Treating Patients with Autism in a Dental Setting

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Continuing Education Units: 3 hours


Disclaimer: Participants must always be aware of the hazards of using limited knowledge in integrating new techniques or procedures into their practice. Only sound evidence-based dentistry should be used in patient therapy.

Autism affects 1 in 88 US children. It is more common than pediatric AIDS, diabetes, and cancer combined. Individuals with autism have difficulties with communication, social interaction and sensory processing. These characteristics pose very unique challenges in a dental setting. This course will give all team members a better understanding of the disorder and prepare professionals for the rewarding experience of helping patients with autism.

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Overview
This continuing education course begins by answering very basic questions about autism: what is it, how is it diagnosed, and what will it look like in a dental setting. A large section is dedicated to communication and sensory processing difficulties as these pose the most challenging difficulties for professionals who have never worked with patients on the spectrum. The oral health section includes what oral conditions are associated with autism with recommendations of how to handle a dental appointment, how to help the patient prepare for the appointment, how to use basic behavioral strategies to increase compliance and understanding, and lastly recommendations on products the author has found useful in working with patients with autism.

Learning Objectives
Upon completion of this course, the dental professional should be able to:
• Define autism spectrum disorder.
• Create a sensory friendly office.
• Develop an office protocol for patients with autism.
• Utilize a visual schedule.
• Implement basic behavior modification techniques to help individuals with autism behave appropriately in clinical setting.
• Increase understanding of the disorder and accompanying behaviors.

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Introduction
Autism affects 1 in 88 US children. It is more common than pediatric AIDS, diabetes, and cancer combined. Individuals with autism have difficulties with communication, social interaction and sensory processing. These characteristics pose very unique challenges in a dental setting. This course will give all team members a better understanding of the disorder and prepare professionals for the rewarding experience of helping patients with autism.
**Definition of Autism**

According to the Center for Disease Control and Prevention (CDC), “Autism spectrum disorders (ASDs) are a group of developmental disabilities that can cause significant social, communication and behavioral challenges. People with ASDs handle information in their brain differently than other people.

“ASDs are ‘spectrum disorders.’ That means that ASDs affect each person in different ways, and can range from very mild to severe. People with ASDs share some similar symptoms, such as problems with social interaction. But there are differences in when the symptoms start, how severe they are, and the exact nature of the symptoms.”

**Prevalence of Autism**

Autism statistics from the CDC identify around 1 in 88 American children are on the autism-spectrum; a ten-fold increase in prevalence in 40 years. Careful research shows that this increase is only partly explained by improved diagnosis and awareness. Studies demonstrate that autism is five times more likely in boys than girls. An estimated one out of 54 boys and one in 252 girls are diagnosed with autism in the United States. Autism is more common than pediatric cancer, diabetes and AIDS combined.

**Causes of Autism**

According to the Autism Society, “There is no known single cause for autism, but it is generally accepted that it is caused by abnormalities in brain structure or function. Brain scans show differences in the shape and structure of the brain in children with autism versus neuro-typical children. Researchers are investigating a number of theories, including the link between heredity, genetics and medical problems. In many families, there appears to be a pattern of autism or related disabilities, further supporting a genetic basis to the disorder. While no one gene has been identified as causing autism, researchers are searching for irregular segments of genetic code that children with autism may have inherited. It also appears some children are born with a susceptibility to autism, but researchers have not yet identified a single “trigger” that causes autism to develop.

Other researchers are investigating the possibility under certain conditions, a cluster of unstable genes may interfere with brain development, resulting in autism. Still other researchers are investigating problems during pregnancy or delivery as well as environmental factors, such as viral infections, metabolic imbalances, and exposure to environmental chemicals.

**Genetic Vulnerability.** Autism tends to occur more frequently than expected among individuals who have certain medical conditions, including Fragile X syndrome, tuberous sclerosis, congenital rubella syndrome, and untreated phenylketonuria (PKU). Some harmful substances ingested during pregnancy also have been associated with an increased risk of autism.

**Environmental Factors.** Research indicates other factors besides the genetic component are contributing to the rise in increasing occurrences of autism, such as environmental toxins (e.g., heavy metals such as mercury), which are more prevalent in our current environment than in the past. Those with autism (or those who are at risk) may be especially vulnerable, as their ability to metabolize and detoxify these exposures can be compromised.

**Characteristics of Autism**

ASD begins before the age of 3 and lasts throughout a person’s life, although symptoms improve over time. Some children show hints of future problems within the first few months of life. In others, symptoms might not show up until 24 months or later. Some children with ASD seem to develop normally until around 18 to 24 months of age and then they stop gaining new skills, or lose the skills they once had.
A person with ASD might:
- Not respond to their name by 12 months
- Not point at objects to show interest (e.g., point at an airplane flying) by 14 months
- Not play “pretend” games (e.g., pretend to feed a doll) by 18 months
- Avoid eye contact or want to be alone
- Have trouble understanding other people’s feelings or talking about their own feelings
- Have delayed speech and language skills
- Repeat words or phrases over and over (i.e., echolalia)
- Have trouble relating to others or not have an interest in other people at all
- Get upset by minor changes
- Have obsessive interests
- Flap their hands, rock their body, or spin in circles
- Have unusual reactions to the way things sound, smell, taste, look, or feel
- No real sense of danger
- Appear to be unaware when other people talk to them but respond to other sounds
- Have trouble expressing their needs using typical words or motions
- Not look at objects when another person points at them

Diagnosis
Presently, there is not a medical test that can diagnose autism. Instead, specially trained physicians and psychologists administer autism-specific behavioral evaluations.

Often parents are the first to notice their child is showing unusual behaviors such as failing to make eye contact, not responding to his or her name or playing with toys in unusual, repetitive ways.

The Modified Checklist of Autism in Toddlers (M-CHAT) is a list of informative questions about the child. The answers can indicate whether he or she should be further evaluated by a specialist such as a developmental pediatrician, neurologist, psychiatrist or psychologist. (Take the M-CHAT screening test here.)

A typical diagnostic evaluation involves a multi-disciplinary team of doctors including a pediatrician, psychologist, speech and language pathologist and occupational therapist. Genetic testing may likewise be recommended, as well as screening for related medical issues such as sleep difficulties. This type of comprehensive evaluation helps parents understand as much as possible about their child’s strengths and needs.

Sometimes an autism spectrum disorder is diagnosed later in life, often in relation to learning, social or emotional difficulties. As with young children, diagnosis of adolescents and adults involves observation and interviews by a trained specialist. Often, a diagnosis brings relief to those who have long struggled with difficulties in relating socially while not understanding the source of their difficulties. A diagnosis can also open access to therapies and assistive technologies that can improve function in areas of difficulty and improve overall quality of life.

It can be a very difficult time for families who are awaiting a diagnosis or who have been recently diagnosed. When working with these patients and their families be sure to offer support and compassion. Many people have compared receiving an autism diagnosis to experiencing death: the dreams and aspirations for the child have now been changed drastically due to a lifelong disability.

Related Conditions
The Autism Society lists several conditions related to autism.

Low IQ: Research studies have frequently used inappropriate IQ tests, such as verbal tests with nonverbal children and, in some cases, estimating the child’s intelligence level without any objective evidence. Tests that do not require language skills, such as the Test for Nonverbal Intelligence (TONI), can offer more accurate information about the person.

Seizures: It is estimated 11-39% of autistic individuals also develop seizures, some in early childhood and others as they go through puberty as changes in hormone levels may trigger seizures. Suspected seizures should be confirmed by electroencephalogram (EEG) and treated with anticonvulsant medications (as directed by a neurologist).

