Conference Paper

Conceptual Frameworks for Understanding System Capacity in the Care of People with Special Health Care Needs

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Abstract: *This paper seeks to (1) identify strengths and weaknesses of the US health care system regarding oral care for persons with special needs; (2) provide a framework for understanding system capacity; and (3) describe the context within which dental care is provided in the United State. It explores a series of concepts that help explain the current lack of access for those with special needs and synthesizes options for improvement. (Pediatr Dent 2007;29:108-16)*

KEYWORDS: PERSONS WITH SPECIAL HEALTH CARE NEEDS, ACCESS TO CARE, HEALTH CARE SYSTEM, BARRIERS TO CARE

This contribution to the American Academy of Pediatric Dentistry's (AAPD) Symposium on Lifetime Oral Health Care for Patients With Special Needs addresses the charge to "identify the health care system's strengths and weaknesses and make recommendations for action by government, health care organizations, advocacy groups, and other interested bodies." Underlying this charge is the observation that, across their lifespans, persons with special health care needs (PSHCN) suffer from profound disparities in access to dental care compared to their healthier and frequently wealthier peers.

In recent years, the AAPD has gained considerable experience addressing disparities related to age and income. Examples include:

1. institutionalizing early dental care;
2. securing state governmental insurance mandates for general anesthesia for dental treatment of young children, including dental benefits in SCHIP; and
3. reforming Medicaid programs.

PSHCN, however, suffer from the same or worse disparities as do young children, but for different reasons. The disparities they experience are compounded by:

1. their personal capacities, dependencies, and complexities;
2. social stigma;
3. deficiencies in professional training and dentists' willingness to care for them;
4. inadequate public support and financing; and
5. limited numbers of facilities able to address their dental treatment needs.

Deficiencies in access to dental treatment for vulnerable populations have been well explored by the Health Resources and Services Administration's (HRSA) 2001 Conference on Dental Care Considerations for Disadvantaged and Special Care Populations. Commonalities across young children,[1] adult disabled,[2] and frail elderly[3] relate overwhelmingly to dependency.[4] All 3 populations require the assistance of others:

1. for transportation;
2. to determine when, where, and how dental care is to be obtained; and
3. to benefit from routine oral hygiene and preventive care.

All these groups experience exacerbated oral health problems that correlate with poverty and inadequate dental coverage. All suffer from difficulties finding dentists willing and able to address their needs. The conference concluded that all would benefit from:

1. an expanded cadre of better trained dental professionals;
2. better integration between medical and dental systems, including:
   a. collocation of services and mobile services; and
   b. joint oral health training of medical, nursing, and dental providers;
3. expansion of dental residency programs that attend to these populations;
4. increased availability of interdisciplinary continuing education; and
5. public education that raises awareness about oral health and its relationship to general health.

A 2003 contribution by Casamassimo[5] to the Ameri-

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can Academy of Pediatric Dentistry's Interfaces Conference complements the HRSA report by focusing only on children. Findings for children with special health care needs (CSHCN) are similar to those for: (1) young children; (2) disabled adults; and (3) frail elderly. Roles for dentists, hygienists, dental assistants, primary care physicians, specialty physicians, allied therapists (eg, occupational and rehabilitative therapists), parents, and caregivers are suggested. An integrated system of care is envisioned and described as "accessible, competent, affordable, safe, individualized, compassionate, high quality, and educational."

A 2005 HRSA-commissioned paper on "dental and interdisciplinary workforce approaches to oral health care for vulnerable and special-needs populations"[6] proposes that people made vulnerable by either health or social liabilities face similar disparities in access to dental care. It notes that people who suffer from both health and social liabilities experience the: (1) least access to care; (2) highest levels of treatment difficulty; (3) greatest disease burden; and (4) most intense consequences of poor oral health.

