Early Childhood Oral Health



Second Edition

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WILEY Blackwell

Acknowledgments

We are grateful for the expertise of our colleagues and for their willingness to contribute to this second edition.

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CHAPTER 1
Introduction: Why this book?

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This book represents the second edition of the first published textbook on the topic of the name it carries—*Early Childhood Oral Health*. This topic has caught the attention of a large host of stakeholders, as evidence of its importance to those who encounter the youngest members of our society. We hope that after reading this book, you will agree there is nothing more important in dentistry than early intervention, with the connected comprehensive prevention and management of the prevalent early childhood caries. We have the tools available to us to prevent most dental caries in children at a very early age, yet we have seen an increase in dental caries in pre-

schoolers in recent years. The chapters of this book will guide you from the epidemiology of caries in young children through ways in which preventive programs for infants and toddlers can be established in a variety of settings. You will note a prevailing theme of interaction between members of a team of providers-from a variety of healthcare delivery disciplines-to avert what is essentially a behavioral disease. You will notice that our approach in early intervention is one of managing a disease—well before it manifests itself in the form of a cavity, the way in which many children, generally later than at a toddler age, might encounter their first visit to a dentist. You will also perceive a prevailing theme of education—including the family and all related caregivers, to the community of healthcare providers, all of whom need to be educated in the prevention of early childhood caries.

There is new science related to the prevention of and management of early childhood caries that you will read in the chapters of this book. There is also repetition of science that has been known for decades, indicating what the new science confirms—that early childhood caries is essentially preventable. Only now, when various societal, academic, and political forces are properly aligned are we ready to recognize the clear value of a much earlier entry into the dental world.

Many parties are becoming aware of the costs associated with the treatment of the effects of early childhood caries. These costs have historically been apparent only after children present to their dentist, or to an emergency room somewhere, at the age of 2 or 3, with a mouthful of cavities. As a society, we have accepted the fact that children present somewhere with many cavities in their primary teeth at a young age, never having had any form of prevention attempted. Only recently have we started to ask why we cannot change the way in which the profession

views the management of early childhood caries as an opportunity for prevention—versus waiting for the devastation to occur. We believe this book provides a guide to making the transition to manage the disease before it devastates the mouth and potentially beyond. We talk about the relationship between oral health and overall health. With so much more being discovered each day connecting the mouth to the body, early intervention becomes ever more important.

New in this edition is a chapter on the legal and political environment that impacts the management of ECC and specifically, the effects of the Affordable Care Act (ACA). The ACA may not affect many aspects of oral health care and delivery for adults, but it is already having an impact on children.

Another important factor that has instilled increased enthusiasm around the early management and prevention of early childhood caries is the realization by many of how rapidly an infant with no clinically evident disease can progress to a toddler with multiple caries affected teeth. Few chronic diseases persist and progress over such a long period of time, and yet so rapidly as does early childhood caries. Drs. Mouradian and Meyer describe the important role of physicians in prevention and management of early childhood caries. In the years ahead, healthcare providers form all perspectives will play a role in identification of children at the greatest risk of disease. The chapter on “referrals that work” will guide us through the ways in which existing encounters in conjunction with well-baby checkups in pediatrician and family physician offices can work in concert with referrals to dental homes to avert disease in early childhood.

In spite of attention to the subject of early childhood oral health we hope this book will bring, the overall awareness

about this most important age group as it concerns their oral health is very low. The focus therefore needs to be on the youngest of all via a unification of parties extending from parent and family to teacher and healthcare professional.

An extra course for students and practicing dentists beyond pediatric dentistry in “general” should include a discrete emphasis on early childhood oral health as is this book’s purpose. Early childhood oral health, as this book elucidates, is primarily an effort to prevent and manage early childhood caries. Although pediatric dentistry in more general terms includes a multitude of other aspects of assessing the health of children, as well as managing their oral care in a variety of ways, the emphasis in early childhood and within the pages of this book is essentially on dental caries prevention and treatment. Caries is the disease we speak of and which dominates the oral disease morbidity in early childhood. Problems that occur later in a child’s life regarding their oral health will include caries in a significant way, and will also include many other diseases and problems that are rarely seen in early childhood. The subsequent 10 chapters provide a complete landscape of views regarding dental caries and its prevention, caries management, and caries outcomes treatments in early childhood.