Chronic Constipation and/or Diarrhea: Recent medical literature cites that 70-80% of autistic
children have gastrointestinal symptoms. Diarrhea is most common, abdominal pain is cited next most frequently, and constipation is reported slightly less. Constipation in autism is usually not hard, impacted stools, but the slow passage of stools with long gaps in between, and loose stools when they do come.

**Pain:** Some children with autism have very high pain thresholds (i.e., insensitivity to pain), whereas others have very low pain thresholds.

**Sleep Problems:** Many individuals with autism have sleep problems. Night waking may be due to gastrointestinal issues, food/environmental allergies or intolerances, seizures or the effects of medications. Other potential causes might include: sleep apnea (pauses in breathing when the airway becomes obstructed during sleep), sleep terrors and confusional arousals. Children with sensory processing difficulties may have more problems falling asleep and increased periods of night waking.

**Hearing and Visual Impairments:** Children with a dual diagnosis of autism and a sensory impairment and their families travel many different paths at almost the same time. Some of these are determined by which disorder is identified first. Children born deaf/hard of hearing or blind/visually impaired are usually identified early and receive intervention to support their communication and interaction with their families. Sometimes, children have progressive hearing and visual impairments or a traumatic loss of sensory input. In these cases, sometimes behavioral issues are overlooked or seen as a reaction to blindness or deafness. In other cases, a child’s atypical behaviors are seen as part of their autism and not as compensation or adaptation to the increasing sensory loss. This can complicate the dual diagnoses occurring with a gap of 2 to 8 years.¹

**Related Conditions**

**Chairside to Autism**

Now that you have read the science, let’s discuss how this information translates to the dental chair. You will not initially notice anything physically different about your patients with autism. This is both a blessing and a curse. We have had numerous run-ins with people who were upset with my son because he “looks normal” but “acts strange”. Looks can be deceiving. Pay attention to body language and behaviors. Prepare yourself for these patients to communicate differently; they may not make eye contact, respond to your social initiations, or have vocal language. For example, you may hold out your hand for a handshake or a high five and be left standing there (maybe even feeling denied). They may, in fact, appear to be “in their own world”. In situations like these, we are naturally inclined to talk “about them” instead of “to them”. The best thing you can do is persist. Don’t expect them to answer, but ask questions and talk to your patient anyway. Sometimes this is the only thing I do differently than other clinicians and it works. Just because these patients struggle with social skills does not mean they do not want to have friends or meaningful relationships with others. We have the opportunity to be a meaningful relationship. Often
times individuals with autism are much more aware of their environment than they appear. Be friendly, make compliments, and try to be a friend. I have found individuals with autism are the most loyal people. Once they trust you and like you, it lasts for a lifetime and, in my experience, they are often more forgiving than “typical” patients.

Stereotypical Behavior
Self-stimulatory behavior is often referred to as “stimming” or “stereotypy” and is stereotypical of autism. It includes repetitive behavior such as rapidly flapping their hands, rocking, repeating phrases or even sounds, moving things in front of their eyes, etc. Self-stimulatory behavior is very common in individuals with autism and is different for each individual. It can happen when the individual is bored, overwhelmed, nervous, or happy. It depends on the individual. Self-stimulatory behavior may look very strange to someone who has never been around an individual with autism.

Prior to working with the patient, it is useful to find out if the patient engages in stereotypical behavior. If they do, ask what it looks like and how you should respond. If this information is not known and stereotypical behavior is observed during dental work, follow these general guidelines: Unless the behavior is disrupting dental work, do not feel an obligation to stop or change the behavior. However, if it is disrupting dental work, try redirecting the person by showing them another item or giving them something else to do with their hands.

Meltdowns vs. Tantrums
Recognize the difference between a meltdown and a tantrum. The public often verbally abuses families with autism because what others see as a “bratty” child that needs discipline may actually be the child desperately struggling with their environment.

Characteristics of a tantrum:
• When a child has a tantrum they will look around ever so often to see if their tantrum show is getting any attention or reaction.
• A tantruming child typically avoids hurting themselves.
• A tantruming child will try to manipulate the situation to their benefit.

• Tantrums achieve a certain goal and once that goal is reached all returns to normal almost as quickly as it began.

Characteristics of a meltdown:
• In a meltdown, the child with autism does not look nor care if anyone is reacting to them.
• They will not consider their own safety and stand at risk of putting themself in danger.
• Meltdowns seem to continue as if having their own power and will taper off slowly.
• No one feels in control of a meltdown.
• The meltdown might occur from a want not being met or even inability to adapt to a change in the environment; however, once a certain point is reached in the meltdown, nothing will be able to satisfy the child until the situation is over. For a simple example, the child wants a cookie (which was not permitted), a meltdown occurs and in an attempt to “make it stop” the parent offers the cookie. If this were a tantrum, giving the cookie would normally end the tantrum. However, during a meltdown, the child has lost complete control and awareness and continues engaging in the meltdown behavior (indicating that the cookie being offered is no longer relevant).

There are potentially many triggers in the dental environment for meltdowns. Before treating your patients with autism, it is the clinician’s responsibility to find out if the patient has meltdowns, what triggers them and what signs the patient will give (if any) that a meltdown is about to occur (see Appendix A for a worksheet to be completed prior to treatment).

While a meltdown can be frustrating for the dental provider as it interrupts treatment, potentially scares other patients or causes the clinician to run late, take time to consider the feelings of the other party. The parent/caregiver will feel a great deal of strife and grief and maybe even embarrassment. They will need compassion, patience and support. If you feel helpless for the hour this individual is on your schedule, imagine the energy it requires to live with it every single day. Imagine the energy expended and the amount of stress and emotion the patient has felt during this meltdown. They truly feel their environment is out of their control and may not have any other way to communicate their fear and frustration. As we focus on the
challenges of working with individuals with autism, imagine the frustration of having autism.

A Closer Look at Language
Like the general population, individuals with autism communicate in a variety of ways. Some speak vocally, others use sign, some use pictures, and some use other ways to communicate like gestures. In addition, some individuals have minimal communicative skills or lack them all together. It is a natural tendency to think that individuals who do not speak, do not understand. This is simply not true.

- Expressive Language is the ability to communicate with others using language
- Receptive language is the ability to listen and understand language

It is important to learn how the individual communicates with their parent/caregiver and it is important to learn what type of communication the individual understands. For example, a child’s expressive language may be pictorial (meaning they show you an image), while their receptive language may be vocal (meaning they understand what you say).

Here are two more useful definitions in understanding language used by individuals with ASD.

- Functional language is the use of appropriate language in the correct context. For example, someone with ASD might repeat long sentences or phrases from movies, but they may not be able to use those same words spontaneously on their own or in a different context. If this is the case, the long sentence or phrase is not functional, meaning it does not help the patient get what they want or need. This is of note because sometimes we hear a patient repeating complex sentences and phrases and then expect them to respond to our questions or to the dental situation using similar complex responses. This is erroneous on our part. It is important to find out if the patient can appropriately respond to yes/no questions, and how they communicate pain or discomfort (see Appendix A for parent interview form).

- Echolalia is when the individual with autism repeats words or phrases they hear from others. For example, the question may be asked, “Do you want bubblegum or cherry?” The individual may respond with the entire question, “Do you want bubblegum or cherry?” or may simply repeat the last word, “cherry”. To see if the patient is truly answering the question or just echoing a portion of the question, ask in a different way, “Do you want cherry or bubblegum?” If they say “bubblegum,” then it is possible the patient is only echoing what is heard. In these cases, it is helpful to show the child the options and say something like “pick one” or “choose one.”

Communication Strategies Used by Individuals with ASD
How would you communicate if you could not speak? It is a difficult task, but can be done. Individuals with autism are highly visual. It is much easier for a majority of this population to understand pictures than spoken language. This makes communicating with pictures ideal in many situations. Here is a closer look at some of the ways these patients may communicate with you, and you with them.