Significant consequences of inaccess to care and poor oral health cited in that report include: (1) interference with oral function; (2) exacerbation of other diseases; (3) a limitation in employment opportunities and job performance; and (4) negative impact on self-image and self-esteem. In common with other reviews on dental access for vulnerable populations, this work also substantiates the:

1. inadequacy of dentists' training;
2. paucity of programs dedicated to advanced training;
3. resultant inadequacy of practitioners willing to care for PSHCN;
4. lack of interdisciplinary training and system coordination;
5. cultural incompetency; and
6. inadequate financing of care for vulnerable groups.

Rather than repeat the evidence for these well documented limitations, this paper aims to provide a framework for understanding system capacity in the care of PSHCN by first describing the overall context within which dental care is provided in the United States and then exploring a series of concepts that help explain the current lack of access. Finally, this paper explores opportunities for advancing solutions that have already been well articulated by others.

Dental care for PSHCN in context

The recent AAPD symposium focused tightly on oral health care. This is the critical service delivery component of the larger health care system that is required to ensure that PSHCN receive appropriate dental treatment. Yet, our capacity to provide dental care for PSHCN is largely governed by forces beyond the dental care system itself. Capacity is impacted by:

1. the larger US health care system that is constantly struggling to become better organized, integrated, managed, and financially efficient;
2. workforce capacity, competency, and composition that, in turn, depend on medical, dental, and paraprofessional education systems;
3. financing sources and mechanisms that depend upon public, private, and philanthropic programs;
4. the availability and suitability of dental care facilities that depend upon both private and public sector resources and policies;
5. care content and quality that is largely regulated by individual dental practitioners based on their interests, skills, and perceived professional roles;
6. coordination between medical, dental, nursing, and social work systems; and
7. inattention to PSHCN in public policy discourse on health care because this subpopulation is small, expensive, exceptional, and difficult to address compared with competing interests.

For those whose special needs are significant, an additional ring of systems beyond medical and dental care systems plays into the availability and utilization of dental services. In his contribution to this symposium, Balzer notes that these include: (1) social services systems; (2) parent empowerment systems; (3) public health systems; (4) disability rights systems; and (5) education systems. This complexity of systems reflects the complexity of lives led by many of the people addressed by this symposium.

Underlying constraints in the US dental care system

The complexity of inter-related systems confronting PSHCN is exacerbated by negative underlying trends in the availability of dental care for all. The dentist-to-population ratio is declining[7] and rural and inner city locations continue to lose practitioners. Vulnerable and dependent populations are increasingly crowded out of existing dental treatment sites. The "safety net" dental system, comprised of community health centers and dental educational institutions, remains: (1) small; (2) underfunded; and (3) poorly staffed. The private dental insurance market is getting squeezed by the ever-expanding cost of medical coverage in employee benefits. Medicaid dental programs are moving toward commercial-style "alternative benefits" that mimic commercial medical plan benefits with little dental coverage. States continue to drop optional adult dental coverage—leaving poor adults, including many with disabilities, without dental insurance. And the significant growth of cosmetic dentistry siphons off core therapeutic capacity from the private delivery system.

Some observers further suggest that the culture of dentistry is shifting subtly but profoundly away from its focus

on core health services and toward a strong community orientation to a "boutique" image that focuses on elective care for the affluent. Indeed, the American Dental Association has characterized "effective demand" for dental care as the demand for care only by those who have both the ability and willingness to purchase dental services. This definition fails to respond to the underlying oral health needs of people, including those with special needs, who suffer disproportionately from oral diseases but lack the personal resources to readily obtain care.