Many organizations tout the age one dental visit, or even earlier. The American Academy of Pediatric Dentistry as well as the American Dental Association proclaim that a child’s first dental visit should be soon after the first tooth erupts, and no later than age 1. The American Academy of Pediatrics says that the first oral health screening should take place at or around 6 months of age, likely in conjunction with a well-baby checkup already on the docket as part of the normal periodicity of examinations.

It sounds like integration of an oral assessment into an existing examination that occurs for other purposes is the right thing to do, yet historically this has not occurred. Only after the relatively recent emphasis on oral health have physicians begun to think about their own role in the comprehensive management of oral health for the children they have been seeing many times at a very young age. Physicians are now well integrated into the messages that go out to healthcare team about oral health in early childhood. Yet, the work is not yet complete. As in any "system" of healthcare delivery, access to the most appropriate care for all must target those at greatest risk as early as possible in the course of potential disease, and there must be a mechanism in place to provide continuous, comprehensive and effective preventive and surgical care where needed most. The system must facilitate not only the best possible access to care for the greatest in need, but must have the assurances in place that higher risk patients will be treated more aggressively. This would focus more attention and cost on those infants and toddlers deemed to be at the greatest risk. Dentistry as a whole is new to risk-based management of patients as it relates to dental caries. There is no better opportunity to implement a risk-based approach to caries management than in the pre-school population to avert the devastation of early childhood caries. In the chapter by Quinozez and Crall, an approach to managing the youngest children related to their dental caries risk level is described.

A decade of discussion hasn't "tipped" the situation yet. Although many in the business of dealing with preschoolers and their oral health would say that we have reached the point of dealing with caries management effectively in the youngest children, clearly there is a long way to go. Third party payors, holding an enormous amount of influence over the determination of who gets care when and how

often, are also beginning to recognize the value of early intervention—as it should occur in managing caries at the youngest possible age.

Parents are engaged early on, yet we haven't talked with them enough and at each possible opportunity about their critical role in preventing and managing early childhood caries in their infant or toddler.

For the dental professional, bringing early childhood oral health into their practice might amount to a change in practice philosophy. Dr. Curtis tells us in his chapter how to make an infant and toddler practice work in anyone's office. Dental practices may not yet be accustomed to the notion that patients will be treated at an age and from a perspective that most will not need restorative surgical intervention. The idea that a visit with an infant or toddler and their parent(s) will generally be without any "treatment" to deliver may be a foreign one. Clearly, however, we are moving toward a new kind of dentistry, a kind where our words and actions regarding anticipatory guidance and prevention will be the care we deliver that will be the most impactful for the child's entire life.

Third party payors, as noted, are recognizing the problem of waiting until children are older before intervention takes place. With fewer teeth in mouth at a very young age, it is far simpler to engage parents to comply with oral hygiene regimens that can be implemented early for lifelong prevention. Drs. Nowak and Casamassimo tell us how anticipatory guidance can be brought to parents early on, to engage their enthusiasm toward better health outcomes for their child, and to demonstrate their role in preventing disease. Their other chapter talks about the blend of risk assessment and referral of the most risky to a dental home—something from which all children will benefit, and from which the most at risk will particularly benefit.

Stakeholders

What is likely to be the primary factor in “tipping” the access to care issue for infants and toddlers in the direction of a dental home for all children by the first birthday is the multitude of stakeholders engaged in making this happen. Whereas a decade ago it was the dental professional community speaking alone toward this end, today and even more in the future, a long list of interested parties is striving to make this happen. In Dr. Lee’s chapter, we learn of community programs that connect a long list of stakeholders, all with the common interest of early childhood oral health.