Pictorial or Iconic Images as Language
Many individuals use pictures or images as a form of communication. These patients will carry with them a binder full of small images or will use apps on a tablet. The patient will pull out or point to several different images that will compile a thought, a request, or a sentence. Parents and caregivers will assist and bridge the gap between clinician and patient; it is important just to be aware of alternative modes of communication.

Video of a child communicating with pictures:
Video of a child with autism using a communication app:

Video 3. The Proloquo2Go Speech App. To view this video, please go to online version of this course using the link on page 1.
Source: YouTube

There are an increasing number of apps and alternative forms of communication used by those who are not vocal. These are just two examples.

Communicating with Patients with ASD
This section includes very practical information that will enhance understanding of information given by the clinician to the patient. These strategies are the result of personal experience and recommendations from the different behavior, occupational and speech therapists the author has worked with.

• **Use short, concise statements.** Do not use abstract examples. For example, it is recommended to say, “Open your mouth” rather than “open your mouth like an alligator.” Individuals with ASD understand language very literally and may not understand sarcasm or examples like the alligator. Furthermore, if the patient is higher functioning and loves alligators, it may be difficult to refocus the patient away from alligators once the subject is brought up.

• **“Hands on belly”.** Teaching children to keep their hands on their belly is simply a way to keep little hands still. It is one of the first “rules” the author teaches to children prior ... and just sounds friendlier and less scary than, “put your hands down” or “Stop.” It works wonders.

• **Give the instruction once and wait patiently.** Imagine there is a small child in the dental chair. The clinician is trying to get the child to open and the conversation usually sounds a little like this: “Open your mouth, let’s see, open big like an alligator, open, open, open!” Each time an instruction is given the patient with ASD must try to process what is being said. Keeping instructions simple and direct promote understanding. So, when working with a patient with autism, it might sound like, “Open your mouth” and then we might add, “Like this” and open our mouth to show them. It is also my experience the “wait time” between when the direction is given and when the patient understands is generally longer with my special needs patients than with typical patients.

• **Keep language consistent.** Once the patient understands the clinician’s instructions, make a point to use the same phrases. How many different phrases can be used to tell a patient to open their mouth? It may be surprising to realize how many versions of “open your mouth” are available. “Open up”, “Open wide”, “Let’s see those teeth”, “Open please” etc. Pick one phrase, “open your mouth” or whatever the staff prefers and stick to it. Be sure every staff member working with the patient knows what phrases to use. In my experience this helps decrease anxiety for the patient and improves compliance and understanding. Be sure to document what works.

• **It may not be what you say, but how you say it.** The tone of voice used may be what the individual with autism understands, not the actual words. For example, if “open your mouth” is said in a sing-song like manner and higher pitched the patient may not understand the words but the tone of voice is not alerting the patient that an instruction was given and something needs to be done. If, on the other hand, “open your mouth” is said in a deeper, more direct tone the patient may recognize a request is being made. This takes practice. It may feel like you are being a little harsh or insensitive but it really makes a difference. Do not be loud or rude, just be direct with an even, neutral tone and a deeper voice than the one typically used for children.

• **Excitement can be scary too.** For typical pediatric patients, clapping and getting loud when the patient has done something for the first time usually makes the child feel good. This is not always the case with patients with ASD. Clapping and yelling, “Yeah! You did
it!!” may be enough to keep them from ever opening their mouth for the clinician again. Offer compliments freely, but do it in a calm manner for those patients that might be upset by the clapping and yelling.

- **Avoid questions that allow the patient to say “no” when “no” is not an option.** At one time many clinicians make the rookie mistake of asking a child, “Can I polish your teeth now?” Then the child says, “No.” Now what? Do not ask questions that allow the patient to have control over something that needs to be done. Instead try, “it is time to polish your teeth. Please open your mouth.” Consent to treat has been obtained prior to this point in the appointment; handing over control of the appointment to the patient by asking questions like this make the appointment difficult. The clinician has the responsibility to explain to the patient every step of the way what is happening and what to expect. Unless an emergency arises, treatment decisions should be made in advance and not as treatment progresses.

- **Use visual supports.** Pictures are concrete and easy to understand for individuals with autism. They can decrease anxiety, increase understanding and can be the gateway to successful dental treatment.

**Chairside to Autism**

It is so important that you talk to and about your patient with kindness and respect. With individuals who lack expressive language, you will need to talk “about them” in front of them. You will interview the parent/caregiver to find out what you need to know about medical history, pain, habits, etc. just as you do with small children. I cannot stress enough the importance of speaking positively and respectfully. Yes, many individuals with autism also have cognitive impairments and may not understand what we say. On the other hand, so many of these individuals do understand what we say and it can be harmful to your relationship with them and their self-esteem when the clinician says things like, “it must be so hard to have a child with autism”, or “you have a real challenge here”.

Remember these concepts are not black and white, cut and dry. I have several patients with very low expressive language and fairly good receptive language but struggle to understand what I am asking them to do. They smile or giggle when I tease them and understand when I am asking them to choose between two different options (like a toothbrush). But when I ask them to complete a task (turn your chin towards me, open wide) they may not initially respond to what I am asking them. It takes practice. I have also noticed individuals with autism understand more when it is coming from someone they know. For example, my son and I can be in an appointment with a therapist and the therapist may say to my son, “sit down” and he may stay standing, and then I will say the exact phrase, “sit down” and immediately he sits. For the first several visits it may be you, the clinician, giving an instruction, and the parent or caregiver repeating it, and then the patient completing the task. Be patient and consistent and soon they will be “in tune” with your voice and understand your instructions.

**A Closer Look at Sensory Processing Disorder**

In *Psychology Today*, author Chantal Sicile-Kira (2010) describes Sensory Processing Disorder (SPD) as a “neurological disorder that causes difficulties with processing information from the five senses: vision, auditory, touch, olfaction, and taste, as well as from the sense of movement (vestibular system), and/or the positional sense (proprioception). For those with SPD, sensory information is sensed, but perceived abnormally. Unlike blindness or deafness, sensory information is received by people with SPD; the difference is information is processed by the brain in an unusual way that causes distress, discomfort, and confusion.”

Autism and sensory processing disorder are two distinct conditions. Do not assume an individual with SPD will also have autism and vice versa. SPD is very common in individuals with ASD; studies by the SPD Foundation suggest more than three-quarters of children with ASD have significant symptoms of Sensory Processing Disorder.

Heather Miller-Kuhaneck, MS OTR/L BCP helps dental professionals understand sensory defensiveness in the following article taken from the spdfoundation.net website.7
What is Sensory Defensiveness?
Sensory defensiveness has been defined as the behavioral indications of over-reactivity to common sensory experiences (Lane, Miller, & Hanft, 2000; Wilbarger & Wilbarger, 1991). Sensory defensiveness can occur in any of the sensory systems, of which there are really eight, rather than five.

They are as follows:
1. Tactile system (touch)
2. Vestibular system (sense of movement in relation to gravity)
3. Auditory system (sound)
4. Visual system (sight)
5. Proprioceptive system (position of our body parts, joints, and muscles, as well as the amount of force being used with movement)
6. Gustatory system (taste)
7. Olfactory system (smell)
8. Inner senses (hunger, elimination, etc.)

Typical over-reactions to sensations others might not find noxious range from mild to severe, depending on the stimuli received and the overall amount of stimuli the child is being exposed to. The range of behaviors includes gaze aversion, physical withdrawal, blocking of the stimuli, vocal outbursts, aggressive behaviors, and tantrums.

