

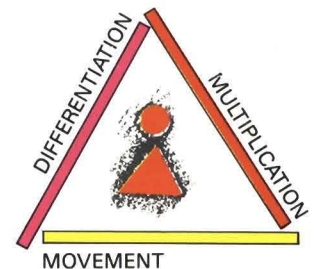
JOURNAL OF DENTISTRY FOR CHILDREN

The growth and development of a child from conception to adolescence represent one of the greatest of nature's achievements, well conceived but poorly understood. There are countless opportunities for nurturing the seemingly computer-fast growth processes—and for abusing them. But there is no turning back: The event is now; the trigger for nurture must be pulled now; the trigger for abuse must be locked now.

Preparing for
a
Healthy Life

LOVE IS THE BASIC INGREDIENT
OF DISCIPLINE

—Benjamin Spock



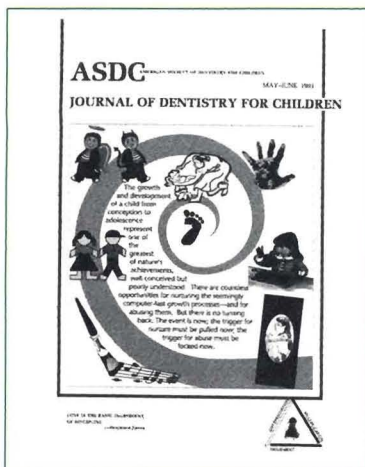
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For the child there is no turning back. For him the present is of greatest importance. Cover art and design by Sharlene Nowak-Stellmach.

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For the busy reader

Dental management considerations in children with obsessive-compulsive disorder—page 217

The most frequently encountered obsession is concern with dirt and germs. Compulsions are repetitive behaviors that are performed according to certain rules or in a stereotyped fashion. In children, the rituals often involve "cleaning" or "checking". Excessive or ritualized handwashing, showering, or grooming is the typical response to a grossly exaggerated fear of contamination. However, they may be inconsistent in other areas of grooming—too preoccupied or disinterested to brush their teeth.

Requests for reprints should be directed to Dr. Arthur H. Friedlander, Hospital Dental Service, UCLA Medical Center, Los Angeles, CA 90024.

Strategies used by dentists in Victoria, Australia, to manage children with anxiety or behavior problems—page 223

Three main experimental hypotheses were proposed in this study. First, that members of the Australian Society of Dentistry for Children (AusSDC) would more frequently perform all forms of management strategy than did dentists in general practice. Secondly, that the younger generation of dentists would more frequently perform behavior-management strategies; and thirdly, that there would be no difference between the strategies used by male and female dentists.

Requests for reprints should be directed to Dr. F.A.C. Wright, Section of Preventive and Community Dentistry, School of Dental Science, The University of Melbourne, 711 Elizabeth Street, Melbourne, 3000, Victoria, Australia.

Age and sex predilection of unmanageable Hispanic pediatric dental patients—page 229

It has been estimated that 10 percent of children in dental treatment are unmanageable using standard behavior techniques. It is imperative that their attention

be obtained and communication established. A total of 516 Hispanic children, ranging in age from three to fourteen years old, were selected for this study. Twenty-two patients (4.3 percent), three to six years old, proved to be unmanageable using tell-show-and-do, positive reinforcement, or voice-control techniques.

Requests for reprints should be directed to Dr. Robert Steelman, Assistant Professor of Pediatric Dentistry, West Virginia University Health Sciences Center, Morgantown, West Virginia 26506.

Parental perceptions of the effects of maxillary incisor extractions in children with nursing caries—page 233

A questionnaire was mailed to the parents of 132 children with nursing caries who had their four maxillary incisors extracted. Out of the fifty-two parents who responded, forty-five chose descriptive terms that indicated their child's behavior was normal after the extractions. The majority (82.7 percent) said their children had no problems making social contacts after the extractions. A majority of the children had no difficulty speaking or learning to speak without the incisors.

Requests for reprints should be directed to Dr. Lorne D. Koroluk, Dental Clinic Building, University of Saskatchewan, Saskatoon, Saskatchewan, Canada S7N 0W0.

Almost eleven million special children—page 237

About 2.5 million children have had a delay in their growth or development; 3.4 million children between the ages of three and seventeen have had learning disabilities; and 7 million more have had significant emotional or behavioral problems. In addition, half a million children aged two or younger have had developmental delays. These eleven million children are not distributed uniformly throughout the population.

Requests for reprints should be directed to Dr. H. Barry Waldman, Professor and Chairman, Department of Dental Health, School of Dental Medicine, State

University of New York at Stony Brook, Stony Brook, NY 11794-8715.

Respite care: a new social program for children at risk—page 241

Children who are at risk of abuse or neglect include those who are mentally retarded, behaviorally disturbed, physically disabled, or chronically or terminally ill. Almost 2.2 million children were reported as victims of abuse and neglect in 1988. Respite care seeks to support the family under stress by offering a break for parents and a safe place for the child for a short period of time.

Requests for reprints should be directed to Dr. H. Barry Waldman.

Changing environment for the care of children—page 244

There are more than seven million households headed by single parents with children younger than eighteen years old. Many children spend time in a care arrangement or are considered latchkey children. Dental practitioners need to become more aware of the currently evolving pattern of child supervision, especially in terms of home-care follow-up for children. There have been many changes in health insurance and medical care, and changes in scope of populations receiving care.

Requests for reprints should be directed to Dr. H. Barry Waldman.

High frequency jet ventilation in complete oral rehabilitation—page 248

High frequency jet ventilation (HFJV) has been defined as ventilation using small tidal volumes delivered through a small cannula at a respiratory rate at least four times the natural breathing frequency of the sub-

ject being treated. This study evaluates its applicability to complete oral rehabilitation in seventeen pediatric patients and defines possible indications.

Requests for reprints should be directed to Dr. Mamoun M. Nazif, One Children's Place, 3705 Fifth Avenue at DeSoto Street, Pittsburgh, PA 15213.

The effects of feeding methods on the growth of the jaws in infants—page 253

Sucking encourages normal development of the alveolar processes and adjoining structures; and breast-feeding, correct intermaxillary relationships. A study of 214 children showed that there were no statistically significant relationships between the prevalence of overjet and overbite and the way the child was fed. Numerous factors influence malocclusion.

Requests for reprints should be directed to Dr. Dr. Mario Legović, Associate Professor, Department of Orthodontics, School of Dentistry, University of Rijeka, Mate Balote 4, 51140 Porec, Yugoslavia.

Short root anomaly in a patient with a history of Stevens-Johnson syndrome: report of case—page 256

Stevens-Johnson syndrome is a serious, life-threatening variant of a fairly common disease called erythema multiform. It may be seen as mucosal, ocular, and cutaneous lesions, with or without systemic complications, such as gastrointestinal tract lesions, nephritis, cardiac arrhythmia and pericarditis. There have also been dental findings reported. The clinical findings in this case were consistent with the disorder.

Requests for reprints should be directed to Dr. John B. Thornton, University of Alabama at Birmingham, School of Dentistry, Box 89, UAB Station, Birmingham, AL 35294.

Dental management considerations in children with obsessive-compulsive disorder

Behavior

Arthur H. Friedlander, DDS
Spencer Eth, MD

Obsessive-compulsive disorder (OCD) is a psychiatric syndrome characterized by obsessive thoughts and/or compulsive actions that cause distress and impair social interactions and performance.¹ It is a relatively common psychiatric condition among young children and adolescents.^{2,3} Dental morbidity is often seen in association with this disorder and undiagnosed individuals may initially seek treatment from a pediatric dentist. Dentists must be familiar with the signs and symptoms of OCD in order to effect a prompt referral for definitive diagnosis and treatment. They must also be familiar with the necessary modifications in the dental treatment of these patients, if treatment is required.

OBSESSIVE-COMPULSIVE DISORDER

Obsessions are unwanted, recurrent, and persistent ideas, images and impulses that invade consciousness, and cause great anguish. They are recognized as self-generated, irrational, and not reflective of true feel-

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Dr. Eth is Assistant Professor in Residence, Department of Psychiatry and Biobehavioral Sciences, School of Medicine, University of California, Los Angeles, and Clinical Associate Professor of Psychiatry, University of Southern California School of Medicine, Los Angeles, California; Associate Chief of Psychiatry, Veterans Affairs Medical Center, West Los Angeles, CA.

ings; but the individual is unable to suppress them. The fear of something terrible happening (e.g. fire, family death or illness) and a need for symmetry and precision are often noted; but the most frequently encountered obsession is concern with dirt and germs.⁴

Compulsions are repetitive behaviors that are performed according to certain rules or in a stereotyped fashion. Typically, a child will perform the rituals a consistent number of times and in an invariable sequence. Children usually recognize that the behavior is being performed in response to an obsession, and that it is unreasonable and unnecessary, but their attempts to avoid performing the ritual produce mounting anxiety. This increased anxiety is often responsible for forcing the child to yield to the ritual. Two of the most common types of compulsive activity are "cleaning" and "checking". Excessive or ritualized hand-washing, showering, or grooming is the typical response to a grossly exaggerated fear of contamination. The compulsive act of checking and rechecking of door and window locks, light switches, electric sockets, and faucets is explained by most children as resulting from their fear that these items have the potential to cause harm.

A gradual progression of symptoms is often noted in youngsters. The initial symptom of counting in childhood may progress to washing rituals in adolescence and to obsessive thoughts in early adulthood.⁵ The rituals frequently become intricate and time consuming, making even simple tasks of daily living difficult or impossible to complete. Recognizing the senselessness of these activities and embarrassed by their behavior, these children go to great lengths to hide them. They simulate normalcy as long as they can by limiting their rituals to private hours and avoiding intimate social situations in which their compulsions might be discovered.⁴

The marked distress caused by the obsessions or compulsions frequently results in anxiety, anger, and hostility. It may severely disable the child by interfering with family life, friendships, and school activities.

Obsessions and compulsions must be differentiated from the normal pattern of development, which often includes ritualized behavior during stressful situations, such as bedtime and separations from loved ones. These normal behaviors assist the prepubertal child in mastering anxiety, enhancing socialization, and furthering development; and rarely cause emotional distress, isolation, or incapacitation.⁷

Longitudinal studies have demonstrated that the disorder tends to be chronic and episodic in nature, leaving many patients with disabling symptoms their entire lives.^{8,9} Follow-up studies of youngsters with OCD have noted pronounced social and personal impairment, affecting job performance, and the capacity to form stable interpersonal relationships.¹⁰

Most children (75 percent) with OCD are afflicted with one or more other psychiatric disorders. Depression, anxiety disorder, and conduct disorder are the most common co-morbidities. Depression or anxiety may predate the onset of OCD, or these disorders may develop as a reaction to the symptoms of OCD. Behavioral problems that are entirely independent of confrontations over rituals frequently predate the development of OCD.¹¹ Substance abuse, dysthymia, bulimia, phobic disorder and panic attacks are also seen in association with OCD.

EPIDEMIOLOGY

OCD was once thought to be rare, possibly because of patient concealment, but new data from the National Institute of Mental Health document the lifetime prev-

A powerful compulsion to wash
the hands, but not necessarily
the teeth.

alence to be 2.0 percent to 3.3 percent in the U.S. population.¹² Approximately 30 percent of patients experience onset of the disorder between the ages five and fifteen.¹³ This group of youngsters is predominantly male (66 percent); boys have an earlier onset than girls, by about two years. Boys with the disorder tend to have a flatter growth pattern through adolescence than their cohorts, resulting in their being shorter and lighter in weight, accompanied by a somewhat delayed onset of puberty.¹⁴

ETIOLOGY

The etiology of obsessive-compulsive disorder is unknown. The disease is familial; 25 percent of patients have a first degree relative who is also afflicted with the disorder.¹⁵ Genetic studies suggest that the disease may be transmitted by an autosomal dominant gene.¹⁶ There are intriguing similarities between OCD and Tourette's syndrome (TS), a neuropsychiatric disease that is primarily a movement disorder. The initial appearance of both disorders is often in childhood or early adulthood and may involve the presence of chronic facial tics. Further, there is the common appearance of scatologic cognitive material; in TS the child involuntarily shouts obscenities and blasphemies, while in OCD there is a struggle to control the urge to scream them. Genetic studies demonstrate that 25 percent of first-degree relatives of patients with TS may have OCD. More than a quarter of pediatric patients with TS also have obsessive-compulsive symptomatology of such magnitude as to qualify them for a diagnosis of OCD, raising the possibility that the two conditions may be related to the identical autosomal dominant gene.¹⁷

Obsessive-compulsive disorder may arise from a dysfunction of neuronal circuits interconnecting the orbitofrontal cortex, basal ganglia, limbic striatum, and thalamus. Tending to substantiate this hypothesis are the spatial-perceptual deficits noted on neuropsychological tests, involuntary motor movements, and abnormal CT (computerized tomography) and PET (positron emission tomography) scans of the brain.¹⁸⁻²³

Drug response data suggest that the symptoms of OCD are due to a functional deficit of the neurotransmitter serotonin [5-hydroxytryptamine (5-HT)] at receptor sites in selected areas of the brain.²⁴ The most efficacious pharmacotherapeutic agents have been those that increase the levels of 5-HT, and thereby facilitate neuronal signaling across the synaptic cleft.²⁵

PSYCHIATRIC TREATMENT

Behavior therapy has been shown to be effective for some children with OCD. The most successful method involves "exposure" with "response prevention".^{26,27} The patient is repeatedly exposed to the feared object (e.g. "germ-contaminated" door handles) and the ritualistic response is "blocked" (e.g. asking the patient not to wash his hands).²⁸ The treatment may be initially stressful; but with continued exposure, the evoking stimulus gradually loses its ability to cause anxiety and discomfort. By not allowing performance of the anxiety reducing ritual ("blocking"), the element of conditioned reinforcement is eliminated.²⁹ For behavioral therapy to be effective the child must be highly motivated and capable of following directions. Behavior therapists have to work closely with the parents of young children in order to implement this program. Approximately a third of patients become symptom-free after a full course of behavior therapy; but unfortunately the other two-thirds gain only "limited benefit" from the treatment.³⁰

Clomipramine hydrochloride (Anafranil: Ciba-Geigy) is a potent enhancer of serotonin neurotransmission by inhibiting presynaptic reuptake. Controlled clinical trials have demonstrated that this recently approved medication is relatively safe and in 75 percent of children over the age of ten years results in a "moderate" to "marked reduction" in the symptoms of OCD.³¹ This degree of improvement usually translates into major improvements in social and vocational functioning.³² Although clomipramine is classified as a tricyclic antidepressant, its antiobsessional action appears to be independent of its antidepressant effect.³³ Concomitant administration of this medication with behavior therapy augments the patient's compliance with exposure treatments, and further enhances the likelihood of successful management of the disorder. Unfortunately, medication effects are transient if withdrawn, as 65 percent of patients can be expected to relapse.³⁴

DENTAL FINDINGS

Patients with OCD typically display bizarre behavior patterns that involve the orofacial structures. Those having an inordinate fear of contamination and a powerful compulsion to wash their hands may be inconsistent in other areas of grooming. They may be disinterested or otherwise too preoccupied to brush their teeth.³⁵ Others are so intent with oral cleanliness that they practice excessive or ritualized tooth brush-

Inhibition of parasympathetic stimulation of the salivary glands may cause hyposalivation and increase susceptibility to oral diseases.

ing, causing abrasion of the oral mucous membranes and teeth.³⁶

Approximately 20 percent of patients with OCD manifest chronic multiple motor tics. These tics most commonly involve the orofacial region and present as spasmodic grimaces of the facial muscles and involuntary blinking of the eyes.