Parents are at the head of this list. Infants and toddlers are dependent upon their families to maintain their health. Parents are becoming aware of their role in establishing a dental home early in life, and the difference that can make in preserving good oral health. In her chapter on family oral health education, Dr. Brickhouse shows the essential role of parents and families in protecting their child’s oral health early in life. We learn therein the specific means of communicating with parents and the responses to the questions they will ask. Early childhood oral health in the office is about communication with the parents and the family. Dr. Segura tells us about the complete list of elements in the examination of an infant or toddler’s mouth, and therein one sees the importance of communication with the parents and family as a critical component of achieving success.

Now is a very good time for every stakeholder who cares about early childhood oral health to ask the questions they need to ask. By encouraging parents, families and all who encounter the youngest children to ask questions about the child’s oral health alongside their total health, we will provide the answers that will lead to solutions that are

effective. Stakeholders, by definition, have a vested interest in the well being of the young children around whom they hold stake. Given that position of caring, and with the multitude of touch points collectively managed by the various stakeholders, we have both the opportunity and the obligation to educate each stakeholder individually about their component role in preventing and managing the oral health of children.

As generations of stakeholders have changed, so have the expectations regarding health in general. What was expected in terms of oral health decades ago is not necessarily expected today. Whereas parents placed their own health and the health of their children “solely” into the hands of professionals in the past, today they understand their inextricable role in maintaining good health. Again, this provides both the opportunity and obligation to educate all stakeholders so that they possess the tools necessary to maintain good oral health along with total health of all children.

Several decades ago, when fluoridated toothpaste commercials on television not only raised the awareness about oral health, about cavity prevention and about fluoride’s great benefit in general, they also perhaps provided another message. When we heard the famous line “look mom, no cavities,” after the child in the ad returned from the dentist, we were ingrained with the appropriate powerful message that good oral health maintenance including a regimen of fluoridated toothpaste can prevent cavities. We also learned that the outcome measure of success—no cavities—was a conclusion reached by the dentist—only after his/her examination. Today, when we talk about early childhood oral health, we recognize the role of fluoride in various forms, including toothpaste, in preventing early childhood caries and maintaining good oral health. We also know, however, as we did then, that

there is a process of caries progression that leads toward what might become a “cavity.” What has changed today, and what might be a good way to describe in a nutshell the difference in the way we should talk with our patients/parents today, is in the communication about the caries process. Only in this way can we effectively integrate all the various components of a comprehensive and patient-specific prevention program that includes information about a proper fluoride regimen, as described in the chapter by Dr. Tinanoff. This may be the first look at a complete fluoride program with infants and toddlers specifically in mind. And only when we think about the process of dental caries progression as one we want to communicate to our families, can we provide the right information about other aspects of a comprehensive preventive program that includes information about the child’s diet and oral hygiene, and the role of the parents/family in changing behavior; behavioral change that increases interaction with their child to achieve the desired healthy outcome.

Although it is not universally true, there is clearly a trend in the practice of dentistry for children for parents to be present in the operatory during a dental visit. This automatically provides an opportunity to communicate with parents of children of all ages. Clearly a parent must be present in the operatory to allow an effective infant or toddler examination, but importantly to allow the right kind of communication to effect behavioral change that will result in good oral health. Given the expectation that parents will be present in the operatory for a dental visit with an older child, there is an additional opportunity to engage the parent in communication concerning the younger child about establishment of a dental home as early as possible.

There is a culture of interaction with today's parents that will make them feel more comfortable in asking the right questions about all of their children, including of course, the baby in their arms while they are attending a visit of their older child. Additionally, as we educate more and more parents about the importance of early intervention toward good oral health, peer pressure from other parents about the essential role of a parent in maintaining oral health might further encourage early establishment of dental home.

Our communication to families individually and collectively, and the way we talk with consumers in general should make it no longer acceptable to have "rotten" teeth. Many parents of the past may have had the expectation that a child would get cavities, and/or that it was not really a problem. As discoveries are made about the morbidity of dental caries in the youngest children, combined with the host of changing expectations, we might effectively engage more parents to establish a dental home for their child early on.

This book will not provide a repeat discussion of the dental caries process and the biology or microbiology of dental caries. There are many resources available to provide such information. Our intent in writing this book is rather to bring information available from the collective body of science today into programs delivered in different venues that collectively result in improved oral health at a very young age.