A child with sensory defensiveness may exhibit the following during a dental visit:
- Tendency to pull away from or over-react to unanticipated touch, particularly touch to the face
- Over sensitivity to teeth cleaning by the hygienist
- Fear responses to moving backwards in the dental chair
- Difficulty tolerating the bright light above their head
- Fear responses to the noises of the dental equipment, including the polishing brush
- Fear responses to unexpected office noises, such as intercoms, door alarms, or beeps
- Extreme dislike of the polishing paste due to the texture
- Over-reactive gag responses to dental tools or x-ray materials
- Responses to the smell or feel of the glove materials

Fear responses may escalate to physical responses if the fear is not respected. Typically a child will demonstrate “flight or fight” behaviors. First, they will try to escape from the stimuli that are distressing, but if that cannot occur, they will become more and more physically reactive in any attempt to remove themselves from the situation. A child may be able to tolerate one type of stimuli but become more and more agitated if multiple stimuli are added.

Intervention Strategies for Sensory Defensiveness
Sensory defensiveness is often treated with two types of sensory input: deep touch pressure and heavy work. Deep touch pressure is firm touch provided to the skin by way of massage, vibration, brushing, lycra clothing, ace wraps, sandwiching between pillows, heavy weighted clothing, or lying under something heavy. Heavy work includes any activity that provides resistance to the muscles and joints of the body. Activities such as pushing or pulling something heavy, hanging from a trapeze bar, jumping, lifting or carrying heavy items, or squeezing something against resistance can all be considered heavy work. Using deep touch pressure and/or heavy work before and during distressing events can help calm a child with sensory defensiveness. See the box below for specific ways to use these techniques before or during a dental visit. Lastly, a child with sensory defensiveness will best be able to handle discomforting inputs when they are not unexpected. Using verbal preparation can be very helpful. Before doing anything that involves distressing sensory input, warn the child that it is about to occur so they can be prepared and not startled. Also, giving a set time limit the input will occur may also be helpful (i.e., “we are going to do this until the count of 20,” or “we’ll be done when the clock says X,” etc.).

Suggestions for Reducing Sensitivity During Dental Visits
- Have the child wear the X-ray vest during the entire appointment to provide extra weight and deep pressure.
- Have the parent do oral deep pressure or vibration in the form of electric toothbrush, mini massager, or rubbing with toothette prior to appointment.
- Have the child eat something very chewy prior to the appointment.
Visual schedules are a series of pictures used to demonstrate the order of activities. A visual schedule may be pictures or it may be writing. Dental professionals use a visual schedule every single day, several times a day; it is just referred to as a patient schedule and not a visual schedule. The visual schedule can help the patient visually see what is happening and what will happen next. Implementing visual schedules are easy and very effective.

Implementing a visual schedule in the dental office:
Take pictures of each step of the appointment. Individuals who are older or who have experience in the dental environment will be fine with a visual schedule that does not include every single step. For patients that are very anxious or very young, each step will be broken down. Below is an example of a visual schedule for simply getting in the chair and lying down (Figures 1-4).

Putting the pieces together. If I were seeing a young child with autism or one that is very anxious, I would take these pictures with me to the waiting room. I would sit next to or kneel next to the child and in a calm voice say,

“Hi Ethan. My name is Josey. I am going to clean your teeth today. I promise to show you everything we do before we do it and will take good care of you and your teeth. I want to show you what we are going to do today. This is a picture of my special chair. You get to sit in my chair today. After you sit down, I am going to put a special napkin on and have you wear sunglasses. After that, you will lie down in my chair like you do in your bed. Come on Ethan, it is time to go get in the chair.”

Once we were in the operatory and the patient was in the chair, I would show the rest of the pictures for the appointment. The very last picture should always be a reward card. If the child is new to the dental environment or struggling to finish the appointment, reward cards can be placed throughout the appointment. Or, if the clinician knows of something specific that

Visual supports for patients with ASD
Visual Schedules
The Indiana Resource Center for Autism lists several advantages to using a visual schedule with individuals with ASD including (Mesibov et al., 2005):

- It utilizes the individual’s visual strengths and therefore provides a receptive communication system to increase understanding;
- It helps the individual to learn new things and broaden their interests;
- It provides tools that allow the individual to use skills in a variety of settings;
- It can increase the individual’s flexibility;
- It helps the individual remain calm and reduces inappropriate behaviors; and
- It helps the individual to develop independence and resulting self-esteem. **m**
is particularly hard to the patient, place a reward card following that activity. For example, if we know polishing is difficult, immediately after the polishing picture place a reward card.

Social Stories
A social story is a short story that describes to an individual the relevant social cues and common responses in a specific situation. It explains what happens and why the situation occurs. A social story is designed to prepare an individual for an uncertain event, to share information, or to provide him/her with a strategy to deal with an event effectively with a thought-out plan and guide. The story should be read to the patient several times before the first appointment. Here are links to two different social stories for the dental office.

Visit to Dentist’s Office:
http://www.handsinautism.org/pdf/StrategyAtWork_VisitToDentistSocialStory.pdf

Going to the Dentist:

Video Modeling
Video modeling is effective in teaching individuals with autism how to behave appropriately in certain situations. In preparing for the dental appointment, ask the parents/caregivers to watch videos of others going to the dentist. It would be ideal for a dental office to create a video specific to their office and staff and keep the video on the website for patients to view. Showing the specific environment and staff members is more ideal than a “generic” video; although, either would work. One company makes a dental video that allows a picture of the child to be inserted into the video so it is as if the child is watching himself going to the dentist. Below are two links to some good examples of video modeling for the dental office.

Autism in a Dental Setting

Dental Conditions Commonly Seen in Patients with Autism
The probability of certain dental conditions is higher in patients with autism due primarily to difficult behaviors, sensory aversions to home care, frequent snacking, and xerostomia caused

Figure 1.

Figure 2.

Figure 3.

Figure 4.
Visual schedule of steps for getting in the chair and lying down.
by medications. These conditions include:

- Caries
- Attrition
- Erosion
- Gingivitis/periodontitis
- Trauma
- Drooling

**Caries**

Frequent snacking, inefficient removal of biofilm, and a high cariogenic food intake contribute to the higher rate of caries in individuals with autism. Food is often used as a motivator in therapy and in the home environment. Often these foods are highly cariogenic such as small candies, sugary drinks or fruit snacks.

Brushing and flossing are particularly difficult because the activity involves so much sensory input. The taste of the toothpaste, however mild it may seem to typical individuals, may be too strong for someone with autism. The feeling of the bristles on the gingiva and the floss interdentally may actually feel itchy or painful to someone with ASD. Many individuals with ASD do not like to be touched and even those that are comfortable with touch have a difficult time having their head touched by another person.

Individuals who lack speech may also lack fine muscle coordination. This makes self-cleansing, rinsing, and expectorating difficult or impossible for many individuals. Think about eating popcorn or something sticky. After swallowing the tongue is used to clean occlusal surfaces and vestibules. The self-cleansing of the tongue following eating will be absent in many of these individuals. It is not uncommon to see food packed away in vestibules, in between the teeth and even the occlusal surfaces. This will contribute to caries and halitosis (Figure 5).

**Attrition**

Bruxing and grinding of the teeth are very common in individuals with developmental disabilities including autism. Possible causes include grinding or bruxing from anxiety, airway obstruction or simply because it provides a lot of sensory information to the individual.

**Anxiety** – The parent/caregivers may not have even considered the grinding is triggered by an event or a place or simply a way of communicating the individual with ASD is uncomfortable or unhappy or anxious. Recommend keeping a journal when the individual grinds, how long it lasts, and what events are taking place around the activity. Understanding the trigger will help to prevent the action.

![Video 4. Autism Video Model- Going to the Dentist (Look at Me Now!®).](source)

To view this video, please go to online version of this course using the link on page 1.

