1. Eighty-seven children's hospitals in the United States have comprehensive dental clinics, but significant variability exists in size, staffing, and the amount of dental services provided.
2. While most responding dental clinic administrators indicated that premedical treatment dental care was recommended and delivered, fewer responded that postmedical treatment dental care was recommended and/or delivered.
3. A large amount of care appears to be rendered by residents in children's hospitals, suggesting that the network of dental residencies is critical to the care system for children with special health care needs.

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Abstract of the Scientific Literature

Randomized controlled trial of the effect of anticipatory guidance on management of teething symptoms

*This paper reported the effect of anticipatory guidance provided in the form of printed information on maternal management of teething symptoms in their infants. Participants were enrolled into a larger parent randomized controlled trial (**RCT**) to prevent early childhood caries (**ECC**). Those mothers recruited in the intervention arm of the main study received oral health promotional materials during pregnancy and when their infant was 6 and 12-months-of-age. Specific literature related to teething was mailed to mothers at the 6 month milestone. This material included information on teething, its management, eruption times of primary teeth, common signs and symptoms of teething, along with tips on how to ease teething pain and discomfort. Data were available for 232 mothers and infants in the test group and 209 maternal-infant dyads in the control group. There was no apparent difference in maternal reporting of teething symptoms between the groups. Drooling, biting, and irritability were the most noted symptoms reported by mothers. Those mothers who received oral health materials as part of the RCT did manage their infant's symptoms differently than those serving as controls. They were significantly less likely to give their child teething medication (P<.03) and more likely to massage their infant's gums (P<.005) than those mothers who did not receive any oral health literature. This study concluded that providing information on teething can lead to more conservative and non medicinal management of teething discomfort.*

***Comment:** Clear signs and symptoms of childhood teeth are difficult for both parent and health professionals to observe. Despite the fact that teething discomfort is common there is great variability among providers regarding tips they provide parents to manage their child's teeth pain. This study provided mothers with information on teething coinciding with the eruption of a child's first tooth; at a time when it is most useful and needed. Equipping mothers with information on recognizing and managing teething pain appears to potentially reduce the reliance on infant teething medications. This may help in reducing the risk of potentially overmedicating a child.* **RJS**

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28 references