Bacteria from mom? There is developing body of science related to the familial transmission of the caries-causing oral flora from parent to child during what Caufield calls the "window of infectivity," which takes place during the establishment of the primary dentition in the mouth in the first years of life. One can learn much scientifically, and can

imagine the discoveries and resultant therapies that will be in place extending from Caufield's important work. And in the context of this book, one might imagine the opportunity to educate families about the implications of transmission of bacterial flora from parent to child as an opportunity for their own engagement in their child's oral health. This opportunity exists not only in the dental home, but in the many places a young child encounters various stakeholders.

Who is supposed to brush whom? In the chapters by Drs. Segura and Curtis, we learn not only about the various elements of an infant or toddler examination, but also about the education on effective oral hygiene for babies. Parents must be educated on their essential role in brushing their child's teeth. Although we might all assume that this important parental duty is well known, we could certainly spend much more time not only educating about toothbrushing, but demonstrating how to do it well. Additionally, we should document how well parents actually can brush their child's teeth. Only by witnessed "coaching" on this absolutely essential parental duty—with subsequent documentation and follow up—can we expect that parents will perform adequately. Because parents are so important in the brushing of their baby's teeth, one might argue that early childhood oral health is really "parent education for early childhood oral health." Rarely can there be good oral health outcomes for children without parental engagement.

Fluoride is all around us. It exists in water, in toothpaste, and in rinses and in professionally delivered varnishes and gels. Dr. Tinanoff's chapter gives us an understanding of the importance and interaction of these and other forms of fluoride. Because fluoride is available from so many places, and is also administered professionally in many instances by healthcare professionals beyond the dental home, the dental home must be cognizant of the various oral health

“touch points” and must assume the role of managing the child’s oral health comprehensively. The chapters by Tinanoff, Casamassimo and Nowak give us effective ways of managing each child’s oral health individually, given the existence of a team of providers. Teachers are becoming important stakeholders in maintaining oral health. In school age children, they might be the first to note problems related to tooth decay that manifests in the classroom, either as a toothache that first becomes known to anyone besides the child there, or perhaps what might be originally noticed as a deterioration in performance. Pediatric dentists will commonly report anecdotal stories of school age children whose performance deteriorates, only later to discover that a toothache was the cause. A body of evidence is being developed toward this end, and teachers may be some of the first to report dental problems in their school age children. For infants and toddlers, many of whom may be in pre-school or some type of daycare scenario; it may similarly be the teacher who plays an important role. In this latter instance, however, the pre-school teacher has an important role in establishing and maintaining behaviors that are effective in improved oral health. It is therefore important to note the dental community’s obligation to properly educate all teachers about their important role in oral health maintenance, regardless of the child’s age. In fact, for the pre-schooler, the teacher’s role in dental caries prevention is more important than ever. Teachers today also have better oral health themselves than their predecessors years and decades ago. Therefore, their expectations regarding oral health will be different for the children they encounter than those of their predecessors. A different set of expectations is in place for the many stakeholders who encounter our children today, and today’s stakeholders therefore have a different vested interest in children’s oral health. Our

opportunity to intervene early on in life has never been greater.

Partnerships

Partnerships within and amongst the various stakeholders are key to implementing all of the many measures this book discusses related to improved oral health for infants and toddlers. Pediatricians and family physicians are principal players in the oral health team. They see child patients early in life, and on many occasions in the first years of life, during which time historically, dental teams have not been engaged in the process. Because of this, they've been seeing the problem for a long time—the problem being early childhood caries in the primary dentition—often within a year of the time the teeth emerge into the mouth. Although dental offices need to serve as a dental home starting in early childhood for all patients, not enough of dentistry has participated in engaging patients into their practices early in life.