The psychiatric literature has long noted that patients with ODC may be terrified of body secretions, including saliva. Historically this is manifested in children by continual spitting, but in more recent years this obsession has come to include a fear of AIDS.^{37,38} Some children now feel compelled to "remove the AIDS germs from their mouths" by repeated spitting.³⁹

Clomipramine is a medication with potent anticholinergic properties. It inhibits parasympathetic stimulation of the salivary glands and produces hyposalivation in approximately 65 percent of patients.⁴⁰⁻⁴³ Hyposalivation results in an intensification of periodontal disease and in rapid progression of caries, because of adverse changes in the oral environment. A diminution in the mechanical cleansing action of saliva allows for increased bacterial adherence to teeth and the accumulation of dental plaque at the gingival margins. Inadequately buffered or neutralized acids, produced by increasing numbers of bacteria, promote dental decay.⁴⁴ Clomipramine therapy has also been associated with dysphagia, ulcerative stomatitis, halitosis, pharyngitis, sinusitis and altered taste perception.⁴⁵

DENTAL MANAGEMENT

Patients presenting with obscure dental problems and demanding inappropriate diagnostic and treatment modalities should be afforded a comprehensive evaluation

of the orofacial complex. Appropriate consultations with other dental colleagues should be obtained, and if a somatic abnormality remains unidentifiable, referral to a psychiatrist should be considered.

Dentists treating patients with a known history of OCD should obtain consent to consult with the patient's psychiatrist before beginning dental treatment. Information requested would include the patient's current psychological status and current psychotropic medication regimen. In addition, in this era of malpractice litigation, the dentist must obtain from the psychiatrist an opinion as to the patient's ability to participate in the treatment plan (e.g., perform preventive hygiene procedures).

Preventive dental education for this group of patients and their family members is paramount. They should receive instruction in proper toothbrushing and flossing methods that maximize dental plaque removal. Artificial salivary products are prescribed for all patients with signs or symptoms of xerostomia. Their use appears to make most patients more comfortable and relatively more compliant with proper oral hygiene techniques.

Dental treatment consists of subgingival scaling, root planing and curettage, caries control, and dental restorations. Profound local anesthesia is mandatory in order to perform procedures adequately in these highly anxious patients. Recent research findings have demonstrated that the tricyclic antidepressants (i.e. clomipramine) potentiate the pressor (elevation of mean arterial and central venous pressures) and arrhythmic effects of levonordefrin (Neo-Cobefrin)* and Lev-

*2 percent Carbocaine (mepivacaine) with 1:20,000 Neo-Cobefrin. Cook-Waite Laboratories.

ophed** to potentially dangerous levels, but that the interaction of the tricyclics and epinephrine*** is more modest in magnitude.⁴⁶ Local anesthetics for patients receiving tricyclic medications, therefore, must be limited to those formulations that contain epinephrine as the vasoconstrictor.^{47,48}

Adverse drug interactions between medications used in dentistry and the tricyclics may produce significant morbid reactions. Sedative-hypnotics, barbiturates, and narcotics may have their depressant effects potentiated by tricyclics, and severe respiratory depression may ensue.

At three-month-recall visits, a clinical examination, oral prophylaxis, and application of a fluoride gel with greater than or equal to 10,000 ppm F are performed. Correction of defects in the natural dentition are also performed during these recall visits.

On occasion during a follow-up visit, the dentist will observe marked deterioration of oral hygiene. This is often a sign of a recurrence of the disorder, and on these occasions, the responsible psychiatrist is promptly advised to permit definitive diagnosis and appropriate intervention.

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**Ravocaine (0.4 percent propoxycaine + 2 percent procaine) with 1:30,000 Levophed. Cook-Waite Laboratories.

***2 percent Xylocaine (lidocaine) with 1:100,000 epinephrine. Astra Pharmaceutical Company.

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CONSCIENCE AND COMPULSIVE NEUROSIS

It was not until I'd grown into an adult, had my psychiatric and psychoanalytic training and then had turned around and tried to help parents manage their children that I realized that the heavy moralistic method by which I was controlled was not the best and only way to manage a child.

In the first place, it's not mentally healthy for people to be saddled with such a heavy conscience. Some of them become compulsive neurotics; they may, for instance, spend a great deal of their lives having to wash their hands repeatedly or having to add up a column of figures again and again, in order to do penance for their real or imagined sins.

A more general disturbance occurs in a person who, because of an overbearing conscience, becomes excessively cautious, rigid, or restricted. He is afraid to do anything outside his narrow daily pattern or to let himself feel his emotions or to think any fresh thoughts, out of anxiety that these might get him off the straight and narrow path and lead him into some kind of trouble. These people are pathetic.

Spock, Benjamin: *Dr. Spock on parenting.*
New York: Simon and Schuster, 1988, p 187.

Strategies used by dentists in Victoria, Australia, to manage children with anxiety or behavior problems

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More than a decade ago Chambers highlighted the multitude of behavioral and pharmacologic techniques available to dentists to assist them in the management of child patients with dental treatment.¹ A number of North American surveys have provided an objective measure of the frequency and circumstances under which different management strategies were used by pediatric dentists in certain areas of the USA.²⁻⁵ A similar survey of management strategies of general dentists and community dental officers in Yorkshire, England provides contrasting information on strategies used in a different cultural context.⁶

The study of dentists' management strategies can contribute to resolving issues in three main areas. Firstly, the strategies used by dentists, and the manner of their use, appear to be an important ingredient directly affecting the behavior of children receiving the dental care.⁷ Secondly, information on management practices provide a useful background against which educational needs can be identified, and continuing education programs developed to provide dentists with effective management options for young people with anxiety or behavioral problems. Thirdly, such studies can be used

to formulate causal models of the determinants of dentists' behavioral management choices.⁵

The aim of the present study was to determine the frequency of use of particular behavioral and pharmaceutical techniques used by a sample of dentists registered with the Dental Board of Victoria, and practicing in Victoria, Australia. Three main experimental hypotheses were proposed. Firstly, that members of the Australian Society of Dentistry for Children (AusSDC) would more frequently perform all forms of management strategy than dentists in general practice. Secondly, that the younger generation of dentists, being more exposed to behavioral sciences in their undergraduate curriculum, would more frequently perform behavior management strategies than the older dentists; and thirdly, that there would be no difference between the strategies used by male and female dentists.

METHODS AND MATERIALS

Sampling

The Dentist's Register contained 2130 names of dentists licensed to practice in the State of Victoria.⁸ Sixty-seven names had overseas or interstate addresses. The AusSDC provided a list of sixty-six members, sixty-two of whom practiced within the State in clinical settings. Anticipating a final sample size of 200 general dentists

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and fifty AusSDC members, a random sample of 318 names was drawn from the Dentist's Register. All sixty-two AusSDC members were sampled. If in the selection of a subject from the Dental Register an AusSDC member was drawn, that name was replaced by the next non-AusSDC name on the Register. An information letter, questionnaire and post-paid reply envelope were mailed to the 380 subjects sampled.

If after six weeks a reply to the first questionnaire had not been received, a second mail out and prompt was undertaken. Sampling yielded forty-eight (72.7 percent) AusSDC subjects and 219 (69.7 percent) general dentist subjects with valid and usable information.

Questionnaire

The questionnaire comprised five sections: personal and demographic information; characteristics of the particular practice; training and educational skills in particular techniques; attitudinal factors related to management; and management strategies used by the subject.

Table 1 summarizes the list of strategies presented to subjects. Each was asked to place the appropriate code in the item box beside each of the twenty-two strategies, according to whether they—"never", "rarely", "sometimes", "often", or "very often" used the technique.

Analysis

Data were checked and transferred to a systems file on the University of Melbourne VAX computer. Fre-

quency distributions, one-way analysis of variance testing (for age-groups) and Student's *t* tests (for dichotomous factors) were performed using the SPSSx program.

RESULTS

Ten of the responding AusSDC members had Masters' level training in pediatric dentistry or extensive experience in the area of pediatric dentistry. Of all subjects, 16.5 percent had been in practice for five or fewer years with 63.6 percent having eleven or more years clinical practice experience. Forty-seven (17.6 percent) subjects were female. The six most frequently used strategies (Table 1) (i.e., those cited as being "often" or "very often" used were: "permit child to raise the hand, press a buzzer, etc. to stop treatment, if they are experiencing difficulties" (78.9 percent); "furnish play materials in the waiting area" (71.9 percent); "use behavioral methods such as positive reinforcement and coaxing" (67.6 percent); "model things (Tell-Show-Do) you want the child eventually to do" (59.7 percent); "let child hold toys or mirror during treatment" (51.6 percent); and, "offer the child a toy after appointment" (51.0 percent).

In contrast, the strategies that subjects most frequently claimed they never used were: the use of TV or audiotapes during dental treatment (85.8 percent); film or video modeling (85.4 percent stated they never used this technique); hypnosis (83.1 percent); and the use of Hand- Over-Mouth technique (where 74.2 percent claimed never to use this technique).

Of those subjects who claimed also to "use some

AusSDC members more frequently taught anxious children to relax by breathing in a specific manner than did the general practitioners.

Table 1 □ Management strategies and their frequency of use.

| | Never | | Rarely | | Sometimes | | Often | | Very often | |
|--|-------|------|--------|------|-----------|------|-------|------|------------|------|
| | n | % | n | % | n | % | n | % | n | % |
| Furnish play materials in waiting room | 16 | 6.2 | 28 | 10.8 | 29 | 11.2 | 66 | 25.4 | 121 | 46.5 |
| Spend time with child before appointment outside operatory | 65 | 24.9 | 75 | 28.7 | 81 | 31.0 | 23 | 8.6 | 17 | 6.5 |
| Model things (Tell-Show-Do) you want the child to do | 20 | 7.7 | 34 | 13.1 | 51 | 19.6 | 68 | 26.2 | 87 | 33.5 |
| Show film/video explaining procedures | 222 | 85.4 | 24 | 9.2 | 12 | 4.6 | 2 | 0.8 | 0 | 0.0 |
| Offer child a toy after appointment | 66 | 25.5 | 18 | 6.9 | 43 | 16.6 | 59 | 22.8 | 73 | 28.2 |
| Let child hold toy, mirror etc | 8 | 3.1 | 33 | 12.7 | 85 | 32.7 | 81 | 31.2 | 53 | 20.4 |
| Bring parent into operatory | 9 | 3.5 | 35 | 13.5 | 89 | 34.2 | 68 | 26.2 | 59 | 22.7 |
| Use TV or audiotape | 223 | 85.8 | 13 | 5.0 | 14 | 5.4 | 5 | 1.9 | 5 | 1.9 |
| Set short appointments | 39 | 15.1 | 33 | 12.7 | 65 | 25.1 | 88 | 34.4 | 33 | 12.7 |
| Permit child to raise hand, etc to stop treatment | 12 | 4.6 | 7 | 2.7 | 36 | 13.8 | 73 | 28.1 | 132 | 50.8 |
| Gently restrain child | 30 | 11.5 | 63 | 24.2 | 99 | 38.1 | 51 | 19.6 | 17 | 6.5 |
| Get parent to restrain child | 106 | 40.6 | 100 | 38.3 | 40 | 15.3 | 9 | 3.4 | 6 | 2.3 |
| Use positive reinforcement and coaxing | 2 | 0.8 | 18 | 7.0 | 63 | 24.6 | 100 | 39.1 | 73 | 28.5 |
| Teach child to relax | 57 | 21.8 | 56 | 21.5 | 82 | 31.4 | 44 | 16.9 | 22 | 8.4 |
| Use oral sedation | 125 | 48.1 | 97 | 37.3 | 28 | 10.8 | 7 | 2.7 | 3 | 1.2 |
| Use mouth prop or rubber dam | 183 | 70.7 | 47 | 18.1 | 21 | 8.1 | 6 | 2.3 | 2 | 0.8 |
| Use Hand-Over-Mouth to control hysteria etc. | 193 | 74.2 | 47 | 18.1 | 14 | 5.4 | 5 | 1.9 | 1 | 0.4 |
| Refer elsewhere | 89 | 34.2 | 96 | 36.9 | 64 | 24.6 | 7 | 2.7 | 4 | 1.5 |
| Defer treatment until child is older | 50 | 19.2 | 108 | 41.5 | 90 | 34.6 | 9 | 3.5 | 3 | 1.2 |
| Use general anesthetic | 72 | 27.8 | 87 | 33.6 | 80 | 30.9 | 17 | 6.6 | 3 | 1.2 |
| Use hypnosis | 216 | 83.1 | 23 | 8.8 | 18 | 6.9 | 2 | 0.8 | 1 | 0.4 |
| Other strategy (including relative analgesia) | 82 | 63.6 | 6 | 4.7 | 15 | 11.6 | 16 | 12.4 | 10 | 7.8 |

Table 2 □ Management strategies used by subgroups^{a,b}

| Strategy | ASDC member | | Gender | | Age-group of Dentist | | | | |
|--|-------------|------|--------|------|----------------------|-------|-------|-------|------|
| | Yes | No | M | F | <30 | 31-40 | 41-50 | 51-60 | >60 |
| Furnish play materials in waiting room | 3.7 | 3.9 | 3.9 | 4.3* | 3.8 | 4.1 | 4.2 | 3.7 | 3.8 |
| Spend time with child before appointment outside operatory | 2.6 | 2.4 | 2.3 | 2.9* | 2.2 | 2.8 | 2.3 | 2.4 | 2.2* |
| Model things (Tell-Show-Do) you want the child to do | 4.0 | 3.6 | 3.5 | 4.2* | 4.1 | 3.9 | 3.3 | 3.0 | 3.1* |
| Show film/video explaining procedures | 1.3 | 1.2 | 1.2 | 1.3 | 1.2 | 1.3 | 1.1 | 1.4 | 1.0* |
| Offer child a toy after appointment | 3.2 | 3.2 | 3.1 | 3.7* | 3.7 | 3.4 | 2.9 | 2.7 | 2.9* |
| Let child hold toy, mirror etc. | 3.7 | 3.5 | 3.4 | 3.9* | 3.5 | 3.6 | 3.4 | 3.4 | 3.7 |
| Bring parent into operatory | 3.4 | 3.5 | 3.5 | 3.6 | 3.6 | 3.6 | 3.6 | 3.4 | 2.9 |
| Use TV or audiotape | 1.3 | 1.3 | 1.3 | 1.3 | 1.1 | 1.4 | 1.2 | 1.5 | 1.2 |
| Set short appointments | 3.3 | 3.1 | 3.1 | 3.5* | 3.1 | 3.2 | 3.1 | 3.3 | 3.1 |
| Permit child to raise hand, etc. to stop treatment | 4.3 | 4.1 | 4.1 | 4.3 | 4.4 | 4.4 | 3.9 | 3.8 | 3.4* |
| Gently restrain child | 2.8 | 2.9 | 2.9 | 2.6 | 2.7 | 2.8 | 2.8 | 3.2 | 3.0 |
| Get parent to restrain child | 1.9 | 1.9 | 1.8 | 2.0 | 1.8 | 1.8 | 2.1 | 1.8 | 1.7 |
| Use positive reinforcement and coaxing | 4.1 | 3.8 | 3.8 | 4.1 | 4.1 | 4.0 | 3.8 | 3.4 | 3.4* |
| Teach child to relax | 3.2 | 2.3* | 2.7 | 2.6 | 2.5 | 2.9 | 2.5 | 2.7 | 2.4* |
| Use oral sedation | 1.6 | 1.7 | 1.7 | 1.5 | 1.5 | 1.7 | 1.6 | 1.9 | 2.2* |
| Use mouth prop or rubber dam | 1.7 | 1.4* | 1.4 | 1.6 | 1.6 | 1.3 | 1.4 | 1.6 | 1.5 |
| Use Hand-Over-Mouth to control hysteria etc. | 1.4 | 1.4 | 1.4 | 1.4 | 1.4 | 1.3 | 1.2 | 1.5 | 1.7 |
| Refer elsewhere | 1.8 | 2.0 | 2.0 | 1.9 | 1.9 | 2.0 | 1.9 | 2.2 | 2.0 |
| Defer treatment until child is older | 2.0 | 2.3 | 2.3 | 1.9* | 2.0 | 2.3 | 2.5 | 2.3 | 1.8* |
| Use general anesthetic | 2.2 | 2.2 | 2.2 | 2.0 | 2.1 | 2.3 | 2.1 | 2.3 | 2.0 |
| Use hypnosis | 1.4 | 1.2 | 1.2 | 1.3 | 1.2 | 1.3 | 1.2 | 1.2 | 1.4 |
| Other strategy (including relative analgesia) | 2.4 | 1.8 | 1.9 | 2.1 | 1.8 | 1.8 | 2.1 | 2.5 | 1.7 |

^a Data are presented as mean scores from 1 to 5 ("never" to "very often") scale.