Source: YouTube

![Video 5. Going to the Dentist - Great for Autism and Down Syndrome.](source)

To view this video, please go to online version of this course using the link on page 1.

Source: YouTube

![Figure 5. Teeth damaged by caries.](source)
**Airway obstruction** – If upon oral examination it is apparent the individual with ASD grinds their teeth, take a few minutes to assess the airway. Are the tonsils present? If so, are they enlarged or inflamed? Does the individual also snore? Have chronic allergies? Is the patient a mouth breather? Grinding, especially at night may be a symptom of sleep apnea or an obstructed airway. If insufficient oxygen is getting to the brain the body will try to arouse the individual to take in more air - this is the cause of nocturnal grinding in some individuals.

The Mallampati Score is a score used by anesthesiologists to determine the ease of intubation in patients. This score also relates the possibility of obstructive sleep apnea or airway obstruction and is easily completed in the dental office. With the patient sitting up in the chair, simply have them open wide and stick their tongue down out and down toward the chin. Class I is healthy, Class IV is indicative of possible obstruction (Figure 6).

It is not recommended that dental professionals complete this examination and inform the patient that sleep apnea/airway obstruction is present and the cause of grinding or other associated conditions. This is simply a tool that can be used to identify potential problems that will require a referral to a physician or dentist specifically trained in sleep apnea.

**Sensory Activity** – Many individuals with autism participate in self-injurious behaviors. They may hit their heads on the wall or the floor on purpose. There is not a scientific explanation for this other than it may be related to frustration in not being able to communicate, being overwhelmed by their environment or simply being uncomfortable i.e., headache, toothache, stomach pain etc. Some individuals with autism have stated activities like the head banging or teeth grinding are a way “to stop the input” (Figure 7). Meaning the sensory information being taken in is too much, and the best way to stop that or control those feelings is to use a lot of output. At the end of the course is a link to a video that discusses this further.

**Erosion**
Erosion is the breakdown of tooth structure by chemical means. Erosion is often seen in individuals with bulimia or GERD as the acid from the stomach is brought to the oral cavity. As demonstrated earlier, many individuals with autism have digestive disorders. If upon clinical examination erosion is present, be sure to discuss this with parents/caregiver as this may be the only sign the patient has possible digestive disorders. When individuals are nonverbal or do not communicate clearly, it can be very difficult to recognize indigestion, stomach pain, etc. The dental practitioner may be the first to alert the family to a problem with the digestive tract and play a crucial role in helping the individual improve their oral and systemic health (Figures 8 and 9).

**Case Study**
Keep in mind conditions may overlap. This is a picture of the author’s son at the age of four (Figure 10). Nocturnal grinding, excessive snoring, and mouth breathing were present until his tonsils and adenoids were removed. Also at that time he was put on a gluten free, casein free diet. Removing the gluten and casein resulted in a calmer, more relaxed child, which the author believes helped eliminate the grinding in combination of the removal of the enlarged tonsils. Erosion was also present and by the time his primary teeth exfoliated they were just millimeters in length. The child is now nearly 11 years old.

![Figure 6. The Mallampati Score](image6)

![Figure 7. Teeth damaged by grinding.](image7)
Gingivitis/Periodontitis

Eighty percent of adults age 30 and older have some form of gingivitis. There are not currently any statistics available for the population under 30. Dental clinicians see every day how common gingivitis is in children and teenagers. Individuals with autism have a higher incidence of gingivitis and periodontitis than their typical peers. This is due to the difficulty of daily biofilm removal.

It is absolutely critical dental practitioners work to find the physiological cause of habits like bruxing and grinding. If this child were simply given a bruxing splint (which would have been impossible for him or most individuals with ASD to tolerate), he would have continued to suffer from inadequate sleep, digestive discomfort, and his permanent teeth would have been severely affected leaving a negative impact on him for the rest of his life.

Gingivitis has previously been considered a “reversible” condition with plaque and biofilm control leading to clinical resolution. Evidence now demonstrates the chronic inflammatory response to plaque biofilm may establish a
“memory” in the gingival connective tissue. The hypothesis suggests once an individual has had gingivitis the next time disease-inducing biofilm is present the memory enhances the inflammatory cascade, resulting in attachment loss and destructive periodontitis. This mechanism of action parallels those found in other chronic inflammatory diseases. Understanding this gives the clinician greater motivations to treat, discuss, and educate patients more aggressively when gingivitis is present. Gingivitis must be resolved to improve health but also to prevent periodontitis.

Periodontitis occurs in 20% of the general population, it is higher for the autism population. Periodontitis cannot be cured; it must be maintained and requires expensive, frequent, diligent visits for the patient. Many individuals on the autism spectrum rely on state funded insurance like Medicaid. This does not often cover dental procedures for those over the age of 18. This is a limitation of care not to mention the difficulty of treating patients on the spectrum when it requires subgingival and ultrasonic scaling. Prevention is absolutely critical to the health and well-being of these patients (Figure 12).

Trauma
Trauma will be very common in patients with ASD as they do not have an accurate sense of danger and have a very high pain tolerance. Unusual patterns of wear or unexplained trauma may be due to PICA when the child chews on non-food items like wood or rocks. In addition, the individual may not think to show their parents/caregivers they have been hurt (Figure 13). As dental professionals, we must pay careful attention and be an advocate for those we feel are being abused. This can be extremely difficult with persons with ASD because despite the best efforts of loving parents/caregivers individuals with autism are prone to wandering, and high levels of activity throughout the day that make it much more probable for accidents to occur and for them to occur more than once. Please consider individuals with autism are also “easy” targets for abuse as they may not fight back, and may not have the ability to communicate their needs. It can be a very difficult situation for dental professionals and imperative both scenarios are weighed carefully. Click here for an interactive guide to dental trauma.

Drooling
Nonverbal individuals will lack coordination in muscles and may be drool. The parents/caregivers may also complain the individual is a very messy eater. One simple recommendation is to have the child suck on a sugar free candy. This will help them practice swallowing more frequently and with coaching can be taught to swallow frequently throughout the day. The ideal treatment would be for the individual to be assessed and treated by an orofacial myofunctional therapist. These therapists help individuals learn chew, breathe, and swallow correctly. For more information on myofunctional therapy and to find a therapist near you, click here: http://www.myoacademy.net

Figure 12. Progression of Gingivitis/Periodontitis

Figure 13. Trauma to teeth.
Preparing for the Dental Appointment
It is **strongly** recommended the families and dental staff take some extra time to prepare for the first appointment. The worksheet in Appendix A includes information that will help the staff understand the needs and abilities of the patient.

Here are some general recommendations on scheduling the appointment:

- **Mornings are generally better than afternoons.** Getting though a typical day of school and therapy can be very taxing on an individual with autism. A dental appointment at the end of the day may be the tipping point for a patient to have a meltdown, especially if it has been a bad day. Each individual is different, trust the parent/caregiver if they feel afternoons are better.
- **The first appointment of the day is ideal for many reasons.**
  - Minimal time in the waiting room and waiting for the doctor. Waiting is especially difficult for patients with ASD and the parents/caregivers accompanying them.
  - The office is quiet and calm first thing in the morning. Staff is fresh and happy and usually more patient. The sterilizers are not yet humming, the drills are not drilling and the staff is not frantically rushing to the next appointment.
  - The waiting room is not bustling with people coming and going
  - If possible create an appointment ten minutes earlier than regular scheduling. This allows the patient to come in, go directly to the treatment room and get started before the hustle and bustle of the day begins. This also allows for a longer appointment.
  - The operatory was cleaned the night before and the smells of cleaning solutions have settled and are not as obvious
  - Have everything that could possibly be needed in that appointment ready and within arm’s reach, preferably out on the counter. Walking away from the operatory is distracting and confusing, opening and closing drawers is noisy and can contribute to sensory overload.
  - Do not wear perfume (not recommended anyway) or scented lotion that may be offensive to a sensitive nose.
  - If possible, have the patient practice at home. Have the parent/caregiver come in a few weeks before the appointment to pick up a “practice kit” and take a few minutes to demonstrate how to use the items at home. Included in the kit will be disposables that help familiarize the patient with items used during the appointment. Practice should begin a few weeks before the first appointment and be completed several times a week. It is **imperative** the practice sessions are enjoyable and not forced on the patient. Instruct the parent/caregiver to remain neutral and positive and not scare or upset the patient. The practice sessions at home are helpful in introducing the child to having different items in the mouth. Items in the kit may include:
    - Prophy angle
    - Saliva ejector
    - Fluoride varnish brush
    - Patient bib with disposable holder
    - Gloves, mask for parent/caregiver to wear
    - Disposable XCP holder for bitewings without the metal bar
    - Cotton tip applicator used to place topical anesthetic
    - Disposable mirror
    - Dry angles
    - Consider including pictures of these items placed in the mouth correctly so the parent/caregiver knows how to correctly use it but also for the patient to look at.