Now that dentistry clearly understands its need not only to participate, but also to lead the team of caregivers, how we communicate and refer interactively becomes a critical component of successful oral care delivery at a young age. We must take advantage of the fact that children are encountered by their pediatrician or family physician many more times in their early years than by their dentist, even when properly managed in the context of a dental home. Drs. Mouradian and Myer guide us through a discussion of the interactive role of the medical and dental teams in maintaining oral health in their patients in common. Questions raised and answered include: Who is responsible for what? How much time do I have to do what? What expertise/training do I need/have? The question of being compensated for services provided is important, and is an

emerging topic prominent on the agenda of third party payors. Most notably, the role of the medical office in risk assessment is critical. Given the challenges of obtaining a dental home for all children soon after the first teeth erupt and no later than by the first birthday, it certainly makes good sense to identify the infants at the greatest risk for dental caries, and provide them with all the elements of a dental home as early on as possible.

Family physicians see the minority of young children, with pediatricians seeing the majority. Mouradian and Myer talk about their respective and mutual responsibility to assist all their patients in maintaining good oral health and the role of their medical teams. As in dentistry, family physicians have the advantage that they can treat parents as well as infants/toddlers in their practice. General dental practices see 70% of the population of children, with pediatric dentists seeing the minority of (older) children, the reverse of the situation in medicine.

Historically, we have poorly trained our general dentistry graduates in pre-doctoral curricula in dental schools. Now, not only is there an interest, but there also is a desire to learn about early childhood caries prevention in the pre-doctoral dental curriculum, as well as now in the medical school curriculum. Additionally, pediatrics as well as family medicine residents are exposed to curricula showing them how to provide oral health assessment and referral in their practices. In many parts of the US and certainly around the world, there is no specialist pediatric dentist or pediatrician. In these areas and others, it is important for generalists in medicine and dentistry to work together to maintain oral health while establishing a referral mechanism for special needs and complex restorative treatment patients.

There is a great need for regular and easy access continuing education for medical and dental teams in all aspects of early childhood oral health. This book is intended to provide a comprehensive view on the management of patients in early childhood in order to maintain oral health. Communities must establish there own mechanisms to guarantee that teams of providers remain up to date with the latest scientific methods in early childhood oral health.

Dental Industry role

Industry cares about oral health, particularly for the youngest of children. Not only is there a profit motive, an essential component for product development and distribution in industry, but also early childhood oral health related products provide a means to “do well by doing good.” Given the relative newness of the world’s attention to oral health for the youngest of children, we are only now seeing the possibilities in the creation of what will likely be a plethora of products to help parents and healthcare professionals maintain the oral health of the babies they treat. Although we are well aware of the benefits of fluoride delivery to infants and toddlers as discussed in this book by Tinanoff, there are other agents in various developmental stages that may also be of benefit. The effectiveness of other agents may be dependent not only on their actual clinically measured efficacy as demonstrated via clinical trials, but also by their ease of use in the context of the environment in which they are to be delivered. Additionally, as the FDA further allows additional methods of assessing the outcomes for newly developed products in terms of clinical endpoints, we will likely see many new products that will benefit the youngest of children, and especially those with the greatest risk. Dr. Donly talks about various

pharmaceuticals that either are available for use in young children or are under development. More attention to the oral health of infants and toddlers will ultimately result in the demand by dental professionals for new and better products. If one sees a child at greatest risk, there will be a need for products, in addition to behavioral change, to provide the desired results.

Likely one of the most valuable roles of the dental industry in improving oral health for infants and toddlers is in their ability to reach consumers/parents with important oral health messages. Just as the toothpaste advertisements of decades ago shaped the behavior of millions of (older) children and their parents, there will be a need to reach all of the above referenced stakeholders with newly emerging oral health messages. Perhaps the most important message is simply the need for early engagement and intervention. The dental industry, particularly the consumer products/over the counter (OTC) component therein, has the means and the need to reach families with oral health messages as they relate to product marketing. By working together as partners with the dental industry, we can therefore help shape the important messages that will ultimately improve access to care for all children at ever younger ages.

For example, teaching parents about the caries process, not just the results of caries in the form of cavities can be promulgated in a significant way by the dental industry. As new products are created that manage caries in a variety of venues, the need to educate consumers about the process of dental caries progression, and hopefully regression, will be in the hands of the dental industry.