^b* indicates $p < 0.05$ between subgroups.

other strategy" (n = 47) 57.4 percent (i.e., 27 dentists) used nitrous oxide and oxygen, relative analgesia.

Table 2 summarizes the mean frequency of use score (where, "never" = 1; "rarely" = 2; "sometimes" = 3; "often" = 4; and "very often" = 5) for the different age-groups of subjects; gender group, and whether or

not subjects were members of the AusSDC. In two situations, AusSDC subjects differed significantly ($p < 0.05$) from general dentists in the frequency of usage of a particular strategy. AusSDC members more frequently taught the anxious child to relax by breathing in a specific way and used a mouth prop or rubber dam

to control uncooperative behavior. These two factors maintained their levels of significance, when age (used here as a continuous variable) was used as a covariate in two-way analysis of variance. In contrast, when controlling for age, the significance of the association (between AusSDC membership and use of the Tell-Show-Do approach, less frequent referral rates, and more frequent deferral of treatment until the child was older) was lost.

Female subjects also differed significantly from males in the use of management strategies. Women more frequently furnished their waiting rooms with play materials, spent time with a child before the appointment outside the dental operatory, more frequently modeled or used the Tell-Show-Do technique, and more frequently let the child hold a toy or the mirror during dental treatment. Similarly, women more frequently set short appointments for children who were anxious or had other behavior problems. In contrast, however, women were less likely to defer treatment until the child was older. Using two-way analysis of variance with age as the covariate, the influence of gender lost its significance with the strategy of "offering a toy after the appointment".

In the age-group analysis, the addition of the Student-Newman-Keuls test permitted the identification of the subgroup(s), which differed significantly from each other. Thus the significant differences between the age-groups with regard to the performance of "spending time with the child before the appointment..." related to the thirty-one-to-forty-year-old group using this strategy more frequently than either the youngest age-group (those aged thirty years or less) and those subjects aged between forty-one to fifty years. The thirty-one to forty-year-olds did not differ significantly, however, in their frequency of using this strat-

egy, when compared to the remaining age-groups. Similarly the two younger age-groups more frequently used a modeling (Tell-Show-Do) approach than any of the other three age-groups. These two age-groups differed also from the older groups in the greater frequency of using the permissive strategy of allowing the child to raise the hand, press a buzzer etc. to stop treatment, if they were experiencing difficulties. The two youngest groups also differed from the remaining groups by more frequently using behavioral methods such as positive reinforcement and coaxing. The youngest age-group differed from both the forty-one-to-fifty-year-old and the fifty-one-to-sixty-year-old groups by more frequent usage of the strategy of offering the child a toy after the appointment. This group also differed from the thirty-one-to-forty-year-old, forty-one-to-fifty-year-old, and fifty-one-to-sixty-year-old age-groups (but not from those over sixty years) by less frequently deferring treatment until the child was older. The thirty-one-to-forty-year-old group differed from the youngest age-group in more frequently teaching the child to relax. Subjects in the over-sixty-years age-group differed from the youngest three age-groups, but not the fifty-one-to-sixty-year-old group, by more frequently using oral sedation as a management strategy. Finally, the forty-one-to-fifty-year-olds more frequently deferred treatment than those thirty years or less, and those over sixty years.

DISCUSSION

The literature and personal experiences provide dentists with a multitude of approaches to the management of children with anxiety or behavior problems. A myriad of techniques may exist for a variety of reasons. First, the condition to be remedied may have a mul-

**Respondents in the 31-to-40-year
age-group most frequently
spent time with patients before
appointments.**

tifactorial causation, requiring a variety of changes to the individual and environment. Second, as many of the remedies being applied are behavioral, there is the potential for using a strategy that fits in with a practitioner's personal preference and philosophy, assuming that a number of strategies have the same efficacy. Third, the effectiveness of any strategy may be so variable that there is no narrow range of procedures that adequately cover all possible outcomes. For whatever reasons, dentists' approaches to management are varied and somewhat intuitive. There are few strategies, either behavioral or pharmacologic that appear to have a clear and well researched scientific acceptance; and considerable confusion exists in their usage as a result.⁹

Although in this study a high proportion of subjects used effective communication strategies with children, and provided mechanisms for dentist - child interaction, the extremely low use of modeling tapes and films, relaxation training, and distraction strategies such as TV and audiotapes suggests a slow uptake by Victorian dentists of alternative state-of-the-art techniques. The literature is consistent in demonstrating the value of modeling in reduction of anxiety in childhood; yet, apart from the Tell-Show-Do technique, has not received the practical application by either North American or Victorian dentists that seems justified.^{5,10} This may well reflect the availability of appropriate video or film material, rather than the lack of acceptance of the strategy in Victoria. There was for example some indication that a few respondents attempted more sophisticated modeling strategies than was apparent in the closed question format. In response to the use of alternative strategies, three respondents stated that they used either an older sibling, their nurse or the parent as a model before performing a particular dental procedure. Further, the use of audiotapes appears to be a simple and effective method for use in a variety of clinical situations (Ingersoll *et al* 1984); yet only 3.8 percent of respondents "often" or "very often" used this strategy.

Although a comparison of the findings of this study with those conducted elsewhere has the serious limitation of lacking standardization, a rough comparison between this and other studies does raise some interesting similarities and contrasts. For example, by dichotomizing responses from this study into "use" (rarely through very often) and "never use", nine items can be compared between the present study and the Washington State study. There were strong similarities in the proportion of subjects from both studies: who used the Tell-Show-Do strategy; who permitted the child to hold a toy, etc.; and who brought the parent into the operating room. There was a marked contrast in the

proportion of subjects from each of the two areas, however, who used certain of the other techniques. For example, in the Washington Study, 88 percent of respondents used the Hand-Over-Mouth technique to control hysteria or gain the child's attention; in Victoria, only 26 percent of subjects claimed ever to use this technique. This is also in sharp contrast to the 1980 Association of Pedodontic Diplomates Study where 90 percent used Hand-Over-Mouth (with airway open); 54 percent used Hand-Over-Mouth (with airway restricted); and 86 percent used physical restraint, other than Hand-Over-Mouth. Eighty-five percent of Victorian subjects used the strategy of setting short appointments for children with problems; in contrast, only 35 percent of Washington respondents used this technique. Similarly, a higher proportion of Victorian dentists spent time with the child before entering the operatory and taught the child a relaxation strategy than did the dentists in the Washington State study. Similar variations in the use of strategies can be seen between the Victorian sample and the Minnesota study.⁵ For example, in the ten comparable items in which information was available from both studies, the patterns of use were similar for: "furnishing play materials in the waiting area" and using a "Tell-Show-Do" approach. Both groups also presented a low utilization pattern of video or film modeling tapes. In contrast, however, twice the proportion of Victorian dentists claimed "never" to spend time with the child before the dental appointment and outside the dental operatory than did the Minnesota dentists. Further, 77 percent of the Minnesota sample claimed "never" to use general anesthesia compared to only 28 percent of the Victorian sample who claimed never to use this technique. The Minnesota and Victorian dentists appeared also to vary with regards to their frequency of having a parent remain with the child during treatment. Forty-nine percent of Victorian dentists claimed either "often" or "very often" to use this strategy, whereas only 7 percent of the Minnesota dentists claimed "usually" or "always" to use this approach. Thus, in general terms, it appears that Victorian dentists are in certain ways more interactive with their patients and parents during dental treatment than their North American colleagues. Victorian dentists appear to follow a British tradition, however, in the higher use of general anesthesia for managing anxious and/or behavioral problem children requiring dental treatment, rather than using sedative or restraint options.⁶

Comparison with the Yorkshire study suggests that Victorian dentists have their culture of management strategies in certain other areas as well. For example,

63 percent of Yorkshire respondents claimed never to use restraint; in comparison, and excluding use of the Hand-Over-Mouth technique, only 11 percent of Victorian dentists claimed never to use "gentle restraint". The cultural variations in the usage of management techniques warrants further research in order to determine whether or not the prevalent use of a particular technique has a large part of its origin in professional or social acceptabilities of the national cultures.

The hypothesis that AusSDC members would differ in the frequency of usage of strategies was accepted with a 95 percent confidence limit in only two situations. AusSDC subjects more frequently taught relaxation as a management strategy and more frequently used mouth props and rubber dam to assist in controlling uncooperative behaviors. There was no significant difference in the referral rates between AusSDC members and general dentists, which at first sight may appear somewhat surprising. Membership in the AusSDC, however, does not require limitation of practice to only pediatric dentistry. A high proportion of AusSDC members have no additional specialty training in pediatric dentistry, may be orthodontists, or may simply be general dentists with a special interest in children's dentistry. In retrospect, therefore, it is not surprising that the management strategies adopted by members of the AusSDC reflect in general the practices of the profession as a whole. Although the 1980 Association of Pedodontic Diplomates study reported only attitudinal differences between Diplomates and the total membership of the Academy, management practices did not vary significantly. This supports the notion that it is the professional norm within a given culture, which may be playing the important role in use of strategies rather than a broader set of factors based on the application of known scientific principles or special training.

The finding that the younger groups of dentists tended to be more frequent users of especially the behavioral strategies may indicate the changing educational background of more recent graduates and the growth of behavioral science teaching in the undergraduate curriculum. The effect of age as a covariate was most influential in reducing the significance of AusSDC group membership and gender in a variety of the behavioral strategies used. This would support the belief that changes in the undergraduate course do play a role in shaping professional practices. In this study older dentists were more likely to be users of oral sedative techniques. This may reflect the pervasive practices of the time, where greater emphasis was placed on sedative techniques.^{12,13} Glasrud also reported significant vari-

ations in certain strategies used by different age-groups of dentists in her study.⁵ She found that younger dentists were more likely to: have an auxiliary restrain the child; use Tell-Show-Do; use mouth props; use local anesthesia; and use relative analgesia than the older groups.

The substantial variation in the frequency with which female dentists compared to male dentists used particular strategies has not been reported elsewhere. Differences in approach may reflect the general community perception that women do manage interpersonal situations differently from men. The tendency for women subjects to spend more time with the child before entering the operating room, to use a Tell-Show-Do approach more frequently, and to set shorter appointment sessions more frequently fits well with the conventional social stereotype of women being more empathetic toward the needs of children than men and may well reflect a broader experiential base with children. In addition, women were less likely to defer treatment for children with anxiety or other behavior problems, which would indicate that they have a higher degree of self-efficacy than do men for handling such problems.

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Age and sex predilection of unmanageable Hispanic pediatric dental patients

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Alleviating anxiety for the pediatric dental patient can be a formidable challenge for any dentist. Children may learn to fear dental treatment by hearing stories from parents, peers, and older siblings. Fear may also be learned from experiences with the medical profession, for example, when immunizations are given. Furthermore, some parents have been known to threaten children with dental treatment in order to achieve a desirable level of behavior.¹

It is estimated that at least 10 percent of all children who present for dental treatment are unmanageable using standard behavior techniques, which may include tell-show-and-do, positive reinforcement, voice control, and modeling.² In order to manage children using these techniques, it is imperative that their attention be obtained and communication established. Failure to do so may cause them to foster a negative attitude toward dentistry.

Fear in pediatric patients usually peaks between three and five years of age.³ Consequently, studies that have dealt with child management techniques have focused on this age range.³⁻⁷ Very young (less than three years of age), mentally handicapped, and some medically compromised patients usually cannot comprehend simple explanations concerning dental care, and may best be managed, therefore, in a more efficient manner using

techniques such as physical restraint, conscious sedation, or general anesthesia.

In light of escalating malpractice insurance premiums for providing conscious sedation and in-office general anesthesia, it seems prudent that the dental practitioner should refine his nonpharmacologic behavior management skills to guide the developmentally normal child successfully through dental treatment. With practice and patience, most dentists can master these skills. In fact it has been shown that the majority of parents favor tell-show-and-do, positive reinforcement, voice control, and mouth props to manage child behavior as opposed to hand-over-mouth, physical restraint, conscious sedation, or general anesthesia.⁸

The purpose of this study was to determine the age and sex predilection of unmanageable pediatric dental patients from a predominantly Hispanic population using only the tell-show-and-do, and positive reinforcement behavior management techniques.

MATERIALS AND METHODS

Five hundred sixteen Hispanic children (267 males and 249 females) ranging in age from three to fourteen years of age were selected for this study. The average age for male and female patients was 7.9 and 7.6 years, respectively, with an overall average age of 7.7 years (Table 1). Each patient had not previously received any kind of dental treatment. No patient selected was mentally retarded or developmentally delayed.

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Table 1 □ Pediatric patient population.

| | Age (yrs) | Male | Female | Totals |
|----------------|-----------|------|--------|--------|
| | 3-6 | 100 | 103 | 203 |
| | 7-12 | 156 | 121 | 277 |
| | 7-12 | 13 | 23 | 36 |
| Totals | | 269 | 247 | 516 |
| Mean age (yrs) | | 7.9 | 7.6 | 7.7 |

Table 2 □ Unmanageable male patients.

| Age (yrs) | Number seen | Unmanageable |
|-----------|-------------|--------------|
| 3 | 7 | 4 |
| 4 | 21 | 3 |
| 5 | 26 | 0 |
| 6 | 46 | 0 |
| Mean: 3.4 | Totals 100 | 7 |

Table 3 □ Unmanageable female patients.

| Age (yrs) | Number seen | Unmanageable |
|-----------|-------------|--------------|
| 3 | 10 | 7 |
| 4 | 28 | 6 |
| 5 | 31 | 1 |
| 6 | 34 | 1 |
| Mean: 3.7 | Totals 103 | 15 |

Two appointments were scheduled for each child. The first appointment included an examination, rubber-cup prophylaxis, radiographs, and formulation of a treatment plan. The second appointment was for restorative care using local anesthesia and a rubber dam. Appointments were thirty minutes in length with three- and four-year-old children scheduled for morning appointments. Parents were permitted in the operatory, if they wished.

All patients were introduced to dental procedures in an unhurried manner using only the tell-show-and-do behavior technique. Explanations were given in English, or Spanish when appropriate, and in terms the child could understand. Constant communication was maintained with the child throughout all procedures. Acceptable behavior was verbally positively reinforced. Voice control was used for any negative behavior followed immediately with praise, if acceptable behavior ensued. Physical restraint and conscious sedation were not used for any patient.

Two examiners independently rated the behavior of each patient using the behavior scales as described by Frankl.⁹

RESULTS

Twenty-two patients (4.3 percent), three to six years of age, proved to be unmanageable using tell-show-and-

do, positive reinforcement, or voice control techniques. Each of these patients rated a one on the Frankl scale at the first appointment. Both examiners were in complete agreement concerning the behavior rating for these patients.

Tables 2 and 3 show the total number of male and female patients seen between three and six years of age and the number of unmanageable patients for each age respectively. As can be seen, all unmanageable males were three to four years of age with an average age of 3.4 years, whereas the age of unmanageable female patients ranged from three to six years with an average age of 3.7 years.

The number of unmanageable female patients was approximately twice that of unmanageable male patients overall as well as for the three- and four-year age-categories.

One mother accompanied her three-year-old daughter into the operatory for extraction of maxillary incisors. The patient was successfully managed without incident. No other mother chose to remain with her child.

DISCUSSION

The results of this study show that the vast majority of pediatric dental patients can be successfully managed using standard behavior techniques that include tell-show-and-do, positive reinforcement, and voice control. Levy and Domoto surveyed the Washington State Academy of Pediatric Dentists and found that 97 percent use the tell-show-and-do technique.¹⁰ Weinstein *et al* has suggested that the use of specific directions and positive reinforcement of cooperative behavior may be followed by reduction of fear-related behavior.¹¹ Wright has stated that the tell-show-and-do technique has remained a cornerstone of behavior management and should be routinely used by all members of the dental team.¹ Pinkham *et al* have stated that preschool children have required the most energy and talent for effective management and that if dentists would take the time to educate patients over three years of age with the tell-show-and-do technique most fears could be arrested.¹² This study has shown that 95.7 percent of Hispanic children seen for dental treatment can be successfully managed using standard behavior techniques, if such management is conducted in an unhurried and deliberate manner. One might argue that in a busy practice this type of approach is not practical or cost-effective. Allen *et al*, however, has stated that there

was no evidence to support that sedation and restraint were more cost-effective or efficient than published alternative management techniques.¹³

The majority (90 percent) of unmanageable children in this study were three to four years of age. This finding is not surprising since fear usually peaks between three and five years of age.³ Fears produced by hearing stories about dentistry from peers and siblings, therefore, may be exaggerated.