Recognized barriers to dental care for special-needs adults and children

Specific to adults with disabilities, Stiefel[2] lists the following "impediments to maintaining and improving oral health":

1. financial barriers:
   a. the inability to pay for care;
   b. lack of dental insurance; and
   c. limited dental coverage for adults by Medicaid and Medicare.
2. lack of trained personnel:
   a. insufficient numbers of dental professionals with skills or advanced training;
   b. lack of training of other health professionals regard ing oral health; and
   c. inadequate training of caregivers including family, nurses aides, and personal attendants;
3. a lack of support for training:
   a. declining use of well established guidelines for teach ing care of PSHCN;
   b. inadequate curricular time commitment by dental schools;
   c. paucity of advanced training opportunities; and
   d. eroding state and federal funding support for training.
4. a lack of recognition of the importance of oral health:
   a. the need for nondental staff and administrators of institutions—including nurses, social workers, physical and occupational therapists, and rehabilita tion specialists—to understand the consequences of poor oral health and the need for maintenance and professional care;
   b. "neglect" by policymakers;
   c. excessively narrow definitions of "medically neces sary care" regarding dental care; and
   d. discrimination against dental providers in medical systems;
5. difficulties in physical access:
   a. availability of accessible transportation;
   b. distance to qualified dental providers;
   c. personnel and financial costs of special transport; and
   d. accessibility within facilities.

Steifel summarizes the current situation for disabled adults as having reached "critical levels" and as a "national dilemma" requiring: (1) investment in integrated health care delivery systems; (2) expansion of regional centers and institution-based care; (3) promotion of interdisciplinary training; and (4) increased publicly funded financial support.

Casamassimo's exploration of barriers for CSHCN5 summarized limitations under 3 categories:

1. problems related to providers—the longstanding lack of preparedness by dentists that reflects:
   a. a lack of faculty;
   b. a lack of training; and
   c. competing educational needs;
2. problems related to the children themselves:
   a. communication, mobility, psychosocial, and medical liabilities; and
   b. medical technology and caregiver dependence; and
3. problems related to health care systems:
   a. lack of "locus of responsibility" and management capacity;
   b. paucity of care-coordination and case-management; and
   c. limited quality-oversight and accountability systems.

Casamassimo promotes 5 specific goals to improve the dental care system on behalf of CSHCN:

1. Make it easier for consumers to negotiate within the dental delivery system.
2. Make care comprehensive in nature.
3. Ensure family satisfaction with quality.
4. Ensure that the system is sufficiently funded.
5. Provide pediatric care that is easily transitioned to adult care.

These suggestions mirror many of the global goals advanced by the Maternal and Child Health Bureau for the care of CSHCN. Although couched as child-specific goals, they apply equally well to people across the lifespan:

1. Families of CHSCN will partner in decision making at all levels and will be satisfied with services received.
2. All CSHCN will receive coordinated, ongoing, comprehensive care within a medical home.
3. All families of CSHCN will have adequate private and/or public insurance to pay for the services they need.
4. All CSHCN will be screened early and continuously for problems related to special needs.
5. Community services will be organized so that families can use them easily.
6. All youth with special needs will make transitions to aspects of adult life, including adult health care.

Theoretical frameworks to understand oral health and dental care for PSHCN

Factors that explain both oral disease and the use of dental services have been the subject of increasingly sophisticated epidemiologic and health services research. For many years,

both health status and the use of health care were explained at the level of the individual by employing psychosocial theories such as the: (1) health belief model; (2) stages of change model; and (3) theory of reasoned action.[8] Increasingly, however, health and health care are understood as resulting from an interaction of personal determinants with larger family, community, and society-level determinants.[9]

Two new investigative methods of particular relevance to PSHCN are: (1) life course analysis; and (2) social determinants of health and health care. The life course approach suggests that conditions during childhood strongly influence adult health status and utilization of health services. This approach not only considers an individual's experience with health care, but also the myriad of additional factors influencing health, including:

1. heredity;
2. the physical environment;
3. personal health capacities and behaviors; and
4. the underlying social conditions in which each of these factors plays out.[10]

Taken together, the factors that make a person—particularly a PSHCN—unique play out across the lifespan. Effective dental care for PSHCN must recognize the importance of these interacting forces if it is to be: (1) patient sensitive; (2) acceptable; and (3) effective in improving oral health.