Creating a Sensory Friendly Office
Simple steps can be taken before the appointment, no matter what time of day, to help decrease the amount of sensory stimuli in the dental office.

- **Turn the overhead music off.**
- **Keep the sterilizers off during the appointment including the ultrasonic.**
- **Keep the lights low.** Individuals with ASD are particularly sensitive to fluorescent lights. Consider keeping overhead lights off and just using the chair light or personal light used with loupes.
- **Always offer sunglasses.**
- **Noise cancelling headphones can keep a patient calm.** Many individuals with autism use headphones; ask the family to bring them.
patients with autism and other developmental
disabilities (or just very small children):

- **Start lying down.** Some individuals may not
like the feeling of the chair moving back, if that
is the case have them get up, move the chair
in position and then have the patient lie down.
Have them sit up on their own before moving
the chair to the upright position.
- **Start at the midline.** This is effective when
polishing, probing, etc. Many patients will
have a sensitive gag reflex and anxiety can
make the problem worse. If the patient
can feel the vibration of the prophy angle
on the central incisors and remain slightly
closed, they will become comfortable with the
sensation before requiring the patient to open
wide and work around areas that stimulate the
gag reflex. This also keeps the patient from
tasting the prophy paste or fluoride until just
before the procedure is finished. Always work
from least invasive to most invasive.

- **Count to 10.** This teaches a couple of
concepts. It gives the clinician control of when
the procedure will stop but only requires the
patient to work for very short periods of time.
If the procedure stops every time the patient
raises a hand or makes a noise, treatment
will never be completed. This helps the
patient understand that a break is coming
and it is distracting. When the patient is
really struggling the clinician can count very
quickly and when the patient is cooperating
and the clinician needs more time, counting
can be very slow. Without traumatizing the
patient always try to get to 10 so the patient
will associate the word “ten” with a break and
to help the child understand that 10 must be
reached and not any other number.

- **Reward, reward, reward.** See next section.

- **First/Then cards.** Putting a “first/then”
board together is very simple (Figure 14).
This strategy is used to help individuals with
autism get through tasks they find particularly
undesirable. For example, a patient might
really dislike having an injection for local
anesthesia but the patient is highly motivated
by time spent on the iPad. Under the word
“first” is a picture of the anesthetic syringe and
under the word “then” is a picture of the iPad.
Show the patient the board with both cards and
explain, “First we put your tooth to sleep, then
you get the iPad, first get numb, then get the
iPad”. Here is a link to a DIY first/then board

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The Successful Dental Appointment

The day has arrived when the patient with autism
is coming in for an appointment. The paperwork
has been filled out, the parent interview is
complete, the office is ready, the operatory is
stocked, now what?

The Introduction

When meeting someone with autism for the
first time, take a few minutes to just talk and be
physically in the same space. Do not be offended
if the patient does not shake hands, give a high-
five, or make eye contact. Introductions will be the
same as with any child. Be yourself and do the
things you would typically do when working with
small children, even if it seems as if the patient is
not paying attention.

In the operatory

Once the child is seated (this may take some
practice for first-timers) be brief with small talk.
Most of the information on the medical and dental
history will be gathered and discussed at the
parent interview before the patient even sees the
dental office. Allow the patient to sit in the chair
for a few minutes and get comfortable. Use a
visual schedule to help the patient understand
what is next. Avoid wordy descriptions or talking
unnecessarily. Stick to the order of events on the
visual schedule. After each task is completed,
remove the picture from the visual schedule and
put it out of sight. Be flexible; do not hesitate
to offer breaks, adapt treatment or stop the
appointment if the patient is becoming frustrated or
overwhelmed.

Completing treatment

Here are a few useful, effective tips in working with
When teaching a skill, rewards should be given each time the child attempts the task until they understand what is being asked. For example, if a child is learning to sit in the dental chair, offer the reward even if the child sits on the end of the chair or only sits for a few seconds.

Fade rewards once the task is understood and the patient is ready to move to the next step. If the child knows to sit in the chair and does so appropriately, withhold rewards until they learn to open their mouth or sit for longer periods of time. Once the skill is mastered rewards should not be used.

Keep in mind if a patient with autism learns a new skill during the appointment that does not mean the child will automatically understand that at the next appointment, especially if a significant period of time (like 6 months) has passed. This is especially difficult for families as their child may use a word functionally one day but then may take months to use it again.

• Rewards should be highly motivating to the child. It is important to have the parent interview before the appointment and try to have rewards that are motivating for that patient. It is also ok to ask parents to bring in a reward that can be used. Many children have a favorite character they are particularly interested in - do an internet search for images of the character and print off small pictures. This has been a useful reward for many patients.

• When teaching a skill, be sure to have the reward ready to offer as soon as the attempt is made. As soon as the patient’s bottom hits the chair, offer the reward (if sitting in the chair is the skill being taught). It needs to be obvious to the child what they are being rewarded for.

• When giving the reward, offer a very simple explanation. For example, “good sit” or “good open.”

Dental Disease Prevention
Dental disease is preventable. The best thing a dental provider can do for any patient and especially those with special needs, is to help them prevent disease. The strategies listed here are easily implemented and have been used by the author.

• Xylitol
• Adaptive & Power Brushes
• Remineralization Paste
• Herbal Lollipops

To see how first/then schedules evolve and benefit individuals with ASD, watch this short video. Pay attention to the teachers’ voice and the language she uses in the video. Her tone is level, her phrases are concise and she consistently uses the same phrases.

Using Rewards Appropriately
Rewards help shape behavior. When a child exhibits a behavior that is undesirable, it is best to simply ignore the behavior and turn away until the behavior stops. It is important to know how to use rewards correctly so the child understands what behavior is positive and what they are being rewarded for. When using rewards be sure to keep in mind the following guidelines:

• When teaching a skill, rewards should be given each time the child attempts the task until they understand what is being asked. For example, if a child is learning to sit in the dental chair, offer the reward even if the child sits on the end of the chair or only sits for a few seconds.
• Fade rewards once the task is understood and the patient is ready to move to the next step. If the child knows to sit in the chair and does so appropriately, withhold rewards until they learn to open their mouth or sit for longer periods of time. Once the skill is mastered rewards should not be used.
• Keep in mind if a patient with autism learns a new skill during the appointment that
• Interdental Cleaners
• Probiotics

Xylitol
Daily use of xylitol in oral care (e.g., chewing gum, lozenges) in addition to daily oral hygiene with fluoride-containing toothpastes has shown remarkable effectiveness. Xylitol’s noncariogenic five-carbon structure keeps it from being metabolized by bacteria, reducing the production of tooth-decay causing acid. Using 100% xylitol products throughout the day helps to prevent bacteria from creating the acids that damage the teeth. Regular use of Xylitol products helps prevent plaque from gaining hold on dental surfaces. Hence, it protects the mouth between brushing and flossing for both adults and children.