All three- and four-year-old children were scheduled for morning appointments, because it was felt that an appointment in the afternoon that coincided with nap-time would detrimentally influence behavior. Instead, twenty of sixty-six (30 percent) three- and four-year-old children were found to be unmanageable. This finding would seem to suggest that morning appointments should be avoided for this age-range. Lenchner, however, found no association between child behavior and time of day.¹⁴

It is doubtful that the length of the dental appointment in this study (thirty minutes) adversely affected child behavior. Lenchner found no significant difference in behavior during long appointments (48 to 125 minutes) versus shorter ones (16 to 30 minutes) for three- to four-year-old children.¹⁴ Getz and Weinstein, on the other hand, found that the longer the procedural phase in a given appointment, the greater was the likelihood of stress and fear reactions in children three to five years of age. The results of this study do not advocate scheduling short or long dental appointments. The thirty-minute appointment chosen seemed to be an appropriate amount of time needed to complete dental treatment successfully for 82 percent of three-to-five-year-old children (Tables 2 and 3). The length of the dental appointment for the three-to-four-year-old unmanageable children probably was not responsible for the negative behavior. Only one parent accompanied her child to the operatory for extraction of anterior maxillary teeth. Frankl *et al* presented data that suggested behavior in patients less than forty-two to forty-nine months of age was better when the parent was present during dental treatment, regardless of sex, race, socioeconomic background, or whether or not nursery school was attended.⁹ It is possible that more three- and four-year-old children could have been successfully managed had the parent been present during dental treatment.

It is interesting that thirteen female patients three to four years of age were found to be unmanageable as

With practice and
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behavior-management
skills can be mastered.

compared with seven unmanageable male patients the same age. The reason for this finding may be multifaceted. Melamed *et al* found that female patients between four and twelve years of age reported more fears than males.¹⁵ Johnson and Baldwin showed a significant relationship between maternal anxiety and child behavior at the first dental visit in children three to seven years of age.⁶ It was surmised that basic maternal attitudes toward life affect child behavior. Wright and Alpern found a significant relationship between maternal anxiety and cooperative behavior.⁴ Maternal anxiety had less influence on the behavior of older children (forty-eight to sixty-seven months) than on younger ones (thirty- six to forty-seven months). Whether or not maternal anxiety influenced child behavior in this study is not known. As previously stated, only one mother accompanied her child to the operatory for treatment. It may have been that other mothers were anxious concerning dental treatment and avoided the operatory and situation altogether.

There is evidence that children prefer dentists of their own sex. Barconey and Johnson studied 178 children four to five years of age and found that a child's preference for a dentist was directly related to the sex of the child, with girls more often choosing women than boys choosing men.⁵ Indeed in this study, a male dentist performed all needed dental treatment. Unmanageable female patients may have been more cooperative had a female dentist been providing care.

This study has shown that the vast majority of Hispanic children three to fourteen years of age can be

The tell-show-do
technique has been a
cornerstone
of behavior
management.

successfully managed using nonpharmacological behavior-management techniques. The number of female Hispanic children three to four years of age were found to be unmanageable about twice that of males the same age. Even though the reasons for this finding are not clear, it seems that the dental practitioner who treats children often needs to consider several factors collectively in order to guide young patients through dental therapy. These factors include, but are not limited to, age, sex, and family background of the patient. The practitioner who fails to consider these factors may create conditions which are conducive to negative behavior.

CONCLUSIONS

The results of this study show that the majority of Hispanic pediatric dental patients can be successfully managed using standard behavior techniques.

Even though the age-range of unmanageable patients was between three and six years, female patients

three to four years of age were more likely to present management problems than were males the same age. A review of the literature provided some reasons for the sex differences encountered.

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Parental perceptions of the effects of maxillary incisor extractions in children with nursing caries

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The etiology of nursing caries has been well documented to be prolonged nursing of infants, whether by bottle feeding or breast feeding.¹⁻⁶ The clinical presentation of nursing caries follows a definite pattern.⁷ The maxillary incisors are usually affected the most severely while the mandibular incisors are unaffected. Maxillary and mandibular first molars can also be involved to a lesser extent.

In their investigation of child and family characteristics of nursing caries, Dilley *et al* observed a large number of patients with the affliction.⁸ No association of the prolonged nursing habit with the family background was found with the exception of predominately lower socioeconomic conditions. The parents did not know when weaning should occur or when oral hygiene should be instituted.

Johnsen suggested that nursing caries may be a problem of overindulgence or lack of parental restraint rather than one of neglect.⁹ Another study by Johnsen examined the demographic, social, and attitudinal characteristics of children with nursing caries in different geographic and practice settings.¹⁰ A definitive profile of the child could not be made through this study. About a third of the parents of children with nursing caries were aware of the potential problems of prolonged nursing.

Derkson and Ponti found the prevalence of nursing caries to be 3.2 percent in a large Canadian city without fluoridation.¹¹ An overall prevalence rate of 55 percent was found in two Native American populations in Alaska and Oklahoma.¹² Other epidemiological studies have been done in different populations resulting in quite similar prevalence rates: Britain, 5.9 percent; United States, 4.9 percent; and South Africa, 13.7 percent in rural areas and 3.1 percent in urban areas.¹³⁻¹⁵

In spite of extensive public health and dental health education programs, nursing caries still exists as a challenge to pediatric dentistry. Nursing caries can result in extensive destruction of the maxillary anterior teeth, if left untreated for even a short period of time. If the caries process is not controlled, the affected teeth may be involved to such a degree that extraction may be required, especially if extensive periapical involvement is present. If allowed to progress to such an advanced state, nursing caries can lead to pain, infection, tongue thrusting, abnormal swallowing habits, and speech difficulties.¹⁶

Few studies have been done to investigate the effects of multiple extractions in young children with nursing caries. The purpose of this study was to investigate parental perceptions of children with nursing caries that necessitated the extraction of the four maxillary incisors. Social skills, speech development, school progress, and personality changes in these children were investigated.

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METHODS AND MATERIALS

A review of one of the author's (GR) patient records found 132 children with nursing caries who had their four maxillary incisors extracted. A two-page questionnaire which required only check mark answers was then constructed to survey the parents of these patients with respect to post-extraction behavior and adaptability. The questionnaire was mailed to the parents of these 132 children.

RESULTS

Of the 132 questionnaires mailed to parents, fifty-two valid ones were returned, a response rate of 39.3 percent. As some of the patient records were inactive for a number of years, the probability of contacting these parents through existing address information was poor. The number of replies (fifty-two) does represent, however, a unique group from which conclusions can be made.

The data were compiled and the results are shown in Tables 1 to 5.

Table 1 shows the parental response to a question concerning the difficulty encountered in eating after the incisors were extracted; 54.9 percent of the parents said that their child did not have difficulty eating, while 45.1 percent said their child did have some difficulty.

Table 2 shows the degree of difficulty parents perceived their child to have had speaking and learning to speak after the extractions; 61.6 percent of the parents thought their children had no difficulty after the incisors were extracted.

Table 3 represents parental responses to a question dealing with development of social skills; 34.6 percent of the parents *strongly disagreed* with the statement, "My child had problems making friends after the extraction of the upper front teeth." Another 48.1 percent of the parents *disagreed* with this statement. In response to this question, 82.7 percent of the parents, therefore, thought their children had no trouble with social skills in meeting new friends.

Table 4 shows the results of a question that dealt with noticeable behavior changes after the extractions; 76.9 percent of the parents responded that they did not notice any change in their child's behavior after the extractions.

Table 5 represents the parental description of observed behavior during the time following the extractions. The results show that the majority of parents described their child's behavior as normal during this period.

Table 1 □ Responses to "My child had difficulty eating and chewing without upper front teeth after they were extracted"

| Responses | Percentage of parents |
|-------------------|-----------------------|
| Strongly agree | 11.5 (6) |
| Agree | 34.6 (18) |
| Disagree | 38.5 (20) |
| Strongly disagree | 15.4 (8) |
| Totals | 100.0 (52) |

(Absolute numbers in parentheses)

Table 2 □ Responses to "My child had difficulty speaking and learning to speak without the upper front teeth."

| Responses | Percentage of parents |
|-------------------|-----------------------|
| Strongly agree | 11.5 (6) |
| Agree | 25.0 (13) |
| Disagree | 46.2 (24) |
| Strongly disagree | 15.4 (8) |
| No response | 1.9 (1) |
| Totals | 100.0 (52) |

(Absolute numbers in parentheses)

Table 3 □ Responses to "My child had problems making friends after the extraction of the upper front teeth."

| Responses | Percentage of parents |
|-------------------|-----------------------|
| Strongly agree | 34.6 (18) |
| Disagree | 48.1 (25) |
| Agree | 5.8 (3) |
| Strongly disagree | 7.7 (4) |
| No response | 3.8 (2) |
| Totals | 100.0 (52) |

(Absolute numbers in parentheses)

Table 4 □ Presence of noticeable behavior changes after extractions.

| Behavior change | Percentage of parents |
|-----------------|-----------------------|
| Yes | 21.2 (11) |
| No | 76.9 (40) |
| No response | 1.9 (1) |
| Totals | 100.0 (52) |

(Absolute numbers in parentheses)

Table 5 □ Parental classification of post-extraction behavior.

| Classification | Number of children |
|-----------------------------------|--------------------|
| Normal | 25 |
| Normal + outgoing + happy | 8 |
| Normal + happy | 2 |
| Normal + shy | 2 |
| Normal + outgoing | 1 |
| Normal + outgoing + happy + other | 1 |
| Normal + other | 2 |
| Happy + outgoing | 1 |
| Happy + other | 2 |
| Outgoing | 1 |
| Abnormal | 1 |
| Shy | 4 |
| Shy + sad + abnormal + other | 1 |
| No response | 1 |
| Total | 52 |

Of the fifty-two children whose maxillary incisors were extracted due to nursing caries, thirty-five were currently attending preschool or elementary school. Ninety-seven percent of the parents of these children thought their children's progress could be described as satisfactory.

DISCUSSION

In this study, 61.6 percent of the parents responded that their children had no difficulty speaking and learning to speak without their maxillary incisors. This response is similar to the results of a study done by Riekman and ElBadraway.¹⁷ In this study children who had the maxillary incisors extracted due to nursing caries were evaluated for speech development. There appeared to be no long-term effect on speech development on subjects tested between the ages of 5.4 to 11.5 years.

Forty-six percent of the parents responded that their children had difficulty eating and chewing without the maxillary incisors while 53.9 percent said their children had no difficulty. This degree of adaptability could be related to age and type of diet. Older children may have been able to adapt better to eating and chewing without the incisors. The degree of difficulty encountered would also be dependent upon the type of diet the child was fed. Harder foods that would require incising would present a significant degree of difficulty to these children. Parents may have overcome this problem by altering their children's diet and substituting softer foods.

A large majority (82.7 percent) of the parents said their children had no problems making social contacts

after the extraction of the maxillary incisors. This question was constructed to investigate the social skills and self-images of the children. The other 12.3 percent of children may have had difficulty making social contacts, even with their maxillary teeth intact, due to their inherent personality or lack of social development. Younger children may not have been affected socially to any great extent due to their limited exposure to new children, especially if they were not attending daycare or preschool programs. As the children approach school age, they may have a lesser problem fitting into groups of children who are in the mixed dentition and actively exfoliating the primary incisors.

In this survey of parents, 76.9 percent said they did not see any noticeable behavior changes in their child after the extraction of the incisors. The 23.1 percent of children whose parents noticed some behavioral changes may have undergone changes not attributable to the extractions. Such changes could be due to the normal psychological or social development encountered in preschool children.

Out of the 52 parents who responded, 45 parents chose descriptive terms that indicated their child's behavior was normal after the extractions. Another four parents chose to classify their children as being shy after the extractions. Only two parents thought their child's behavior could be classified as abnormal after removal of the incisors. In combination with the question on behavior change noticed after the extractions, the results of this question show that not only was there very little change in behavior, but the observed post-extraction behavior was mainly classified as normal by the parents.

The majority of parents
judged their child's behavior
as normal, following extraction of
the anterior teeth.

CONCLUSIONS

- The majority of parents saw no behavior changes after the extractions.
- The majority of parents classified the post-extraction behavior as normal.
- The majority of parents thought their children had no problems establishing social contacts and making new friends.
- The majority of parents thought their children had no difficulty speaking and learning to speak without the maxillary incisors.

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REMINERALIZATION

Saliva helps to prevent cavities from forming by supplying the raw materials—calcium and phosphate—needed to rebuild tooth enamel, a process called “remineralization.” The development of in vitro models of demineralization and remineralization has greatly enhanced understanding of these processes and the forces involved. These studies have been aided by the development of microanalytical techniques that enable detection of chemicals in very small samples.

Other studies showed that remineralization is associated with an increase in the size of enamel crystals, a characteristic that increases caries resistance. The presence of fluoride in saliva also enhances remineralization.

NIDR: *Broadening the scope.*

Washington, D.C.: Public Health Service/National Institutes of Health, 1991, p 14.

Almost eleven million special children

Epidemiology

H. Barry Waldman, BA, DDS, MPH, PhD

Lay and professional publications increasingly are making our society aware of the existence of special populations of children: the developmentally disabled, the chronically and acutely ill, the hospitalized, the high-risk, and any number of other patients with special needs. Until recently, there were few reliable national prevalence estimates of the numbers of special children in our communities. The results from the 1988 National Health Interview Survey of Child Health conducted by the National Center for Health Statistics provides some of the needed demographic information that is essential in planning for general health and dental programs to meet the needs of this population.¹ The following presentation will review the recent report of this study in an effort to provide an appreciation of the magnitude of the problem to pediatric dentists, who increasingly will be called upon to provide needed services.

Note: The emphasis of this presentation will be on the prevalence of developmental, learning, and emotional problems in the general population of children in the United States. In addition, pediatric dentists increasingly are being called upon to provide care for "a 'new' special patient population, the survivors of medical conditions who previously succumbed to a seemingly endless rate of morbidities: hydrocephalus, epilepsy, spinal cord injuries, spina bifida, cerebral palsy,

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Nearly 11 million
children
with developmental,
learning
or emotional disorders.

major cardiac anomalies, neonatal abnormalities, kidney dialysis, a wide range of blood dyscrasias, immunosuppressant diseases (including AIDS), muscular dystrophy, multiple sclerosis, juvenile diabetes, and complex endocrine abnormalities."²

BACKGROUND

The multiplying numbers of children with psychological disorders have been "...attributed to the growing proportion of children who experience parental divorce, were born outside of marriage, or are reared in conflict-filled families or low income, low-education, single parent households."¹ In addition, childhood learning and behavioral problems may also be increasing as a result of the advancing "... survival rate of extremely low-birthweight babies, the possible effects of environmental contamination, and the rising numbers of babies born to crack-addicted mothers."¹

There is growing concern that substantial numbers of youngsters with developmental and behavioral disorders are untreated and even unrecognized. While the problems of the middle class white children may be handled within the health system, "...similar problems among lower class black or Hispanic youths often go untreated, only to be dealt with eventually by the criminal justice system."¹

SURVEY PROCEDURE

The data from the 1988 National Health Interview Survey represents the results of information on 17,110 children, who were seventeen years of age and under. The survey population was developed using a proba-

bility sample drawn by the Bureau of the Census. The overall completion rate of the Survey for children was 95 percent. Interviewers obtained background information on the family and measures of the child's physical health, behavioral and emotional adjustment, school performance and receipt of medical and psychological care. All data were based on reports by an adult respondent.

THE EXTENT OF THE PROBLEM

Approximately 2.5 million children have had a delay in their growth or development; 3.4 million children between ages three and seventeen have had learning disabilities; 7 million children between three and seventeen have had emotional or behavioral problems that lasted three months or more and/or required psychological treatment. Overall, 19.5 percent of all children between three and seventeen years (almost 10.2 million children) have had one or more developmental, learning or emotional disorders. In addition, almost a half million children, ages two and under, have had developmental delays. There are almost eleven million special children with developmental, learning or emotional disorders (Table).