Like other aspects of health, oral health is increasingly understood as the cumulative result of "complex causal pathways between social structure and health via interlinking material, psychosocial, and behavioral pathways."[11] By examining a birth cohort over a 21-year period, the Longitudinal Study of New Zealand Children and Families begun in 1972 has demonstrated quantitatively that "adult oral health is predicted by not only childhood socioeconomic advantage or disadvantage, but also by oral health in childhood."[12] Models that explain disparities in oral health status and the use of dental services similarly consider multiple levels of influence. These levels include "macro, community, interpersonal, and individual considerations."[13] PSHCN are more likely to manifest liabilities at each of these levels. At the macro level, PSCHN are impacted more than others by such factors as:

1. the lack of political support for oral health services; and
2. an inadequate numbers of dentists.

At the community level, they are more impacted by the: (1) location of services; (2) professional norms about their care; and (3) social stigma. At the interpersonal level, they depend more on the quality of the relationship with their health care providers. At the individual level, their disabilities may affect their capacity to carry out routine oral health behaviors.

In summary, enhancing the capacity of the dental care system to provide services to PSHCN will benefit most from a holistic approach that considers the range of influences on a person's oral health and use of dental services. Simply considering what goes on within the confines of an operatory fails to recognize the breadth and depth of constraints experienced by PSHCN as they seek dental services that meet their individual needs.

Access vs utilization for PSHCN

The symposium's title, Lifetime Oral Health Care for Patients With Special Needs, elects to characterize those with special health care needs as "patients," thereby assuming that they are people who access and utilize dental care. Many PSHCN, however, do not interact with the dental system at all—either because they are unable to obtain care or by choice. These individuals retain their special status and their attendant dental needs but cannot be characterized as "patients" unless they obtain care.

"Access"—the ability to obtain care—is particularly constrained for those with special needs because of: (1) provider unavailability or unwillingness; (2) facility barriers; or (3) finance or insurance coverage insufficiencies. Those who do have access to a dental provider may still elect not to:

1. utilize care; or
2. utilize care to the extent recommended by their dentist.

Failures of utilization may reflect the patient's perceived competing: (1) interests; (2) needs; (3) opportunities; and (4) priorities. It may also reflect their perception of care quality when they do obtain treatment.

Primary dental care for PSHCN

Like all individuals, PSHCN first require primary dental care services that address their basic oral health needs. These include a thorough oral examination and assessment, provision of preventive and restorative services, and ongoing maintenance care. For many if not most PSHCN, dental needs are no different than for people without disabilities. What makes their care demanding on the clinician, and frequently on the patient, are other attributes that affect:

1. acceptance of dental treatment, including:
   a. mobility;
   b. comprehension;
   c. communication;
   d. tolerance; or
   e. cooperation;
2. response to and ability to receive treatment, including:
   a. the need for antibiotics because of immunosup pression or adjustment of medications to prevent drug interactions; or
   b. unfavorable tissue response such as bleeding;
3. risk for disease, including:
   a. xerostomia; or
   b. inability to perform personal oral hygiene; or
4. intraoral complications, including:

a. a limited opening;
b. lingual interference;
c. deficient swallowing reflex; or
d. other impediments to visualization and operative access.

Primary care has been defined expansively and appropriately for PSHCN by the Institute of Medicine (IOM) as "the provision of integrated, accessible health care services by clinicians who are accountable for addressing a large majority of personal health care needs, developing a sustained partnership with patients, and practicing in the context of family and community."[14]

This definition reflects the multilevel understanding of health care derived from social determinants of health. It recognizes that the patient exists within the contexts of family and community and that the clinician exists within the contexts of a delivery "team" and a "delivery system".

"Integrated care" is further defined as being:

1. comprehensive in relation to the patient's stage in the life cycle;
2. synergistic with other services and health determinants in the family and community; and
3. continuous in terms of both a consistent clinician and consistent attention to risks, advice, and patient preferences.