Xylitol enhances the remineralization of teeth, particularly in small decay spots just developing in the tooth enamel. Bacteria are unable to produce acid in the presence of xylitol and as a result the plaque pH does not decrease. The stable pH prevents demineralization, and hardens the lining of the cavities making untreated cavities less sensitive. This was clearly demonstrated in the study done in Belize on school children. In a 1980’s double blind study, 1,277 school children chewed gum several times a day. Some were given ordinary gum sweetened with sucrose; others were given gum sweetened with sorbitol or xylitol. After 40 months of gum chewing (including weekends, holidays, and vacations), the xylitol group experienced 73% fewer caries, sorbitol group a reduction of 26%, and an increase of 120% of caries in the sucrose group. Xylitol’s naturally cooling and sweet tastes also increase salivary flow, which optimizes the pH level in the mouth further promoting dental health. Research has confirmed and expanded on earlier findings.

*Streptococcus mutans* (*S. mutans*), are known to increase acid in the mouth, as they produce an acidic environment, additional acid-loving microorganisms have a selective survival advantage and exponentially will cause more damage. However, if the acid in dental plaque is kept low, then demineralization is slowed or halted. Since xylitol slows demineralization and enables some rebuilding of the enamel, it assists in the prevention of new cavities from forming and over time can reverse tooth decay that already occurred. Studies have shown using xylitol five times per day is very effective at preventing caries.9

Instruct patients to strive for 5 exposures a day of a pure xylitol product of your choice. This is not to “push” a product but so that patient’s are introduced to a purely xylitol product that will offer therapeutic benefits. The author prefers products made by Xlear. Not only does Xlear provide xylitol in a pure form the company makes efforts to reduce allergens and other chemicals as much as possible.10

Case Study
The following patients were given a 30-day supply kit of xylitol. The kit includes toothpaste, mints, gum, nasal spray and mouthwash (Figure 15).

The disclosing solution used was made by Young. The blue color indicated plaque that has been present for 48 hours or more. The pink is plaque formed within 24 hours. The “after” pictures were taken 30-35 days after initial photographs (Figures 16-19).

Adaptive & Power Brushes
Fine motor skills like brushing and flossing can be difficult for many individuals with ASD. If possible, have the patient brush in the operatory so the dental professional can visually assess what adjustments should be made. Creating an assistive brush can be as easy as putting a tennis ball on the brush handle to make a custom grip (Figures 20 & 21).

Some individuals may find the sensation of the bristles very uncomfortable. In several patients the author has found the Banana brush to be a useful transition tool (Figure 22). The toothbrush is made of silicone and marketed to very young children as a “safe toothbrush”. There are short bristles made of silicone on the brush that help desensitize the individual and help transition to a regular brush. The handles are also helpful with dexterity challenges.

If the patient does not allow the parent/caregiver to brush very long, a toothbrush that cleans all surfaces at once is helpful (Figure 23).

Power brushes remove more plaque than manual brushes. The author always recommends that...
Figure 15. Spry Dental Defense System® dental kit
Source: Xlear.com

Figure 16. Before xylitol treatment.

Figure 17. After xylitol treatment.

Figure 18. Before xylitol treatment.

Figure 19. After xylitol treatment.
Images Courtesy Carla Gantz

Figure 20. Assistive toothbrushes

Figure 21. Banana brush
Source: Baby Banana Brushes
parents/caregivers try the least expensive version of power toothbrushes before investing in something more expensive. Many individuals will enjoy the vibration of the brush, which will lead to better brushing for longer periods of time, but some individuals may find the noise and the vibration too overwhelming. Using a power brush will help desensitize the patient to sensations felt during the dental appointment.

**Remineralization Paste**

The use of tooth creams that aid in remineralization have gained popularity in the last several years. These creams are used after brushing and flossing and help buffer acidic attacks, reduce white spot lesions and prevent decay. Many dental professionals are familiar with the product MI Paste. MI paste is an excellent product but uses casein, which is a milk protein. A significant number of individuals on the autism spectrum are sensitive to gluten and casein and need to have access to products without these allergens. The author prefers using Voco’s Remin Pro for individuals on the spectrum as it does not use casein (Figure 27).

To learn more about ReminPro watch this video:

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**Herbal Lollipops**

According to their website, Dr. John’s Cavity fighting lollipops contain a specific natural herb extracted from the licorice plant which temporarily inhibits certain harmful bacteria in the mouth. The recommended use is one lollipop in the morning and one in the evening for ten days repeat two to four times per year. This is an extremely easy anti-decay strategy. Simply have the
parent/caregiver use the cavity-fighting lollipop as a reward in the morning and in the evening (Figure 28).

**Interdental Cleaners**

Cleaning interdentally with floss can be challenging for individuals with ASD. Proxy brushes are an easier and safer way (to avoid being bitten) for caregivers to clean interdentally. Floss holders are another good option. Until recently proxy brushes have been to wide to fit into tight contacts but some companies have recently released much smaller versions that can fit into even healthy contacts.

**Probiotics**

Oral care probiotics are probiotics intended for the oral cavity to help maintain a healthy oral flora. One of the most studied and accepted oral care probiotics is EvoraPro® by Oragenics (Figure 30). While most probiotics are *ingested orally*, they are not intended to confer an oral benefit. EvoraPro’s® patented blend of probiotic strains (ProBiora3®) naturally derive from the pockets of healthy mouths and are intended to confer an oral benefit. ProBiora3® is *Streptococcus oralis* (*S. oralis* KJ3™) and *Streptococcus uberis* (*S. uberis* KJ2™) which are both associated with gingival tissue health as well as *Streptococcus rattus* (*S. rattus* JH145™) specific to tooth health. These probiotic bacteria synergistically work as antagonists to undesirable oral bacteria associated with rampant caries, bad breath and oral infections, challenges dental patients face indiscriminately.

EvoraPro® ideally should be taken orally every evening after normal oral hygiene routines are completed. Once activated via saliva (by chewing and swishing around mouth, sucking on until dissolved, or crushing the tablet and placing in the mouth), ProBiora3® competes with the diseasing causing pathogenic microorganisms for the same nutrient layer and space that proliferates below the gum line, deep down in the base of the pocket in and around the crevices of the tooth and occlusal surfaces.

Imagine the impact of helping to maintain our patients oral health by including EvoraPro® as part of optimal care for all our patients!

In a 2009 human clinical study,¹¹ the effects of daily usage of EvoraPro® oral care probiotics over 4 weeks resulted in a decrease in the levels of *Streptococcus mutans* in 84% of the subjects tested. Across all subjects there was an average six fold reduction, thus reducing the risk from moderate to low according to the CAMBRA index. Also documented was a greater than 300 fold decrease in the levels of *Campylobacter rectus*.
a toxic Gram negative bacterium pathogenic in gum and periodontal disease. A greater than 100 fold decrease response was also noted in *Porphyromonas gingivalis* among other oral pathogens within a month of use.

Probiotics come from Latin and Greek words literally meaning “For Life”. With the implementation of EvoraPro3® as part of the all natural hygiene protocol we can now assist all patients reestablish and/or maintain the delicate balance between oral micro flora and the host to prevent the over colonization of undesirable micro-organisms that they sometimes cannot prevent on their own.