Psychological disorders rank among the most prevalent health conditions of modern childhood. For example, the estimated seven million children with psychological disorders compare to 3.5 million children with chronic bronchitis; 3.2 million with asthma; 2.2 million with dermatitis; 1.8 million with orthopedic impairments; and 1.1 million with heart murmurs.¹

But the prevalence of developmental, learning and behavioral problems are not distributed uniformly throughout the child population.

- Children who were reported to be in fair or poor health, as compared to children with good to excellent health, had almost double the rate of developmental delays, learning disabilities, and emotional or behavioral problems.
- A greater percent of male than female, white than black, and non-Hispanic than Hispanic children have had developmental delays, learning disabilities and emotional or behavioral problems. The authors of the report on the survey express concern regarding the extent to which learning and behavioral problems go unrecognized and untreated in the minority youth populations.
- There was a lower percent of children with developmental delays, learning disabilities, and emotional or behavioral problems in higher income families.

- Children in families with both biological mother and father, as compared to other family arrangements, had half the rate of developmental delay, learning disabilities, and emotional or behavioral problems (Table).
- There was progressive increase by age in the percent of children with a learning disability, and an emotional or behavioral problem. By age twelve to seventeen, 8.8 percent of children had a learning disability; 18.5 percent had an emotional or behavioral problem.¹
- The median age at which developmental delays were first noted was between the first and second year; between sixth and seventh year for learning disabilities; between seventh and eighth year for emotional or behavioral problems.¹

TREATMENT

Developmental delays: Approximately one half of the children had not received treatment or counseling.

Learning disabilities: Almost a quarter of the children had not received treatment or counseling for their disabilities.

Emotional or behavioral problems: Approximately a quarter of the children had not received treatment or counseling.¹

PEDIATRIC DENTISTS AND SPECIAL POPULATIONS

General practitioners and pediatric dental specialists provide care to special population groups. But increasingly, pediatric dentists are being called upon to provide services to these growing populations. For example, 49 percent of general practitioners and 96 percent of pediatric dentists reported treating handicapped children.³

It must be remembered that the almost eleven million special children considered within the limitations of this report represent but one component of the total population of special children who require the services

Table □ Number and percent of children 17 years of age and under who have had a delay in growth or development, learning disability, or emotional or behavioral problems: 1988.¹

| | 17 years or under | | 3-17 years of age | | Total with one or more conditions | |
|----------------------------------|--------------------------------|---------------------|---------------------------------|---------|-----------------------------------|--|
| | Delay in growth or development | Learning disability | Emotional or behavioral problem | Percent | Number* (in millions) | |
| All children | 4.0% | 6.5% | 13.4% | 19.5% | 10.2** | |
| Gender | | | | | | |
| Male | 4.2 | 8.6 | 15.4 | 22.9 | 6.1 | |
| Female | 3.8 | 4.4 | 11.3 | 16.0 | 4.1 | |
| Race | | | | | | |
| White | 4.4 | 6.7 | 14.2 | 20.7 | 8.8 | |
| Black | 2.1 | 6.2 | 10.3 | 14.9 | 1.2 | |
| Hispanic origin | | | | | | |
| Hispanic | 3.4 | 5.8 | 12.0 | 17.2 | 1.0 | |
| Non-Hispanic | 4.2 | 6.6 | 13.6 | 19.9 | 9.1 | |
| Family income | | | | | | |
| Less than \$10,000 | 5.4 | 8.4 | 15.8 | 22.8 | 1.4 | |
| \$10,000-\$24,999 | 4.0 | 7.2 | 14.5 | 21.0 | 2.8 | |
| \$25,000-\$39,999 | 4.0 | 6.2 | 13.4 | 19.5 | 2.5 | |
| \$40,000 or more | 3.9 | 5.8 | 12.8 | 18.6 | 2.5 | |
| Place of residence | | | | | | |
| MSA | 3.8 | 6.5 | 13.7 | 19.6 | 7.7 | |
| Central city | 3.1 | 5.9 | 13.6 | 18.7 | 2.8 | |
| Non central city | 4.2 | 6.9 | 13.8 | 20.1 | 4.9 | |
| Non MSA | 4.7 | 6.5 | 12.4 | 19.4 | 2.5 | |
| Health status | | | | | | |
| Good to excellent | 3.7 | 6.3 | 13.1 | 19.1 | 9.6 | |
| Fair or poor | 15.2 | 15.1 | 23.3 | 35.3 | .5 | |
| Mother's education | | | | | | |
| Less than 12 years | 3.3 | 8.7 | 13.6 | 20.3 | 2.1 | |
| 12 years | 4.2 | 6.8 | 12.5 | 19.0 | 4.2 | |
| More than 12 years | 4.2 | 4.9 | 13.7 | 19.3 | 3.6 | |
| Family structure | | | | | | |
| Biological mother and father | 3.8 | 5.5 | 8.3 | 14.6 | 4.5 | |
| Biological mother and stepfather | 3.7 | 9.1 | 23.6 | 29.6 | 1.3 | |
| Biological mother only | 4.5 | 7.5 | 19.1 | 24.8 | 2.8 | |
| All other | 4.8 | 8.3 | 22.2 | 28.2 | 1.6 | |

* The number of children in each category was developed from percentage data. Differences in totals are a result of rounding and variations in reported numbers.

** In addition, almost .5 million children less than three years of age had developmental delays.

of particularly trained and experienced providers. In addition, the fact that the problems of so many of these children are recognized at relatively early ages, places their dental needs within the age-categories that are served for many years by pediatric practitioners. Indeed, despite the evolving pattern of dental disease, pediatric dental practitioners increasingly will be called upon to serve this particular growing population of children. Advanced and continuing education programs will need to prepare both general and pediatric practitioners to provide needed dental services for a population of children that represents a far larger component of the children in communities than many of us may have predicted. (For a more detailed presentation on special populations and their increasing and changing use of dental services, see a previous report in the *Journal of Dentistry for Children*.)²

The intent of this presentation has been to dramatize the magnitude of the numbers of special children in our nation. Surely, "almost eleven million children" with delayed development, learning disabilities, and emotional or behavioral problems are enough to catch the attention of the general lay public and even pediatric dentists!

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NON-OPERATIVE TREATMENT OF OCCLUSAL CARIES

The aim of this study was to evaluate a treatment program designed to control occlusal caries on the basis of intensive patient education and professional tooth-cleaning. The sample consisted of 56 6-8-yr-old children with their permanent right first molars in different stages of eruption. Data from the program were compared with previous data recorded in a similar sample of children. After 1 yr the majority of children in the study group had their permanent right first molars in full occlusion. A significant decrease of surfaces with easily detectable plaque and an increase of surfaces without plaque were observed. The proportion of arrested lesions increased and active enamel lesions decreased. Fissure sealing was only needed in two teeth in contrast to more than two thirds of molars in a comparable sample of children. The program proved to be an efficient alternative to fissure sealing in preventing occlusal caries in erupting teeth.

Carvalho, J.C. *et al*.: Results after 1 year of non-operative occlusal caries treatment of erupting permanent first molars.

Community Dent Oral Epidemiol, 19: 23-8, February 1991.

Respite care: a new social program for children at risk

H. Barry Waldman, BA, DDS, MPH, PhD

The maxim that "dentistry is more than just filling teeth" surely must be the aphorism or the unstated slogan of any dental practice that provides services for children. The need to introduce and provide the complexities of dentistry to children who range from pre-school to the early teens demands skills and understanding that come with years of training and experience. (But we all know that!)

More recently, added meaning and emphasis have been appended to the idea that the services of a dentist extend beyond technical phases of care. Pediatric dentists are being called upon increasingly to provide care to a growing population of special children, the developmentally disabled, the chronically and acutely ill, the hospitalized, the homebound, the high-risk patient, the child with HIV infection, and survivors of medical conditions who previously succumbed to a seemingly endless range of morbidities, the child with fetal-alcohol and addictive-drug syndromes, and children who are physically and emotionally abused.

The need to increase practitioner awareness and abilities in the care of these special children has resulted in significant changes in dental school curricula and in at least one state, the development of continuing education requirements. The State of New York, for

the first time, recently established a continuing education requirement for dental license renewal and original issuance. All dentists and dental hygienists are required to complete an approved course in the recognition and reporting of child abuse.

If pediatric dentists are to provide added dimension to the delivery of needed health services, it is essential that they become aware of a growing spectrum of services that are available for these special children and their families. To this end, the following presentation will review a new national, state, and private agency program that offers very special help for very special children and their families.

WHAT IS RESPITE CARE?

"Respite care" provides temporary child relief to family members and other caretakers of children who may be at risk of abuse or neglect. These include children who are mentally retarded, behaviorally disturbed, physically disabled, or chronically or terminally ill. Almost 2.2 million children were reported as victims of abuse or neglect in 1988.¹ In addition, in 1987-88, about 1.1 million children were classified as mentally retarded by school special education units.²

The undue stress within a family, whether caused by the burdens of caring for a disabled child or such factors as financial worries, often are associated with child abuse. Respite care seeks to support the family by offering a break for parents and a safe place for the

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child for a short period of time. Although there is little evidence on the efficacy of respite care, users have found that the services provide more time to attend to their family and activities of daily living.²

Respite care has several characteristics. It is temporary and is directed at the parent or other caretaker. Such care can serve as a preventive service or in an emergency situation, such as a crisis nursery that specializes in providing short-term crisis care to abused and neglected children.

EXISTING PROGRAMS

A 1988 study conducted by the U.S. General Accounting Office, reviewed respite care activities in twenty-five states with 111 programs. The study also identified six national organizations, including Easter Seal Society and United Cerebral Palsy Association, that provide respite care services through 279 local chapters in 221 cities of forty-four states and the District of Columbia.

Eligibility criteria vary among the many programs. Almost all programs permit families to receive respite care from the time a child is born to age twenty-two. Some programs have no upper age limits. Generally, income is not a determination for eligibility. Most programs provide services at no cost to the family; a few use a sliding fee schedule based on the family's ability to pay.

Respite care services are offered in the parents' or caretakers' home and at other locations outside of the home, including the homes of relatives, licensed foster homes or respite care group homes. National organizations use a variety of different approaches. For example:

- The National Down Syndrome Society brings together Down syndrome children and host families who volunteer to care for the children one weekend every six weeks over a one-year period.
- The National Council on Aging's Family Friend Program matches older volunteers with chronically ill and disabled children.

The federal government's involvement in respite care has been limited to demonstration programs funded by the Department of Health and Human Services (HHS). These grants are to help provide

- Temporary, nonmedical child care to families having children with disabilities or with chronic and terminal illnesses.

Respite care provides temporary child relief to caretakers of children who are at risk of abuse or neglect.

- Crisis nurseries for children who are abused and neglected, at high risk of abuse and neglect, or in families receiving child protective services. HHS provides funds under the auspices of Medicaid financing of home and community-based services for disabled individuals.

In addition to HHS programs, other federal departments and agencies provide some forms of respite services.

- ACTION*: an independent federal agency that administers volunteer service programs, provides services through its Foster Grandparent Program. Through 328 local programs, ACTION employs low-income elderly people to act as foster grandparents to children with special needs.
- Department of Defense*: the Department of the Army provides respite services to its personnel through 232 programs located on and outside its installations and 107 foster care programs in the United States and overseas.
- The Department of Education*: has funded a series of programs to develop knowledge of, and use of, respite programs.²

SCOPE OF SERVICES

Programs provide a range of services, including sitter services, personal care, short-term residential aid, so-

cial and recreational services, camping experiences and companionship. Specifically, these services encompass:

- Personal care services: bathing, dressing and grooming, meal preparation and feeding, light housekeeping, laundering, shopping, and transportation.
- General support services: independent living skills, occupational and physical therapy, home health care (including nursing and therapy), and child care for working parents.

NUMBER OF PEOPLE SERVED

In the twenty-five states surveyed by the General Accounting Office (GAO), over forty-five thousand families with almost thirty thousand children received temporary relief under the various programs. In addition, more than ten thousand families with more than five thousand children requested temporary relief services from these programs. The state programs identi-

fied by the GAO reported 3,700 families on waiting lists for services in 1988.²

THE PEDIATRIC DENTIST'S ROLE

If "dentistry is more than just filling teeth," then increasingly the pediatric dentist must deal with the consequences in families that are experiencing the stresses and strains of caring for special children. Respite care could provide some assistance for these families. Are the families in your practice aware of this service? Surely, such information could be of value to those in need.

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BREAST-FEEDING

Among the health benefits of breast-feeding, one of the most important is a reduction in infant morbidity and mortality from infectious illnesses. The magnitude of the benefit, however, appears to be conditional on socioeconomic factors. For example, the protective effect is far more striking in developing countries than in developed countries. Even within developing country settings, poor sanitation, overcrowding, and other concomitants of severe poverty are associated with increased protective effects. In countries like the United States, with a sizable poor population, it seems reasonable to assume that infants born in poverty, who experience the highest rates of morbidity and mortality (especially in the postneonatal period), would benefit most from being breast-fed. Unfortunately, the mothers of these infants are those least likely to initiate and continue breast-feeding. In this issue, MacGowan et al report dismal breast-feeding rates among Georgia's Women, Infants, and Children Program (WIC) participants; only 24 percent initiated breast-feeding, and only 6 percent breast-fed their infants (even partially) at six months.

Breast-feeding in the United States, as in many other industrialized countries, witnessed a remarkable renaissance in popularity between the early 1970s and the mid-1980's . . . well-educated, high-income, white women were those showing the largest increases. Although initiation and duration of breast feeding also increased in less-advantaged groups, the increases were smaller . . . A disturbing trend toward lower breast-feeding rates since 1984 has recently been reported in a population-based study from the United Kingdom, despite a rise in average maternal age and a fall in the number of nonwhite births. If a similar decline has occurred in the United States, particularly among the poor, it could have considerable adverse consequences for infant and child health.

Kramer, M.S.: Poverty, WIC, and promotion of breast-feeding. *Pediatrics*, 87: 399-400, March 1991.

Changing environment for the care of children

H. Barry Waldman, MA, DDS, MPH, PhD

There continues to be need for improved health services for children, but some progress and changes are occurring. For example, as a result of legislation enacted by the 101st Congress, poor children and their parents may look forward to a healthier life.

- By 2003, all poor children through eighteen years of age will be covered by Medicaid health insurance. The age limit (now six years) will rise one year annually through the next century.
- Congress established a tax credit system for the working poor to permit the purchase of health insurance for children.
- A 26 percent increase in funds for the Head Start program will permit the enrollment of 40 percent of eligible children (25 percent of eligible children currently are enrolled). The legislation authorizes funds that will make it possible to enroll one hundred percent of eligible children by 1994.
- There was a marked increase in the funds provided under the Childhood Immunization Program.
- An expansion of the Earned Income Tax Credit Program for poor working families with children will provide refundable tax credits.
- Finances for an Entitlement Funding for Child Care Services for welfare families unable to purchase child care.

- Child care legislation will provide much expanded and particular support for the working poor. The states are required to establish minimal health, safety, registration and quality standards. Church-run, day-care centers will be eligible for federal subsidies through a voucher system¹.

Unfortunately, despite efforts by the Congress to provide programs for the poor, some states do not participate in highly beneficial programs. For example, the WIC (Women-Infants-Children) federal food plan for poor pregnant nursing women and their children, is a \$2.3 billion program that provides essential dietary supplements. In order for pregnant women to receive these services, they must accept medical check-ups, which help reduce fetal and infant deaths. A recent study found that when poor women received WIC food packages during pregnancy, Medicaid spending was almost \$600 less for the mother and child in the first sixty days after birth. Every dollar spent on the prenatal WIC program saves from \$1.77 to \$3.13 in Medicaid costs. Unfortunately, thirty-one states do not participate in the program, because of budgetary constraints and other factors.²

SOME OF THE CHANGES

- The need for child care*

The evolving composition of families in the United States has resulted in more than seven million single-parent households with children under eighteen years of age (6.2 million female householders and one million male householders).³ Even in families with two parents, fre-

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quently the mother is in the labor force. Sixty percent of women with children less than six years of age are employed. A substantial number of these children spend a significant amount of time in a care arrangement while their parents work.