The attention given to cosmetic dentistry products in the OTC dental business is demonstrative of how effective the industry can be in reaching consumers quickly. By

partnering with the OTC dental industry as new products for infant and toddler oral health become available, we can collectively reach the targeted audience with important oral health messages.

Media

The media collectively have a similar role to that of industry. A good story will reach a lot of people very quickly. One could then imagine how future oral care product introductions that are intended for infants and toddlers might be promoted by media as well. Similarly, as we discover more about the morbidity related to dental caries in young children, it likely won't be the scientific literature that ultimately effects change in consumer behavior in the direction of improved oral health for infants and toddlers. It will most likely be the media who reports on discoveries that will create the necessary information access. "Wouldn't you rather have a rinse than a drill?" might be a message that can be promulgated by media to engage in change. As the consumer, including all of the stakeholders mentioned in this book, learns of the caries process and their own role in managing that process, they will be more likely to engage their youngest patients to achieve oral health as early as possible.

Today's children as adults

Dr. Slayton takes us into the future in the last chapter of this book. In that future, today's children will ask more questions of their caregivers. They will likely be even more diligent than their children about health; such health achievement will include oral health. Beauty and health are often connected in the eyes of the consumer, and the current generation of parents will continue to strive for

improved health in their own children not only for health's sake alone, but also for esthetics. Whereas dental professionals today encounter many parents who don't seem as concerned as we would like them to be about a decayed and therefore unhealthy primary dentition, we hope that as we move forward into the future that it will be an increased desire for health, also as measured by improved esthetics will drive a change in behavior.

Advocates

The fact that oral health is no longer an option is being recognized by a variety of stakeholders. Oral health is medically necessary, and all who have an interest in health should therefore have an interest in oral health.

Legislators are learning about the importance of oral health, and it is likely that as funding priorities are adjusted going forward, an increased awareness about the importance of early childhood intervention to achieve oral health in all children will direct more financial investment in the various aspects of managing the various elements of dental caries prevention in all the ways we discuss in this book.

Organized dentistry is also refocusing its attention on the youngest of our children. In part, this is happening because of the recent reported increases in caries rates in pre-school children. It is also a result of the fact that dental school curricula, as noted in Dr. Lee's chapter, include more information and hands on training on how to manage dental caries in infants and toddlers. As many specialties of dentistry consolidate around restorative management, particularly related to implantology and esthetic dentistry, prevention will consolidate as well, and the attention therein will focus on the youngest of all children.

The Internet

We have seen many examples recently of how so-called “viral marketing” on the internet can achieve mass awareness change on a variety of product or healthcare ideas. If one looks at what happened with tooth whitening, it is easy to see how communication between many different age groups has effected behavioral change. Similarly, if we want to reach consumers who are the stakeholders for our infants and toddlers, the internet and all of its reach will be an important tool in spreading the word about early childhood oral health.

What we hope this book will accomplish

More engagement related to early childhood oral health by a variety of important stakeholders is our main objective. Parental engagement is the most important of all, and it is only through education of all the other stakeholders and their own engagement can we change parental behavior in all the ways we discuss in this book, to allow better oral health for their children, and early in life. We need to continue to discover more ways to bring greater time and attention to this most important aspect of dentistry. It is also the intent of this book to being an isolated focus on prevention at an early age, which is different in its form and frequency of encounter than other aspects of oral disease prevention. Clearly, one will see the need for more research in risk assessment and how to manage costs accordingly, to reduce dental caries in children that often occurs at a very young age.

This book’s audience

Many will benefit from this book. The primary audience is intended to be students in various places. Of course, it is our intent that this book will be used as a textbook for dental and dental hygiene students, and considered to be an integral part of their training to be an effective general dentist. Additionally, trainees in medicine, including residency trainees in Pediatrics and/or Family Medicine will benefit from the contents of this book. Many others, the list including nurses, social workers, teachers, dental auxiliaries and also parents will benefit from certain specific chapters herein that may be specific to their needs.

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CHAPTER 2
Early childhood caries: Definition and epidemiology

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