Bi-directional interactions between the mouth and the body play an important role in the maintenance of oral health and general well being. Including oral care probiotics will assist the family in naturally and consistently improve oral health relevant to children with autism.11,12

**Conclusion**

The behaviors associated with autism can be very confusing and very difficult for professionals who have had no training or experience. I hope this course has allowed you as a professional to see individuals with autism do not misbehave simply because they do not want to listen but because we are speaking to them in ways they do not understand or perhaps they are limited by sensory difficulties. Individuals with autism experience the world in a completely different manner than the rest of us. The trick is stepping back and seeing the world from a different point of view. Success will come from patience, persistence, and understanding. While it may be an exhausting, and sometimes a frustrating hour when a child is learning to behave in the dental environment, it is no doubt worth the effort and absolutely rewarding as the walls are torn down. I personally commend you for using your personal time to take this course and learn more about this special population and how you can benefit their lives. Feel free to contact the author with any further questions or opportunities for training. Good luck!

To hear a one-hour interview with the author on BlogTalkRadio click on the following link (for informational purposes only, not part of the course):

Appendix A
Intake Form for Patients with Autism

<table>
<thead>
<tr>
<th>Patient Name</th>
<th>Phone number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date of Birth</td>
<td>Parent/guardian</td>
</tr>
<tr>
<td>Individual filling out form:</td>
<td></td>
</tr>
</tbody>
</table>

**MEDICAL**
- Describe the nature of your child's disability:
- Please list all medications both prescription and over-the-counter that the patient is taking.
- Has your child ever had seizures?
- If so, when was the last one?
- Describe the type of seizure.
- Does your child have any allergies?
- Does your child breathe through their nose or mouth?
- Does your child snore?
- Does your child wear a hearing aid?
- Does your child have any other physical challenges the dental team should be aware of?
- Is your child on a special diet? (Gluten free, casein free)

**ORAL CARE**
- Has your child been to the dentist before?
- How did the visit go?
- Tell us about how you take care of the child’s mouth at home. How often do you brush?
- Does the child allow you to brush? To floss? Are they able to rinse and spit?
- Tell us about the child’s diet. What type of foods do they like? How often do they snack throughout the day? Is he/she a picky eater? If so what types of foods do they prefer?
- Is your child’s mouth in pain or discomfort now? Does he/she communicate pain/discomfort to you?
- Does your child grind or clench their teeth? When do they clench/grind? Nighttime, both?
- Does your child drool?
- Does your child suck their thumb or fingers? Do they chew or suck on non-nutritive items (toys, rocks etc)

**COMMUNICATION/BEHAVIOR**
- Is your child able to communicate verbally?
- Does your child use some form of alternative communication like the iPad or pictures?
- Are there certain cues the child does that would be helpful for the dental team to know? (i.e. flapping hands when frustrated)
- Will you bring a communication device with you to the appointment?
- Are there any useful phrases or words that work best with your child?
- Please list any specific behavioral challenges that you would like the dental team to be aware of.
- How do you reward your child at home? What rewards does the child find highly motivating?
- What is your child’s favorite movie/television character?

**SENSORY**
- Please list any specific sounds that your child is sensitive to.
- Does your child prefer a dimly lit room?
- Does your child prefer quiet?
- Is your child sensitive to motion and moving (moving the dental chair from sitting to reclining)
- Do certain tastes bother your child? Please list.
Course Test Preview
To receive Continuing Education credit for this course, you must complete the online test. Please go to:

1. How prevalent is autism in the United States?
   a. 1 in 10,000
   b. 1 in 600
   c. 1 in 88
   d. 1 in 253

2. ____________ language is the ability to listen and understand language.
   a. Expressive
   b. Receptive

3. Autism is caused by ________________.
   a. vaccinations
   b. maternal alcohol use during pregnancy
   c. abnormalities in brain structure or function
   d. an extra chromosome

4. Repetitive behavior such as hand flapping or repeating certain vocal sounds is referred to as ________________.
   a. sterotypy
   b. obsessions
   c. stimming
   d. A & C

5. ________________ is a neurological disorder that causes difficulties with processing information from the five senses: vision, auditory, touch, olfaction, and taste, as well as from the sense of movement (vestibular system), and/or the positional sense (proprioception).
   a. Sensory dysfunction
   b. Sensory deprivation disorder
   c. Sensory integration
   d. Sensory processing disorder

6. To create a sensory friendly experience the following strategies should be implemented:
   a. Turn the operatory lights off and just use the chair light.
   b. Provide noise cancelling head phones for the patient.
   c. Turn off the sterilizers and ultrasonics.
   d. Spray air freshener.
   e. Allow the patient to wear the lead apron for the duration of the appointment.
   f. All of the above.
   g. A, B, C, E

7. Which of the following medical conditions are associated with autism spectrum disorders:
   a. Seizures
   b. Dyslexia
   c. Chronic Constipation or Diarrhea
   d. Insomnia
   e. Leg numbness
   f. All of the above.
   g. A, C, D
8. A visual support that utilizes a series of pictures to demonstrate steps in a process is called _______________.
   a. Social Stories
   b. Video Modeling
   c. Picture Education Communication System
   d. Visual Schedule

9. ______________ is a visual support that uses two pictures. The first is a picture of what needs to be done and the second is a reward. It is especially helpful when a patient struggles with a certain task, like polishing.
   a. Visual schedule
   b. Video Modeling
   c. First/Then card
   d. Transition Card

10. Bruxism and grinding can be due to _________________.
    a. anxiety
    b. providing sensory information
    c. obstructive sleep apnea
    d. All of the above.

11. Dental trauma is common because _________________.
    a. children have poor coordination
    b. individuals with autism lack a real fear of danger
    c. parents are exhausted and don’t pay close enough attention
    d. many children with autism have poor eyesight

12. Pick the statement that is true:
    a. Children with autism just need more discipline.
    b. Children with autism know how to behave they just choose not to.
    c. Children with autism do not want friends or meaningful relationships.
    d. Children with autism may act out because they have no other way to communicate their fear or their needs.

13. What strategies are useful when communicating with patients on the spectrum?
    a. Use short, concise statements.
    b. Use metaphors to describe things.
    c. Use the same phrase each time like teaching the entire staff to say, “open your mouth” instead of other phrases asking the patient to open.
    d. Use a sing-song really happy voice.
    e. Use pictures as often as possible.
    f. All of the above.
    g. A, C, E

14. ______________ is the wearing away of teeth by mechanical means such as grinding.
    a. Attrition
    b. Erosion
    c. Abfraction
    d. Trauma
15. ____________ is the wearing away of tooth structure by chemical means like lemons or gastric acids being brought from the stomach to the oral cavity.
   a. Attrition
   b. Erosion
   c. Abrasion
   d. Abfraction

16. For caries prevention and remineralization patients should strive for _____ exposures of xylitol each day.
   a. 3
   b. 5
   c. 6
   d. 4

17. One of the early signs of autism spectrum disorders is ________________.
   a. babbling at 6 months
   b. pointing to desired items by 12 months
   c. lack of pretend play
   d. walking by 14 months

18. ____________ score is used by anesthesiologists to determine how easy a patient is to intubate; it also can be used as a sign to look for when assessing for sleep apnea.
   a. Curve of Spee
   b. Throat
   c. Mallampati
   d. Intubation

19. Autism is ____________ times more likely in boys than girls.
   a. two
   b. five
   c. four
   d. ten

20. If an individual with autism does not use spoken language to communicate, that also means they cannot understand spoken language.
   a. True
   b. False
References
7. SPD Foundation
20. AutismSpeaks.org

About the Author
Josalyn Sewell, RDH
Josalyn Sewell is a Registered Dental Hygienist. She specializes in treating individuals with autism spectrum disorders in a dental setting. Her greatest instructor in all things autism is her 10 year old son, who has classic autism and is mostly non-verbal. Josalyn has developed techniques to use with patients to help desensitize them before the appointment and guide them during the appointment.

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