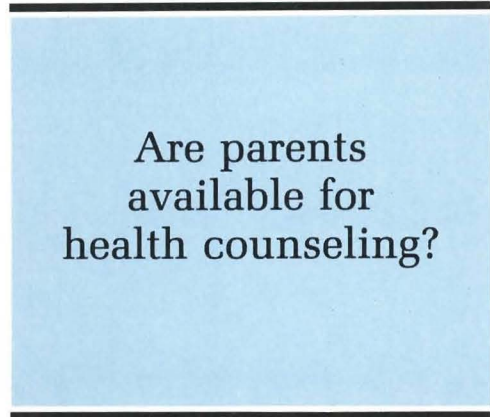
In addition, many families with mothers who are not in the labor force arrange for care services to provide enrichments in the child's life or provide supervision while the parent participates in volunteer work, leisure activities, or household work. In 1988, slightly more than two thirds (67.7 percent) of children less than six years of age were currently or had ever been cared for in a regular child care arrangement. In addition, many other children were cared for on an occasional basis under arrangements that were considered either formal or informal arrangements (Table 1).

□ *Use of child care services*

The use of child care arrangements for children less than six years of age varies by demographic characteristics. A greater percent of white and non-Hispanic children, than their black and Hispanic counterparts, have been enrolled in child care arrangements. There is a direct correlation between increasing family income, increasing levels of the mother's education and the use of child care arrangements. Child care arrangements are the rule for virtually all employed mothers, compared to a third of children whose mothers are unemployed (Table 1).

□ *Why should pediatric dentists be concerned?*

The American Academy of Pediatric Dentistry recommends "...early parental counseling and dental/oral examinations for all infants, prior to twelve months of age."⁵ Well, mom (and dad) may be employed and just not available for "parental counseling." Increasingly, "the lady of the house" is unavailable to wait at home for the repairman, department store deliveries, and the hundred-and-one other things that we took for granted in the past eras of male bread-winners and female house-sitters. Pediatric dental practitioners will need to address an evolving pattern of supervision where parents and child care arrangements share in the upbringing of preschool and school-age children. In addition, we should not overlook the reality that many school-age children return to empty homes, solely responsible for themselves and their respective households for the next three or four hours. Any dental practitioner suggesting home care follow-up for children must consider the possibility (probability?) of the supervision of this needed health care by both parents and child care personnel.



Are parents available for health counseling?

□ *Health insurance and medical care*

In 1988, 83 percent of children had health insurance or Medicaid coverage, 64 percent had a medical care visit in the previous year, 88 percent received routine health care (Table 2). Except for a decrease in the percent of children (in older cohorts) that visited a physician in the previous year, there were no differences by age in percent of children with health insurance or regular medical services.⁶

While one may be "satisfied" that such a relatively high percentage of children are receiving medical services, the reality is that 17 percent were not covered by health insurance or Medicaid, 36 percent did not receive medical care in the previous year and 12 percent

Table 1 □ Number and percent of children 5 years of age and under who have received child care or currently receive care in regular child care arrangements by demographic characteristics: 1988.⁷

| | Number of children (in millions) | Child care status | |
|----------------------------|-------------------------------------|-------------------------------------|-----------------------------------|
| | | Have received child care Percent | Currently receive care Percent |
| Total | 22.1 | 67.7% | 60.0% |
| Race | | | |
| White | 17.8 | 68.5 | 60.9 |
| Black | 3.3 | 63.5 | 54.9 |
| Hispanic | | | |
| Hispanic | 2.5 | 59.8 | 53.3 |
| Non-Hispanic | 18.6 | 68.8 | 60.8 |
| Family income | | | |
| < \$10,000 | 3.0 | 47.6 | 36.7 |
| \$10,000-\$24,999 | 6.3 | 66.4 | 57.9 |
| \$25,000-\$39,999 | 5.6 | 73.3 | 65.5 |
| \$40,000 + | 4.9 | 79.2 | 73.7 |
| Mother's education | | | |
| Less than 12 yrs. | 3.9 | 47.4 | 37.6 |
| 12 yrs. | 9.1 | 66.3 | 58.5 |
| More than 12 yrs. | 9.1 | 77.8 | 71.0 |
| Mother's employment status | | | |
| Employed | 10.2 | 99.6 | 98.9 |
| Not employed | 10.1 | 34.9 | 20.1 |

Table 2 □ Percent of children less than 18 years of age covered by a health insurance plan or Medicaid, who visited a physician in the past year, had a regular source of routine health care, and regular source of care was not a private physician or health maintenance organization: 1988.⁶

| | Health insurance or Medicaid coverage | Medical visit in past year | Had routine health care | Care was not with a private physician or HMO |
|-------------------|---------------------------------------|----------------------------|-------------------------|--|
| Total | 83.1% | 63.9% | 88.0% | 15.5% |
| Gender | | | | |
| Male | 83.5 | 64.1 | 87.6 | 15.1 |
| Female | 82.7 | 63.7 | 88.5 | 15.9 |
| Race | | | | |
| White | 83.7 | 63.7 | 88.6 | 11.2 |
| Black | 80.9 | 65.0 | 86.5 | 35.2 |
| Hispanic | | | | |
| Hispanic | 70.0 | 63.4 | 81.1 | 26.2 |
| Non-Hispanic | 84.9 | 63.6 | 88.9 | 14.2 |
| Family income | | | | |
| < \$10,000 | 71.8 | 62.9 | 83.8 | 36.5 |
| \$10,000-\$24,999 | 76.1 | 61.6 | 86.0 | 22.4 |
| \$25,000-\$39,999 | 89.8 | 64.3 | 91.1 | 9.2 |
| \$40,000 + | 92.4 | 68.0 | 92.4 | 5.7 |

did not receive routine health care. In addition, a greater percent of Hispanic and poor children, than their respective counterparts, lacked health insurance coverage and routine health services (Table 2).

Most children with regular sources of care visited a physician's private office, health maintenance organization or prepaid group practice for the treatment. However, 8.7 million children used the services of outpatient clinics, hospital emergency rooms, walk-in or emergency care centers, and other clinics or health centers, for regular care. In particular, black and Hispanic children, and children in lower income families used these centers for regular services (Table 2).

□ Why should pediatric dentists be concerned?

The simplistic, mythical television world of *Doctor Kildare* and *Marcus Welby, M.D.* has been replaced by an all-too-real environment which governs the very nature of health services in our country. This new world is occupied by an army of accountants, union officials, and an alphabet soup of federal agencies, a diversifying system of delivery modalities and an almost infinite array of third-party supervisory arrangements.

The once-close, friendly, working relationship that existed between a child's family, pediatricians, and pediatric dentists has become bogged down all too often in the bureaucratic morass of government and insurance company arrangements, health maintenance organizations, and the like. In the past, most pediatric dental patients tended to be from higher-income families, which generally financed the needed services by direct payments or a variety of private insurance plans. But many other diverse populations are increasing their use of health services: populations that receive medical

services in a variety of "non-traditional" settings with financing from a wide range of governmental agencies.

Thus, dental practitioners must deal with more complex health-delivery bureaucracies when they seek to provide services to these more varied groups of children: in particular, special populations of children (i.e., the developmentally disabled, the chronically and acutely ill, the hospitalized, the homebound, the high-risk patient, the child with HIV infection and survivors of medical conditions who previously succumbed to a seemingly endless range of morbidities and children who are physically and emotionally abused). The "simple" medical consultation may become (or already is?) just another "endangered species."

UNWANTED CHILDREN

Between 1983 and 1988 there were nearly 16.5 million births to "ever married" women. Thirty-five percent (approximately 5.8 million births) were unintended (about 1.6 million unwanted and 4.2 million mistimed).

Table 3 □ Percent of unwanted children born in the last five years to women 15-44 years of age who were ever married and never married by race of mother: 1973, 1982, 1988.⁷

| | 1973 | 1982 | 1988 |
|---------------------|-------|------|-------|
| Ever married women | | | |
| Total | 14.3% | 7.7% | 10.3% |
| White | 12.3 | 6.7 | 8.8 |
| Black | 30.5 | 15.9 | 22.8 |
| Never married women | | | |
| Total | | 25.3 | 25.4 |
| White | | 20.3 | 14.5 |
| Black | | 30.8 | 35.7 |

During the same period, a quarter of births (approximately six hundred thousand births) to "never married" women were unwanted. For both "ever married" and "never married" women, black women, as compared to their white counterpart, had a greater percent of unwanted children (Table 3). Note: the term "unwanted" refers to the mother's attitude toward the pregnancy at the time of conception. Although the births were unwanted at conception, it does not necessarily follow that they will become unwanted children.⁷

Why should pediatric dentists be concerned?

Unwanted or mistimed, (whether eventually wanted or not) the "unexpected" child can create financial, psychological, and a wide range of other family difficulties. Determining whether the conception of a particular child (i.e., prospective patient) was unwanted, may be beyond the purview of a pediatric dentist. Yet, the dynamics of the parent-children interactions are an all-important concern in the development of the provider-patient and provider-parent relationships.

As pediatric dentists continue to expand their services to varying segments of our communities, understanding the relationship of the child and the parent(s) could take on increased significance.

IN PROSPECTIVE

No doubt, many dentists long with nostalgia for the dental practices in the era of Drs. Kildare and Marcus Welby. So what if the dental burs rotated at six or seven thousand revolutions per minute (while "warming" the pulp of the particular tooth) and turbines were used solely to generate electricity. So what if silicate restorations washed out on a regular basis, and alginate, plaster and compound were the impression materials of choice (in fact, they were just about the only impression materials). And so what if you triturated the amalgam by hand and squeezed out the excess mercury with a piece of cloth. Practice overheads never reached fifty percent and there were no such things as third-

party oversight, advertising, commercial dentistry, and the rest of our present day world of dentistry that makes us pine for the "good olde days."

Unfortunately, in that bygone era (c. 1957), dental care for children and the general public was confined to narrow segments of our communities. Less than half of the population visited a dentist in a particular year. A third of the general population did not visit a dentist in the previous three years; 18 percent never received dental care. And 28 percent of children between five and fourteen years of age never visited a dentist.⁸

Yes, the environment for the care of children has changed. So too have the providers for these needed services. But in addition to the improvements in the technical aspects of dental treatment, increasingly, dental students and current practitioners must develop an awareness of the intra-family environment and the nature of the economic and social world within which the child (and adult) patient exist. Do you think that the next generations of dentists will look back with nostalgia to the era of St. Elsewhere and Cop Rock?

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Clinic

High frequency jet ventilation in complete oral rehabilitation

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Joel B. Sarner, MD

High Frequency Jet Ventilation (HFJV) has been defined as ventilation using small tidal volumes delivered through a small cannula at a respiratory rate at least four times the natural breathing frequency of the subject being treated.¹ This system delivers low-peak, airway pressures, adequate alveolar gas exchange and a stable cardiovascular function.²

To date, the use of HFJV system in the operating room in conjunction with complete oral rehabilitation has not been reported. The objective of this study is to evaluate the applicability of HFJV system to complete oral rehabilitation and to define possible indications.

REVIEW OF THE LITERATURE

Ventilation using a high-pressure source of oxygen through a small cannula was introduced by Sanders in 1967.³ He demonstrated the ability to ventilate patients through an open bronchoscope using an intermittent jet of oxygen under high pressure. Two years later in 1969, Oberg and Sjostrand ventilated dogs at 60-100 breaths/min., which reduced the respiration-synchronous variations in blood pressure, established a constant heart rate and a systemic arterial pressure that did not vary with respiration.⁴ Lunkenheimer *et*

al, in 1973, were the first to report effective ventilation in animals using tidal volumes less than the anatomic dead space.⁵ Various methods of generating high frequency oscillations have been described.^{6,7} In general, the most important factor in determining overall gas exchange when the tidal volume is less than the dead space is the magnitude of tracheal flow rate.⁸

In summary, HFJV provides alternative means of ventilation with a number of potential benefits, including the use of HFJV during laryngoscopy and bronchoscopy, when conventional intubation can interfere with the operative field; and its use in patients with bronchopleural fistulae, since the smaller tidal volumes of HFJV decrease lung distention.¹⁰

Other potential applications of HFJV include patients with head trauma and increased intracranial pressure, when conventional ventilation could be associated with further elevation in intracranial pressure.⁸ The availability of HFJV for patients with major bleeding disorders who require nonsurgical dental treatment may minimize or eliminate the need and risk of replacement therapy, which is normally required before conventional intubation is attempted.¹¹ This is especially significant in cases of mild to moderate factor deficiency, and in von Willebrand's disease, since most such patients require no transfusions except for surgical procedures and conventional intubation. Other possible candidates for HFJV include patients with significant airway or craniofacial malformations, who frequently require either a tracheostomy, a fiberoptic intubation, or other potentially traumatic intubation procedure.

Lastly, this system being a one-way ventilation, requires the maintenance of an open airway in order to allow adequate exhalation to prevent the occurrence of pneumothorax.⁹

MATERIALS AND METHODS

A total of seventeen pediatric patients ranging in age from twenty-eight months to fourteen years, with a mean age of 5.2 years, were included in this study. All patients were admitted to Children's Hospital of Pittsburgh for complete oral rehabilitation, using general anesthesia. The sample included eight healthy patients; five patients with factor VIII deficiency, requiring only restorative treatment; and four patients with craniofacial syndromes. Airway management consisted of intubating the trachea nasally with a small 10-14 French catheter (Figure 1). Ventilation was established by using the Sanders high frequency jet ventilator connected to a standard anesthesia machine (Figure 2).

HFJV was used
successfully
in sixteen of seventeen
patients.



Figure 1. This photograph shows a three-year-old female prepared for complete oral rehabilitation with ventilation established through a small 10 French Catheter inserted nasally. Note the improved access to the maxillary anterior teeth.

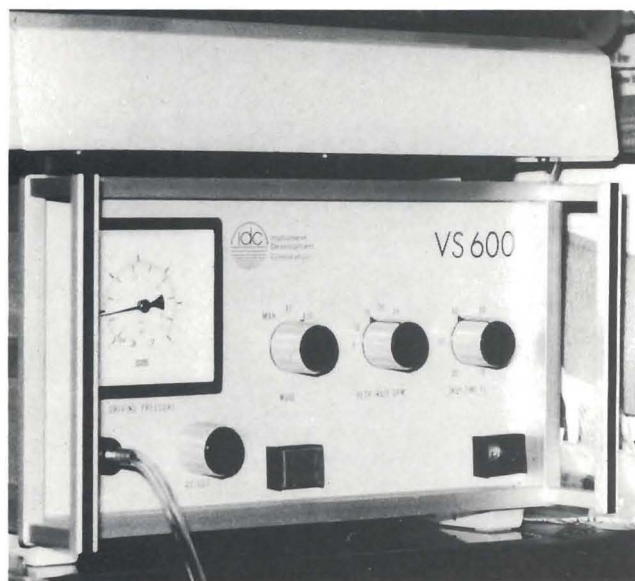


Figure 2. This photograph shows the High Frequency Jet Ventilator used during this study.

Ventilation was controlled by adjusting driving pressure and respiratory rate with adjustments made as warranted by pulse oximetry. Carbon dioxide levels, oxygen saturation and pulse rate, airway patency, temperature and heart were monitored continuously throughout the procedure. Humidification was achieved with normal saline via the (humidification part) of the

jet ventilator. Anesthesia was maintained with halothane, nitrous oxide, narcotics, muscle relaxants, and oxygen.

Following the establishment of modified nasotracheal intubation, patients were prepared for oral rehabilitation. The oropharynx was suctioned and clinically examined. No pharyngeal partition was placed. Radiographic examination was completed and prophylaxis was performed using the least amount of paste possible while the high speed suction was placed immediately lingual/posterior to the area being treated. The bulk of remaining paste was removed with a moist 4 x 4 gauze, saline irrigation and high speed suctioning. The oral cavity was then examined and the dentition charted and treatment planning completed. Restorative procedures were done first with the rubber dam in place. Multiple holes were punched into the top half of the dam and an attempt made to keep the dam away from the patient's lips during placement to enhance ease of exhalation. Restorative procedures were carried out in a routine fashion (Figure 3). Extraction of teeth required additional protection of the patient's airway by placing a loose 4 x 4 moist gauze lingual and posterior to the extraction sites immediately before the procedure was begun. Again, high velocity suction was placed posterior and lingual to the surgical site. Following the completion of extractions, the oral cavity was carefully inspected, suctioned, and sutures were placed.