"Accessible" is also broadly defined and extends to considerations of: (1) geography; (2) administrative barriers; (3) financing; (4) culture; and (5) language.

"Accountability" extends to: (1) quality of care; (2) patient satisfaction; (3) efficient use of resources; and (4) ethical behavior by the clinician.

"Addressing a large majority of personal health care needs" includes:

1. provision of primary services; and
2. coordination across specialty and subspecialty care.

"Personal health care needs" extend to physical, mental, emotional, and social concerns.

"Sustained partnership" refers to a patient-clinician dyad characterized by mutual trust, respect, and responsibility.

"Context of family and community" requires that the clinician understand the patient's living conditions, family and caregiver dynamics, and cultural background.

This very broad approach to primary care is particularly well suited to dental care for PSHCN, as it fully recognizes the multiple spheres that influence care for people with complex lives. It also requires that the dentist be as aware of nonclinical aspects of treatment as clinical considerations. The IOM particularly stresses the centrality of patient satisfaction — a consideration of special import for PSHCN. Referencing the "art of care," the IOM calls upon clinicians to be: (1) responsive to patients' needs; (2) able to elicit information about patient preferences; and (3) caring in their attitude. While this advice is appropriate for all patients, it has special resonance for: (1) PSHCN; (2) their families; and (3) their caretakers.

Quality of dental care for PSHCN

Among the attributes of primary care, perhaps the one of greatest import for dental care of PSHCN is quality. Domains of quality have been defined by the federal Agency for Healthcare Quality to include:

1. Effectiveness: "Providing care processes and achieving outcomes as supported by scientific evidence." The field of special care dentistry would benefit directly from an expanded evidence base. To date, objective evidence is sparse regarding:
   a. best practices for patient management;
   b. medical-dental care integration;
   c. care coordination;
   d. case management for dental care;
   e. professional and lay health worker education; and
   f. other key components of care.
2. Efficiency: "Maximizing the quality of a comparable unit of health care delivered or unit of health benefit achieved for a given unit of health care resources used." More needs to be known about the true workforce, facilities, and care financing costs of an effective system of dental care for PSHCN before efficiency can be measured. Because care for PSHCN is resource intensive and demand for services is likely to outstrip dental system capacity for the foreseeable future, the most efficient and best use of resources will continue to be a central element of quality care for PSHCN.
3. Timeliness: "Obtaining needed care while minimizing delays." Any limitations in access, whether caused by logistical barriers, availability of appropriately trained and willing providers, or patient choices negatively impacts timeliness. Since caries, periodontal disease, and oral cancer are all progressive diseases that exacerbate over time, any delay in care leads to greater treatment needs and less satisfactory outcomes.
4. Safety: "Reduction of actual or potential bodily harm." Safety is often a particular concern for PSHCN, especially if control over bodily movement is impaired since dental instrumentation always holds the potential for harm.
5. Patient centeredness: "Meeting patients' needs and preferences and providing education and support." Patient centeredness is the core message of the IOM's definition of primary care and its foundation in social determinants of health. Regardless of diagnosis or classification, each PSHCN is unique and each presents particular challenges to the dental delivery system. Without a thorough accounting of patient centeredness, care is likely to be less

than satisfactory in its outcome and unsatisfying for the patient and provider.

6. Equity: "Providing health care of equal quality to those who may differ in personal characteristics other than their clinical condition or preference for care." Equity is the central issue in developing a competent system of dental care for PSHCN as it is the answer to disparities. The definition provides wiggle room regarding providing equal care to a disabled person compared to a fully abled person and it gives ample room for the patients' preferences. Nonetheless, the overarching goal of care should be to provide the best possible service to each individual within the constraints determined by their particular condition.

The Institute for Health care Improvement (IHI) promotes a 2-part model for quality improvement that allows providers to isolate and address individual components of care.[15] The first part of the model requires that a treatment team:

1. set clear, measurable, and time-framed improvement aims;
2. establish quantitative measures to determine whether improved outcomes actually occur; and
3. select a specific change that is expected to result in improvement.