Figure 3. This photograph illustrates the modifications used throughout this study with the rubber dam.



FINDINGS

HFJV was used successfully in sixteen of seventeen patients. Only in one instance was adequate ventilation with HFJV not established and conventional endotracheal intubation required and used. The exact reason was not determined, but anatomical variation was the probable cause.

Modifications required with this system in order to carry out the dental operative and surgical procedures included the following:

- Maintenance of an open airway, which required continued vigilance to prevent foreign body aspiration.
- Adjustment of head position and careful manipulation of intraoral structures, in order to prevent airway obstruction by the posterior drop of the patient's tongue.
- Routine use of the rubber dam with multiple ventilation holes to enhance ventilation and protect the airway.
- Careful monitoring of airway patency throughout the procedure.
- Careful control of bleeding and foreign body fragments, especially during the surgical phase of the procedure.
- Completion of the surgical phase after completion of the restorative phase, to control bleeding into the airway space.
- Attempt to perform simple extractions with rubber dam in place whenever possible.

Advantages of the HFJV System included:

- Fast nontraumatic intubation.
- Noninterference with the surgical/operative field, even in the maxillary anterior segment.
- Reduced operative and postoperative intubation-related trauma.
- Less interference with radiographic imaging of upper anterior segment.

Disadvantages included:

- Opened, marginally protected airway.
- Occasional airway obstruction, due to tongue position.
- Difficulty with intraoral surgical procedures, especially with badly decayed posterior teeth and excessive bleeding.

Complications included only one failure to establish airway with a size 10 catheter. All other patients tolerated the procedure very well and oxygen saturation and blood pressure were maintained at ideal levels. None of the patients with Factor VIII deficiency required transfusions.

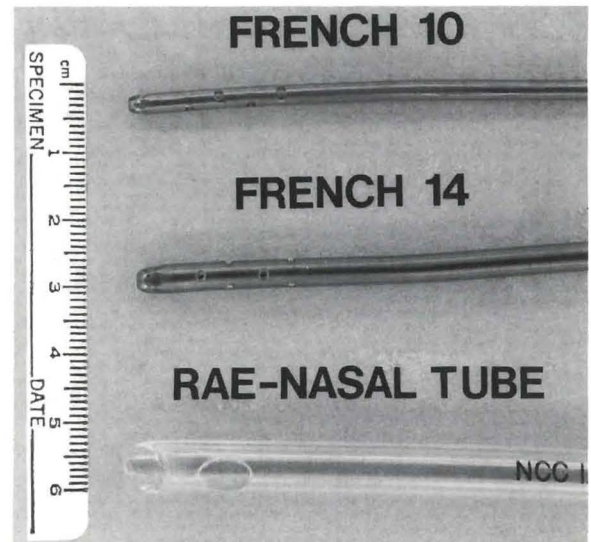


Figure 4. This photograph illustrates the differences between the soft French Catheter and the rigid Rae-Nasal endotracheal tube.

DISCUSSION

Complete oral rehabilitation is routinely performed at most institutions following nasotracheal intubation and establishment of conventional positive pressure ventilation. The use of High Frequency Jet Ventilation via a soft, small diameter catheter is evaluated as an alternative system for healthy as well as patients with bleeding disorders and craniofacial anomalies.

The findings of this study indicated that this alternative system of ventilation provides a simple nontraumatic method of establishing a nasotracheal airway with minimal risk of epistaxis, reduced need for nasal vasoconstrictors, minimized trauma to upper airway and vocal cords, and easier extubation. All these advantages arise from the physical characteristics of the soft catheters used (Figure 4). While this system seemed to have simplified the anesthetic management of most patients, it tended to complicate the operative/surgical phases of treatment. These included the necessity to maintain an open airway, the need for constant vigilance in order to prevent blockage of the airway, in addition to the increased risk of aspiration of blood and/or foreign bodies. It was quite obvious that these difficulties were easy to overcome during the restorative phase by the routine use of rubber dams. During the surgical phase, however, these difficulties were more challenging, making these procedures more stressful. With any new technique, risks as well as benefits must be considered. This technique, for instance, is constraining in patients at risk for aspiration. Also, inad-

vertent extubation is more likely with a small catheter than with a standard endotracheal tube.

In summary, this technique does not seem justifiable for healthy children undergoing complete oral rehabilitation with no evidence of airway abnormalities. Patients with a history of traumatic intubation, abnormal airway anatomy such as the case with some craniofacial syndromes, or for patients with coagulation disorders who normally require transfusions before intubation may be good candidates for HFJV.

CONCLUSIONS

- The use of the HFJV System is most advantageous to patients who are at higher risk with conventional endotracheal intubation, such as patients with bleeding disorders and craniofacial syndromes.
- The desirability and advantages of the HFJV System were best demonstrated with predominantly restorative cases.
- The advantages of this system seem to diminish with the increased complexity and length of the surgical phase.
- HFJV System utilizing a small cannulae is less traumatic and requires less time than conventional nasotracheal intubation.
- Access to the oral cavity is greatly enhanced with the use of the smaller diameter soft cannulae.

- Recovery was faster, more predictable, and with less postextubation trauma than those encountered following conventional endotracheal intubation.

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NICOTINE DELIVERY DEVICE

A leading tobacco company recently introduced a new nicotine delivery device that circumvented FDA regulation by claiming that it was a cigarette. By definition, a cigarette is primarily a small quantity of fine tobacco rolled in paper (usually rice paper), cylindrical in shape, for smoking. In contrast, this nicotine delivery device had the outer paper covering of a regular cigarette, but the cylinder was a metal chamber filled with pellets of alumina mixed with nicotine extracted from tobacco, a flavoring agent, and glycerol. Tobacco was not burned. Instead, when the device was ignited, a distal charcoal tip heated the glycerol, forming an aerosol that was inhaled by the user. The mouthpiece was made, in part, of tobacco leaves, and leaf tobacco was used to insulate the metal chamber, but these were never consumed.

This product was intended to provide the user with the sensations and enjoyment of cigarettes without burning tobacco. However, it was at least as effective as conventional cigarettes at delivering carbon monoxide and nicotine, a substance with well-recognized pharmacologic, toxic, and addictive properties.

AAP Committee on Substance Abuse: "Smokeless Cigarettes" and other nicotine delivery devices. *Pediatrics*, 87:410-411, March 1991.

The effects of feeding methods on the growth of the jaws in infants

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In the last fifteen years, information on the advantages of breast-feeding has encouraged world-wide efforts to reverse the trend to early weaning, a trend considered biologically and medically regressive by pediatricians and nutritionists.

The advantages of mother's milk include content, better internal absorption, fewer nutritional allergies, more favorable psychological development, better immunologic defenses, and a substantial economic advantage among others.^{1,2}

The data regarding early weaning are startling.³⁻⁵ Kaptanović reports that from 3.8 percent to 26.5 percent of the children in Croatia have never been breast-fed.³ Two thirds of the remaining group were breast-fed for less than three months and only a third were breast-fed for longer than three months. Recent data show a slight increase in breast-feeding. It is more prevalent in developed environments, more common in towns than in villages, and among educated mothers than among the unschooled.¹

Sucking encourages normal development of the alveolar processes and adjoining structures. Although studies show there are no significant differences in the number of malocclusions between breast-fed and non-breast-fed children, it has been found that breast-feed-

ing encourages correct intermaxillary relationships.⁵ Gedicke established this in 562 newborns (14 days old), claiming that forward movements of the mandible occurred more quickly in breast-fed infants than in bottle-fed infants.^{6,7} In a study by Heckmann *et al*, however, a difference in frequency of Class II malocclusion between the two groups is not confirmed.⁸

According to Ružmann and Vrankić, furthermore, breast-fed children have significantly fewer carious primary teeth than those who were bottle-fed.⁹

The work reported in this paper intends

- To suggest how infants should be fed and how physiologic and unphysiologic nipples and pacifiers might be used.
- To group the children according to the length of time they were breast-fed.
- To examine the influence of breast-feeding on the growth of the alveolar processes and jaws.

SUBJECTS AND METHODS

The examinations were made of 214 children (male and female), age three years \pm two months, in the nurseries of the town of Poreč in Istria, Croatia. Before examination of the children, the parents were given a questionnaire, requesting such personal data as date of birth; whether the child was breast-fed and if so, until what age; whether a physiologic nipple was used; whether a physiologic pacifier was used; whether the child sucked a finger; and whether the infant breathed

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Table 1 □ Distribution of study population by group and type of nipple used.

| Type of nipple | Groups* | | | | | | Totals | |
|------------------------|---------|--------|----|--------|----|--------|--------|--------|
| | A | | B | | C | | N | % |
| | N | % | N | % | N | % | | |
| Physiologic | 16 | (21.0) | 2 | (2.8) | 6 | (8.8) | 24 | (11.2) |
| Unphysiologic | 60 | (78.9) | 68 | (97.1) | 62 | (91.2) | 190 | (88.8) |
| Physiologic pacifier | 40 | (52.6) | 32 | (45.7) | 28 | (41.2) | 100 | (46.7) |
| Unphysiologic pacifier | 12 | (15.8) | 16 | (22.9) | 0 | (0) | 28 | (13.1) |
| Pacifier not used | 24 | (31.6) | 22 | (31.4) | 40 | (58.8) | 86 | (40.2) |

*A: Bottle-fed (N = 76).

B: Children who were breast-fed for a maximum of three months (N = 70).

C: Children who were breast-fed for longer than three months (N = 68).

%: Percent of total number of children in each of the respective groups. The percent shown in the "Totals" column is the percent of the total study population (A+B+C).

through the mouth or through the nose during sleep. There were pictures of the nipple and the pacifier on the questionnaire and parents were asked to mark the picture corresponding to related questions. During the orthodontic examination, the following factors were observed: canine relationships, anterior diastemas, overbite, and overjet.

In accordance with their eating patterns, the children were classified in three groups:

- Group A: not breast-fed.
- Group B: breast-fed, three months or less.
- Group C: breast-fed, more than three months.

Using the X^2 test, the statistical significance of differences in frequency of the prevalence of anterior diastemas, overbites, and overjets in the three groups of children, was determined.

RESULTS AND DISCUSSION

A high percentage of children in all three groups were fed using unphysiologic nipples, which do not require the same degree of activity of oral and perioral muscles as required in breast-feeding (Table 1). Such nipples are used because mothers are uninformed about the existence of more adequate nipples and in part because pharmacies do not make them available. In regard to physiologic pacifiers, the situation is much better; probably because they are available in the domestic market. A great number of children, especially those who were breast-fed for more than three months, did not use pacifiers, resulting in a great number of children, however, who sucked their fingers (Table 2).

According to Hummel *et al*, the oral part of the nipple or pacifier influences the growth of the child's oral structures, while Meyers *et al* make no mention of a

Table 2 □ The frequencies of mouth breathing (during sleep) and finger sucking.

| | Groups* | | | | | | Totals | |
|-----------------|---------|--------|---|--------|----|--------|--------|--------|
| | A | | B | | C | | N | % |
| | N | % | N | % | N | % | | |
| Mouth breathing | 10 | (13.1) | 8 | (11.4) | 14 | (20.6) | 32 | (15) |
| Finger sucking | 10 | (13.1) | 4 | (5.7) | 14 | (20.6) | 28 | (13.1) |

*A: Bottle-fed children (N = 76).

B: Children who were breast-fed for a maximum of three months (N = 70).

C: Children who were breast-fed for longer than three months (N = 68).

%: Percent of total number of children in each of the respective groups. The percent shown in the "Totals" column is the percent of the total study population (A+B+C).

possible relationship between nipple usage and the need for orthodontic treatment.

Mouthbreathing during sleep occurred most frequently in children of Group C. Children between the ages of six months and five years frequently keep their lips separated, although they breathe through the nose; it is possible, therefore, that some parents may misinterpret what they see.¹³ There were no statistically significant differences in the frequencies of Class I and Class II malocclusion among the individual groups of children (Table 3). The same differences were not observed in the studies by Heckmann *et al*.⁸ Are we overestimating the importance of breast-feeding in the development of proper jaw relationship?

In studying the etiology of dental crowding, Dandoit especially emphasized the substitution of bottle-feeding for breast-feeding as an important factor.¹⁴ Data in Table 4 support the conclusion in part only. The way an infant feeds plays some role in the occurrence of diastemas between the anterior primary teeth. There are differences between the observed and theoretical frequencies for the children of Group A and Group B (positive direction); while they were not established in children of Group C, where they were expected to be found.

There were no statistically significant relationships between the prevalence of overjet and overbite and the way the child was fed (Tables 5,6). As far as its (breast-feeding) influence on the growth of the stomatognathic system is concerned, the conclusions are slightly more complex. There are numerous endogenous and exogenous factors that influence the occurrence of malocclusion.

Breast-feeding should be used for at least nine months, and there were almost no such children in this study;

Table 3 □ Relation between class of malocclusion and feeding method.

| Angle classification | A | Groups* B | C | Σ |
|----------------------|---------------------------------|---------------------------------|---------------------------------|-----|
| I | fo = 56 fe = 55.7 d = 0.3 | fo = 52 fe = 51.3 d = 0.7 | fo = 46 fe = 46.9 d = 0.9 | 154 |
| II | fo = 20 fe = 20.3 d = 0.3 | fo = 18 fe = 18.7 d = 0.7 | fo = 18 fe = 17.1 d = 0.9 | 56 |
| Σ | 76 | 70 | 64 | 210 |

$\chi^2 = 0.105$; $df = 2$; $P > 0.01$

In group C four children had an Angle Class III occlusion

fo = observed frequencies
fe = expected frequencies
d = difference

*A: Bottle-fed (N=76).

B: Children who were breast-fed for a maximum of three months (N=70).

C: Children who were breast-fed for longer than three months (N=68).

Table 4 □ The frequency of diastema in the primary dentition as related to feeding method.

| Diastema | A | Groups* B | C | Σ |
|----------|-----------------------------------|-----------------------------------|-----------------------------------|-----|
| Yes | fo = 40 fe = 48.30 d = 8.30 | fo = 52 fe = 44.49 d = 7.51 | fo = 44 fe = 43.21 d = 0.79 | 136 |
| No | fo = 36 fe = 27.70 d = 8.30 | fo = 18 fe = 25.51 d = 7.51 | fo = 24 fe = 24.79 d = 0.79 | 78 |
| Σ | 76 | 70 | 68 | 214 |

$\chi^2 = 7.431$; $df = 2$; $P > 0.01$

*A: Bottle-fed (N=76).

B: Children who were breast-fed for a maximum of three months (N=70).

C: Children who were breast-fed for longer than three months (N=68).

many children were supplementally fed using unphysiologic nipples. Although a great number of children (especially those who were bottle-fed) using unphysiologic nipples, and others who were breast-fed, did not use a pacifier, they did suck a finger. It is important, therefore, to recognize the influence of unfavorable factors on the growth and development of the oral and facial structures, as well as the influence of favorable factors, such as breast-feeding.

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Table 5 □ The frequency of overjet as related to feeding method.

| Overjet | A | Groups* B | C | Σ |
|----------|-----------------------------------|-----------------------------------|-----------------------------------|-----|
| Normal | fo = 42 fe = 49.57 d = 7.57 | fo = 52 fe = 46.89 d = 5.11 | fo = 48 fe = 45.54 d = 2.46 | 142 |
| Negative | fo = 32 fe = 24.43 d = 7.57 | fo = 18 fe = 23.11 d = 5.11 | fo = 20 fe = 22.46 d = 2.46 | 70 |
| Σ | 74 | 70 | 68 | 212 |

$\chi^2 = 5.59$; $df = 2$; $P > 0.01$

In group A two children had a positive overjet.

*A: Bottle-fed (N=76).

B: Children who were breast-fed for a maximum of three months (N=70).

C: Children who were breast-fed for longer than three months (N=68).

Table 6 □ The frequency of overbite as related to feeding method.

| Overjet | A | Groups* B | C | Σ |
|-----------|-----------------------------------|-----------------------------------|-----------------------------------|-----|
| Normal | fo = 28 fe = 29.23 d = 1.23 | fo = 24 fe = 26.15 d = 2.15 | fo = 28 fe = 24.61 d = 3.39 | 80 |
| Open bite | fo = 26 fe = 23.38 d = 2.62 | fo = 18 fe = 20.92 d = 2.92 | fo = 20 fe = 19.69 d = 0.31 | 64 |
| Deep bite | fo = 22 fe = 23.38 d = 1.38 | fo = 26 fe = 20.92 d = 5.08 | fo = 16 fe = 19.69 d = 3.69 | 64 |
| Σ | 76 | 68 | 64 | 208 |

$\chi^2 = 3.41$; $df = 4$; $P > 0.01$

In group B there were two and in group C, four children with an edge-to-edge bite.