Once that change is identified, the second part of the model calls for a cyclical process of "plan, do, study, act," through which a change is predicted, executed, analyzed, and modified before being repeated until the desired outcome is achieved.

This model may hold strong promise for incremental improvements in the dental care of PSHCN. For example, a change-effort could seek to improve graduating dental students' self-perceived competency in treating PSHCN. Such an effort might start with the baseline finding from the annual American Dental Education Association (ADEA) senior survey that 35% of graduating students report that they are "not well prepared" or "less than prepared" to care for disabled adults.[16] A goal could be established to decrease the percent of graduates who feel unprepared to treat disabled adults to 10% over 5 years, as reported by the ADEA survey. Prior evidence suggests that hands-on experience enhances dentists' sense of competency and willingness to care for PSHCN.[17]

Therefore, a specific change that can be expected to result in improvement could be that each student has a hands-on experience interacting with at least 5 PSHCN during their senior year. This could be accomplished through outreach by the dental school to facilities and programs that provide care for PSCHN, such as: (1) schools or clinics for CSHCN; (2) long-term care facilities; or (3) hospitals and establishing meaningful rotations for students. Once an approach is defined, the "plan, do, study, act" cycle is initiated through repeated refinements in the program until students report enhanced comfort caring for PSHCN.

Explaining dentists' unwillingness to care for PSHCN

The theory of planned behavior[18] provides a psychosocial model that can help explain dentists' widely recognized unwillingness to care for PSCHN and thereby identify potential improvements in dentists' behaviors. The model, as modified by Sadowsky and Kunzel in their studies of dentists' willingness to treat people with HIV/AIDS,[19] considers interactions between 5 factors in determining dentists' intention to treat and recognizes that additional factors act between intention and action. The 5 factors are:

1. Dentists' attitudes toward the person with special needs: This factor reflects social stigma, personal comfort/discomfort, valuation for another person, and similar attitudes about PSHCN.
2. Professional identity: This factor reflects the dentist's self perception of what is required to be a professional or expected of his professional behavior. It extends to perceptions about the profession of dentistry itself.
3. Behavioral control: This factor relates to a dentist's sense of personal competency, skill, knowledge, and experience in carrying out the act of treating PSCHN.
4. Attitudes regarding the action: This factor taps a dentist's sense of the value of:
    a. providing care to PSHCN; and
    b. care to the patient and patient's family.
5. Subjective norms: This powerful factor addresses dentists' perceptions about how "significant others" will regard him or her for taking the action. Significant others include staff, other patients, other dental and medical providers in the community, their own family, and the caretakers and families of PSCHN.

This explanatory model of dentists' behaviors suggests a number of potential interventions that can potentially increase the number of dentists available to PSCHN. Since personal attitudes toward vulnerable people are well formed prior to dental school admission and not readily amenable by education, a proactive effort may be needed to identify and preferentially admit students who demonstrate appropriate sensitivities and personal values. Interaction between dentists, caregivers, and families of PSCHN can possibly improve dentists' attitude toward the value of the dental service itself. Social promotion and social reward by dental associations, special care advocates, and others who are widely respected by the practitioner hold the promise to modify subjective norms and address issues of professional identity. Behavioral control can be readily enhanced through:

1. hands-on training, shared-care experiences and access to support from an experienced practitioner; and
2. experiential continuing education.

The (dis)integrated delivery system at the medical-dental interface

Because of the historical separation between medicine and dentistry in the United States, the dental delivery system is typically regarded as though it were independent of the medical delivery system. Indeed, the 2 health care systems feature: (1) separate educational and licensing authorities; (2) different insurance mechanisms (except for Medicaid); and (3) distinct professional organizations. Within the context of the larger medical system, dentistry can be appropriately considered a specialty service. Within the dental delivery system, however, it is considered an independent primary care entity. For most patients, this distinction is insignificant because they access the 2 systems independently. For PSCHN whose overall health care involves intensive and ongoing medical supervision and requires coordination between medical and dental care, however, the disintegration of dentistry within the medical care system presents a series of logistic challenges.

Over recent years, payers and management organizations (ranging from closed panel managed care organizations to open administrative service organizations) have become central components of integrated delivery systems in medicine but not in dentistry. This evolution has further separated medical and dental practitioners who care for the same patient. As a result, the most efficient but least common arrangements of care for PSHCN are those that are collocated within a single institution that has unified financing, credentialing, and facility arrangements across both medicine and dentistry—typically a hospital or regional care center.

Case management, also referred to as care coordination, is an essential function that can help bridge the medical and dental systems while also bringing in social work, family assistance, translation, transportation, and other attendant services that are needed to facilitate care for PSHCN. These support services are more commonly integrated within medical care than dental care systems. This situation further supports the notion that dental care for the most disabled should be collocated within organizations that already competently address case management responsibilities.

Constraints and opportunities for advancing solutions

This review reveals that there is no lack of ideas about what needs to be done to improve access to care for PSHCN. Recurrent suggestions are:

1. improve dentist supply and competencies;
2. establish sufficient funding streams (particularly through Medicaid); and
3. integrate medical and dental service delivery through:
   a. collocation;
   b. cotraining; and/or
   c. mobile facilities.

Each of these global "fixes" requires allocation of resources that are typically the responsibility of public or professional association policymakers. This is particularly true in the case of PSHCN because they are, of necessity, attended to by the government—whose role is to address the needs of society's most vulnerable citizens.

Garnering sufficient attention, priority, and support from policymakers to effectively address recognized national problems of workforce adequacy, insurance coverage, care coordination, and facility constraints for PSHCN is challenging. This is because these interrelated issues have too many inherent complexities and costs. Rather, success in improving dental care systems for PSHCN will benefit most from a series of carefully targeted, focused, incremental efforts that can be realistically accomplished and are replicable across states. The AAPD's remarkable success in obtaining state legislation that assures inclusion of a general anesthesia benefits in private insurance for young children requiring dental care in the operating room serves as an excellent example of such an effort. Similar campaigns can be applied to improving dental care for PSHCN within the domains of workforce, financing, and facilities and networks. Each specific campaign would benefit from applying the Institute for Health care Improvement approach of setting aims, establishing measures, selecting changes, and testing changes until an approach to each "fix" is well established and replicable. The AAPD could partner at the national level with other interests in dentistry—particularly Special Care Dentistry, the Special Olympics, and the Association of State and Territorial Dental Directors—to articulate and prioritize such aims and pursue the change management approach that could be handed off to state affiliates.

Examples of targeted, focused, replicable workforce improvements that address current system deficiencies include:

1. training the trainers—establishing an intensive certification program for dental school faculty in the teaching of care for PSHCN;
2. best practices in education—engaging communities of interest within each state that has a dental school to work with dental educators to replicate and institutionalize successful dental educational programs on the care of PSHCN at the predoctoral or postdoctoral levels;
3. accreditation standards—working with the ADA Council on Dental Education to markedly strengthen the competency requirements for predoctoral and Advanced Education in General Dentistry (AEGD) training in the care of PSHCN by developing required measurable performance indicators;
4. pay for performance—engaging state Medicaid authorities in establishing incentive payments for centers of excellence that include training of dental and/or inter

disciplinary professionals and demonstrate success in addressing the treatment needs of PSHCN.