*A: Bottle-fed (N=76).

B: Children who were breast-fed for a maximum of three months (N=70).

C: Children who were breast-fed for longer than three months (N=68).

Case reports

Short root anomaly in a patient with a history of Stevens-Johnson syndrome: report of case

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Stevens-Johnson syndrome is a serious life-threatening variant of a fairly common disease called erythema multiforme.^{1,2} This syndrome was first described in 1860 by Dr. Von Hebra. He referred to the syndrome as erythema exudativum multiforme.³ It was not until 1922 when Stevens and Johnson reported two cases of the same disorder, not knowing that it had been previously reported by Von Hebra. As a result of their report, the disorder is referred to as Stevens-Johnson syndrome. Erythema multiforme is an inflammatory reaction of the skin and mucosa characterized by vivid erythematous, urticarial, bulbous, and/or purpuric lesions that may appear on the skin or mucosal membranes.^{2,4} Stevens-Johnson syndrome represents a more serious form of this disorder and may be seen as mucosal, ocular, and cutaneous lesions, with or without systemic complications, such as gastrointestinal tract lesions, nephritis, cardiac arrhythmia and pericarditis.² It begins with prodromal symptoms, such as an upper respiratory tract infection, (e.g. pharyngitis), fever, malaise, vomiting, and arthralgia followed by cutaneous lesions, sloughing of mucous membranes, and ocular inflammations.^{1,5} The skin lesions are sharply demarcated and have a bull's eye or target appearance.² Multiple etiologies of Stevens-Johnson syn-

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drome have been described; however, an exact or purely identifiable cause has not been determined.⁵ A group of authors reported on suspected causes of the syndrome, which include involvement secondary to microbial diseases (e.g. pneumonia, meningitis, measles, mumps, etc.), internal malignant conditions, connective tissue disease, vaccinations, deep x-ray therapy, contact dermatitis, and drug reactions.² Some of the drugs that have been implicated in the initiation of Stevens-Johnson syndrome are sulfanomides, anticonvulsants, penicillin, and barbiturates.⁶

There also have been dental findings reported in association with Stevens-Johnson syndrome. De Man describes a case of abnormal root development.³ In his case report, he states that nearly all the teeth of the permanent dentition had short roots, while some of the teeth were completely absent. He concluded from his findings that the cessation of root development may have been precipitated by an attack of Stevens-Johnson syndrome, which occurred at the age of seven or eight years. The age of the patient and the onset of the disorder corresponded to the time of a cessation of root development. De Man assumes that the severe attack of erythema multiforme (Stevens-Johnson syndrome) may have damaged or even destroyed the epithelial root sheath during this attack. Ranalli and co-workers reported a case of abnormal root development in Stevens-Johnson syndrome.⁵ In their report, they noted that the patient exhibited varying degrees of generalized abnormal root development. The premolars and the mandibular permanent second molars were the most severely involved. The roots of the permanent incisors and maxillary permanent first molars were also involved, but to a milder extent. They describe the root abnormality in their case report as retardation of root development. Root closure of the apices, however, was evident as viewed on the radiograph as a normally appearing periodontal membrane space around the apex.

Another report by Nazif and co-workers on fourteen pediatric cases of Stevens-Johnson syndrome state that the initial distribution of the soft-tissue lesions may occur in the oral, perioral, and facial regions, but not in all cases.¹ They report that the progression of oral lesions can become severe enough to impair mastication and deglutition. The authors recommend that careful oral hygiene measures be performed to reduce discomfort, prevent secondary infection possibly associated with the lesions, and to facilitate feeding. Symptomatic therapy may be instituted in the more severe cases by using alkaline mouth rinses, topical anesthetic agents, and corticosteroid ointments. Milder cases, according to their report, may be managed by routine oral physiotherapy. Vanderveen *et al*, in a report on etiological factors in Stevens-Johnson syndrome, note that mucosal lesions may form on any mucous membrane, but the mouth is the most common site.² These lesions are characterized by macular erythema, edema, vesiculation, ulceration, crusting, fissuring and bleeding. The lips are described as swollen, fissured, eroded and covered with a bloody crust. Other oral mucosal tissues, such as the tongue, gums, buccal mucosa, larynx, and pharynx are involved in a similar fashion.

CASE REPORT

Medical history

A ten-year-old, biracial male was seen on January 23, 1990 at the Children's Hospital, Birmingham, Alabama, as an outpatient for a routine dental evaluation. His medical history was reviewed at this visit. The patient was a healthy male with no major medical problems until September 12, 1985, at age five years and five months. At this time, he was admitted to an army hospital at Fort Hood, Texas, because of the onset of mild dehydration caused by what appeared to be a viral

There also have been dental findings reported in Stevens-Johnson syndrome.

syndrome. On the night of his admission, he developed a rash over his face, upper trunk and groin areas, which was described as maculopapular with flaccid vesicles. He had taken no medications other than children's Tylenol in the two weeks before his admission. Because of the severity of his condition, he was transferred to a pediatric intensive care unit at Brook Army Medical Center, San Antonio, Texas. At this time, he was diagnosed as having severe Stevens-Johnson syndrome and spent thirty-two days in the intensive care unit. His course with Stevens-Johnson syndrome was complicated by the development of a lung abscess, which was treated with IV Nafcillin. Severe sinusitis, otitis externa, esophagitis, duodenitis, and blepharitis further complicated his condition. Since the initial episode of Stevens-Johnson syndrome, he has continued to have problems with chronic sinusitis, hyperactive airway disease, and chronic keratoconjunctivitis with recurrent bacterial superinfection. The physician who treated this patient for Stevens-Johnson syndrome stated that he had never seen a case with such severe, ongoing, chronic complications, and it was felt that there might be some underlying reasons for this patient's chronic inflammatory problems of the eyes and sinuses. It also was determined later that he had supraventricular tachycardia. No SBE prophylaxis, however, is required for this heart condition.

Dental history and findings

On the initial dental visit at The Children's Hospital, an oral examination, prophylaxis, fluoride application, and treatment plan were performed. Radiographs including a panoramic film and two bitewings were taken as well at this visit; however, due to a mechanical problem with the x-ray film processor, the films were not available for viewing. It was noted in the dental chart that the patient had some carious lesions in his permanent dentition. He had only a few remaining primary teeth and was in the late mixed dentition stage. He also displayed some mobility of his permanent first molars and his maxillary central incisors and all the mandibular permanent incisors. It was decided to complete the examination on another visit after the radiographs were developed and available for viewing. The patient's medical history was thoroughly reviewed by the dentist prior to the cleaning.

Approximately a month later, the patient returned for a follow-up examination. Upon inspection of the radiographs, it was noted that the roots of all four permanent first molars, the mandibular permanent incisors, and the maxillary central incisors were only about



Figure. Panoramic radiograph of patient with a history of Stevens-Johnson syndrome demonstrating varying degrees of arrested root development in the permanent dentition.

one-third developed (Figure). There apparently was a cessation of root development of these teeth, which accounted for the mobility noted at the earlier appointment. Also seen on the panoramic film was an area of enamel hypoplasia involving the middle half of the crowns of the mandibular second premolars. These premolars were unerupted. By observing the length of root present and the level of enamel hypoplasia in the affected teeth, there was a correlation between the age of the patient at the onset of Stevens-Johnson syndrome and the stages of tooth development.^{7,8} The dental treatment plan included restoration of carious teeth with the exception of the maxillary permanent right first molar, which was charted for extraction. This treatment was scheduled to be performed in the hospital using a general anesthetic. In the same treatment session, an ophthalmologist planned to do a tissue graft from the palate to an eyelid that was scarred. The patient, however, failed to show for the surgery.

CONCLUSION

Even though an exact etiology was not identified with Stevens-Johnson syndrome in this case report, the clinical findings were consistent with this disorder. The most distinctive oral manifestation of Stevens-Johnson syndrome is the development of the erythematous lesions involving the oral mucosa and perioral tissues. There have been, however, oral sequelae reported that affect the developing dentition and can be traced back to the time of onset of Stevens-Johnson syndrome. De Man reported a case of abnormal root development possibly due to erythema multiforme (Stevens-Johnson syndrome).³ He concluded from his case report that the cessation of root development and the stage of dental development corresponded with the age at which

Stevens-Johnson syndrome occurred in his patient. Another case report by Ranalli *et al* also demonstrated short root development, possibly associated with a previous episode of Stevens-Johnson syndrome.⁵ Despite the fact that there are only a few case reports of short root development and Stevens-Johnson syndrome, it is apparent from this case report and the reports from De Man, and Ranalli *et al*, that there is a strong possibility that the developing dentition may be affected as a result of this disorder and its complications.^{1,5} The parents of a child with a diagnosis of Stevens-Johnson syndrome should be informed of this probable association, which may assist them in preparing for conditions that may be manifested later on in life.

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ERYTHEMA MULTIFORME EXUDATIVUM

The most outstanding features of erythema multiforme exudativum (syn. Stevens-Johnson syndrome, Fiessinger-Rendu syndrome, and ectodermosis pluriorificialis) are stomatitis, conjunctivitis, balanitis, and skin lesions. The disease, seen primarily in young adults and more frequently in men, has an acute onset, and runs a self-limited course from one to several weeks. It is often preceded by an upper respiratory infection, and fever frequently is present. The cutaneous lesions vary from small papules to extensive lesions and often have an iris-like shape with a central indentation. The frequency of oral manifestations in erythema multiforme exudativum may vary from about 40 to 1000 percent. Very characteristic is extensive crust formation on the lips. The crust formation can be helpful in making the diagnosis. The oral lesions, which have been reported to go through the following stages: macular, bullous, sloughing, pseudomembranous, and healing, are seen also on the buccal and gingival mucosa, tongue, and hard and soft palate.

Pindborg, J.J.: *Atlas of diseases of the oral mucosa*. Copenhagen: Munksgaard, 1985, p 242.

ABSTRACTS

Friedlander, Arthur H. and Eth, Spencer: Dental management considerations in children with obsessive-compulsive disorder. J Dent Child, 58:217-222, May-June 1991.

Children suffering from obsessive-compulsive disorder frequently manifest bizarre behaviors that contribute to the development of oral pathology. The medications used in management of the disorder can cause profound xerostomia and compound the magnitude of oral disease. An understanding of the diagnosis and treatment of the disorder will better prepare the dentist to meet the needs of this unique group of patients.

Psychopathology; Obsessive-compulsive disorder; Caries; Dental neglect; Drug therapy

Wright, F.A. Clive; McMurray, Nancy E.; Giebartowski, Jack: Strategies used by dentists in Victoria, Australia, to manage children with anxiety or behavior problems. J Dent Child, 58:223-228, May-June 1991.

Two hundred and sixty-seven Australian dentists from the State of Victoria, representing members of the Australian Society of Dentistry for Children (AusSDC) and randomly selected practitioners, responded to a survey on attitudes and practices in the management of anxious children or children with behavior problems. The most common strategies used by dentists in this study were: permitting the child to exercise some form of control over terminating the treatment, if they were experiencing difficulties; furnishing waiting areas with play materials; and using a Tell-Show-Do approach to the provision of dental care. Members of the Australian Society of Dentistry for Children differed from general dentists by more frequently teaching anxious children a

technique of relaxation and also by more frequently using a mouth prop or rubber dam during the delivery of care. Younger dentists tended to use behavioral strategies more frequently than older practitioners. Women dentists more frequently than male dentists, used strategies including: spending more time with the child before entering the operatory; setting shorter appointment sessions; and permitting the child to hold a toy or a mirror during dental treatment. In contrast to North American studies, few of the Australian dentists used the Hand-Over-Mouth technique to control hysteria. Australian dentists appeared to rely more frequently than their North American colleagues on setting shorter appointment sessions as a major strategy in managing children with anxiety or other behavioral difficulties.

Anxiety, dental; Pediatric dentistry; Australia; Attitudes [and] behavior

Steelman, Robert: Age and sex predilection of unmanageable Hispanic pediatric dental patients. J Dent Child, 58:229-232, May-June 1991.

The Tell-Show-and-Do behavior management technique has been the most frequently utilized method to obtain cooperation from pediatric dental patients. The purpose of this study was to determine the age and sex predilection of unmanageable Hispanic pediatric patients. Five hundred sixteen normal Hispanic pediatric dental patients, ranging in age from three to fourteen years, were introduced to and received dental treatment using only the Tell-Show-and-Do, positive reinforcement, and voice-control behavior-management techniques. The majority of these patients (95.7 percent) were successfully managed. Cooperation was not obtained for twenty-two of these

patients (4.3 percent) who ranged in age from three to six years. Uncooperative female patients, three to four years of age, outnumbered three-to-four-year-old uncooperative male patients, by approximately twofold. Explanations for the difference in the lack of cooperation between males and females included lack of parental presence in the operatory, sex of the patient, and maternal anxiety.

Behavior-management techniques; Hispanic children; Tell-Show-and-Do method; Positive reinforcement; Pediatric dentistry

Koroluk, Lorne D. and Riekman, George A.: Parental perceptions of the effects of maxillary incisor extractions in children with nursing caries. J Dent Child, 58:233-236, May-June 1991.

This study investigated parental perceptions of children who had extensive nursing caries that necessitated the extraction of the four maxillary incisors. The study investigated social skills, speech development, school progress, and personality changes in these children as perceived by their parents. The majority of parents saw no noticeable behavior change after the extractions; classified post-extraction behavior as normal; believed that their child had no problems making new friends; and perceived that their child had no difficulty speaking or learning to speak without the maxillary incisors.

Extraction, maxillary incisors; Nursing caries; Pediatric dentistry; Difficulties, social [and] developmental; Perceptions, parental

Waldman, H. Barry: Almost eleven million special children. J Dent Child, 58:237-240, May-June 1991.

A review of the recent report on national rates for children with delayed development, learning disabilities and emotional problems is provided. The concerns of pediatric dentists are considered.

Pediatric dentistry; Emotional problems; Development, delayed; Education, special; Disabilities, general [and] learning; Needs, special

Waldman, H. Barry: Respite care: a new social program for children at risk. J Dent Child, 58:241-243, May-June 1991.

A working definition and general overviews of the concept of respite care are provided, along with the value of such temporary care for the multitudes of children who suffer abuse and neglect (2.2 million in 1988). Existing programs are identified, with the scope of their services and number of clients discussed. The pediatric dentist is advised to become aware of such programs to offer assistance to families dealing with the stresses of caring for children with special needs.

Care, respite; Agencies, social; Services, personal care [and] general support; Pediatric dentistry; Needs, special

Waldman, H. Barry: Changing environment for the care of children. J Dent Child, 58:244-247, May-June 1991.

A review is provided of developments in child-care services; insurance coverage; use of "non-traditional" sites for medical care; and wanted and unwanted childbearing, with consequences for society in general and for women and their families in particular. Dynamics of parent-child interactions are an important concern in the development of provider-patient and provider-parent relationships.

Pediatric dentistry; Family planning; Nostalgia vs progress; Child care; Insurance, health; Care, medical; Legislation

Nazif, Mamoun M. and Sarner, Joel B.: High frequency jet ventilation in

complete oral rehabilitation. J Dent Child, 58:248-252, May-June 1991.

High frequency jet ventilation (HFJV) has been used recently as an alternative to conventional endotracheal intubation in bronchoscopy and laryngoscopy procedure. The objective of this study was to define the applicability of the system to dental procedures performed on healthy and medically compromised patients. A total of seventeen pediatric patients ranging in age from twenty-eight months to fourteen years were included. The results of this study indicate that this technique is most beneficial for non-extraction cases, especially those with coagulation disorders or significant airway abnormalities. Routine use of this technique is not generally recommended. The physical characteristics of the smaller diameter soft catheter used in HFJV exemplify the advantages of this technique.

Ventilation; Airway; Operative dentistry; Oxygen; Intubation, endotracheal

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