Potential approaches to targeted improvements in financing of care could include:

1. Special needs adult dental coverage in Medicaid: Engage state legislators and Medicaid authorities in electively providing comprehensive adult dental benefits for PSHCN so they don't age out of coverage at 21 when mandatory dental benefits cease.
2. A general anesthesia insurance mandate for PSHCN: Utilize the same approach that has been successful in obtaining anesthesia benefits for young children and extend coverage to older patients who also require anesthesia services.
3. Enhanced payment for the care of PSHCN: Engage state Medicaid authorities in providing a meaningful add-on payment for the care of PSHCN who require significant additional treatment time to perform dental treatment.
4. Pay for performance: Engage state Medicaid authorities in developing enhanced fee levels for practitioners who receive special training in care for PSHCN (analogous to Washington State's ABCD training program in Medicaid) or who provide threshold levels of care to PSHCN (analogous to Utah's dental provider incentive program).

Approaches to improving facilities and networks for care of those PSHCN whose treatment is most complex could include:

1. Establishment of regional treatment and training centers: Engage federal legislators in authorizing and funding a program that would establish regional dental treatment centers within integrated medical care systems in each state.
2. State grants for infrastructure development: Engage state legislators and/or public health agencies in authorizing and funding a program that would incentivize health plans, hospitals, dental schools, or health centers to capitalize facility modifications to accommodate people with special physical access needs through bonding, low-interest loans, or grants.
3. Best practice promotion: Identify and replicate local examples of integrated care coordination between medical and dental services through local medical and dental provider associations, hospitals, Area Health Education Centers, and/or community health centers in collaboration with local advocacy groups. Additionally, develop social rewards to acknowledge participating dentists.

To ease implementation, these could require matching funds from states, foundations, health plans, hospitals, professional associations, or other interested parties.

While many other similar ideas can be proposed, the central elements of moving forward are:

1. establishing a small but identifiable success and building upon it to generate momentum and commitment and to combat frustration and entropy;
2. assure that whatever small effort is identified is done well and is sustainable;
3. promote and replicate successes widely through state and national organizations including organizations of policymakers; and
4. leverage social rewards and recognition of all who actively participate in promoting achievements on behalf of PSHCN.

Incrementalism, replication, development of best practices, persistence, and social rewards hold the keys to success with both public and private policymakers as well as with dentists, physicians, social service agencies, health plans, and all of the various players who must come together to effectively improve dental care for PSHCN.

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Abstract of Science of Literature

Argon Laser versus Light-Cured Bracket Bonding

Wavelength specificity of the argon laser boosts the physical features of composite resins by achieving a more thorough cure with up to 75% shorter exposure time compared to conventional light-curing units. The present study compared the argon laser (AL) to the conventional curing light (CCL) with respect to bond strengths and debonding characteristics. For the in vivo study, 4 premolars requiring extraction from each of 23 adolescent patients (92 teeth) were randomly assigned to the AL or the CCL group. Shear debonding forces were determined after two weeks with custom designed debonding pliers. Shear bond strengths were measured in vitro by using four extracted premolars from each of 25 adolescent patients (100 teeth) randomly allocated to the AL group or the CCL group. Bond strength measurements were determined after two-week thermal cycling with the same procedure as the in vivo study. Assessment of the adhesive remnant index (ARI) score was reported. No statistically significant differences were found in bond strengths according to curing method, dental arch, or sex. In vivo results were significantly lower (P <.05) than ex-vivothe in vitro results. A significant (P <.05) difference in ARI scores between the curing methods was determined; no significant correlation between mean bond strengths and ARI scores was determined. The authors concluded that the bond strengths for either curing methods are comparable and sufficient for clinical applications. Both groups produced the same minimal amount of enamel surface fractures. ***Comments:*** *Decreased curing time for bonding orthodontic attachments is an important element of clinical success. Based on shear bond strength, the 10-second cure using argon laser is comparable to conventional curing devices and may be clinically acceptable.* ***RKY***

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Hildebrand NKS, Raboud DW, Heo G, Nelson AE, Major PW. Argon laser vs visible light-cured orthodontic bracket bonding: in-vivo and in-vitro study. Am J Orthod Dentofacial Orthop 2007;131:530-6.
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