



## **CLINICAL CONCERNS IN THE PROVISION OF DENTAL CARE FOR PATIENTS WITH INTELLECTUAL DISABILITY**

### **Purpose of this Module**

This module reviews the medical and dental problems encountered in the population with intellectual disability. Information on managing patients who have difficulty cooperating for dental care, as sometimes occurs with intellectual disability, is also presented. However, more extensive discussion and information on the use and limitations of medical stabilization and immobilization devices and sedation for this population is presented in Modules 5 and 6. A brief review of appropriate modifications of preventive procedures is also included and additional information is presented in Module 11.

### **Learning Objectives**

After reviewing the written materials, the participant will be able to:

1. Compare the prevalence of dental caries, periodontal disease and malocclusion between individuals with intellectual disability and the general population.
2. Describe medical problems often encountered in individuals with intellectual disability.
3. Discuss the relationship of intellectual disability with mental health disorders.
4. Describe special communication and behavioral support techniques that aid in treating the patient with intellectual disability.
5. Describe indications for the use of medical immobilization and stabilization devices.
6. Describe the major methods of patient sedation and associated concerns for patients with intellectual disability.
7. Describe modifications of preventive practices appropriate for the population with intellectual disability.

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## ORAL HEALTH NEEDS

Three major groups of oral health concerns are reviewed in this module: dental caries, periodontal disease, and malocclusion.

### Dental Caries

There is conflicting evidence on whether individuals with intellectual disability face a higher rate of dental decay compared to the general population; however, there may be an increase in root caries and class V carious lesions in this population, related to both poor oral hygiene and xerostomia. Additionally, untreated caries is more prevalent in this population. Some evidence suggests that persons with Down syndrome experience a lower caries rate than the general population. The reason for this is unclear; however, altered salivary composition is thought to be a major factor. Additionally, delay in tooth eruption, tooth morphology (small teeth) and tooth spacing may also be influential. There is evidence that patients with cerebral palsy present with a slightly higher caries rate. Most of these studies have not divided this group into subgroups with or without intellectual disability. Even with the lower caries rate for those with Down syndrome, the increased rates of untreated decay in the population with intellectual disability is a significant problem that can be encountered in the dental setting.

### Periodontal disease

The evidence clearly suggests that the population with intellectual disability

experiences a greater prevalence of periodontal disease than the general population. This increase is somewhat greater among those who have cerebral palsy and markedly greater among those who have Down syndrome. The lack of high quality oral hygiene undoubtedly contributes to the increased prevalence of this disease, especially in the group with cerebral palsy and associated physical limitations. Further, some of the anticonvulsant drugs such as phenytoin (Dilantin) create unfavorable periodontal conditions, with increased risk of gingival hyperplasia. The impaired immune system common in persons with Down syndrome is an important factor in periodontal disease for this population. Problems with neutrophil chemotaxis and phagocytosis, along with an increased inflammatory response, result in destruction of periodontal tissues in response to periodontal pathogens. In summary, periodontal disease acquires an increased importance in the population with intellectual disability.

### Malocclusion

There is no clear evidence that the prevalence of malocclusion is greater among the population with intellectual disability. Persons with cerebral palsy have a greater incidence of Class II malocclusion and anterior open bite, generally thought to be due to differences in oral motor movements, including atypical swallowing patterns. The typical Class III malocclusion in patients with Down syndrome is the result of hypoplastic growth of the maxillary, premaxillary and nasal structures of the face. In addition, posterior

crossbites are common in this population. Aside from these two sub-groups and specific syndromes with orofacial manifestations, the prevalence of malocclusion should be considered the same for the population with intellectual disability and without intellectual disability alike.

### **Other**

The incidence of missing permanent teeth, delayed eruption, bruxism, enamel hypoplasia, hypocalcification and erosion is higher in the population with intellectual disability compared to the general population.

### **MEDICAL CONDITIONS**

There are fewer pertinent medical conditions in the population with intellectual disability, as a whole, than are often perceived. The major problems are the following:

#### **Cardiac disease**

There is a high prevalence of cardiac disease among the population with intellectual disability, especially in patients with Down syndrome and patients with multiple disabilities. However, treatment modifications necessitated by this condition are the same in all groups (i.e., American Heart Association antibiotic regimens).

#### **Upper Respiratory Infections**

Many persons with intellectual disability, especially those with Down syndrome, those living in institutions, and those who are not able to walk or reposition their bodies in bed, are prone to recurrent severe upper respiratory infections. Except for certain special considerations such as sedative complications and patient positioning considerations, few precautions other than those used with all patients are necessary.

### **Special Medications**

Many persons with intellectual disability have medications prescribed to control seizures, reduce anxiety, or relax muscle spasms. Ordinarily these drugs do not greatly modify dental treatment regimens, although caution is advised, especially in prescribing additional sedative medications. Some seizure medications may complicate gingival health due to the development of gingival hyperplasia.

### **Seizures**

Seizures are common in this population but are controlled in the vast majority of cases with anticonvulsant medication. A grand mal seizure in the dental office is a very rare occurrence and in patients with a well-documented seizure history, it is generally not a medical emergency. Often no special precautions are necessary other than protecting the patient's airway from any dental materials that may be in use at the onset of the seizure, preventing self-injury by the patient, and preventing aspiration in cases of emesis. There is no need to hold the tongue to prevent the patient from tongue swallowing as popularized in the media. If the seizure is not typical for the patient, it constitutes a medical emergency and emergency protocols, including activating 911, should be followed.

### **Other**

Physical and sensory disabilities such as cerebral palsy, blindness, deafness, swallowing disorders, and other disabilities complicate the provision of dental care to the population with intellectual disability.

## NEURODEVELOPMENTAL AND MENTAL HEALTH DISORDERS

While many individuals with intellectual disability do not have co-occurring neurodevelopmental or mental health disorders, they are more common in this population than the general population (32-40%).

- **Neurodevelopmental disorders:** The prevalence of autism is estimated at 5-10% for mild intellectual disability and up to 30% for moderate to severe intellectual disability. The prevalence of attention deficit/hyperactivity disorder (ADHD) in children with intellectual disability is also higher than in the general population (8.7-16% compared to 5%).
- **Mental health disorders:** Conduct disorders occur at a higher rate in this population (20.5% compared to 4.3%). The prevalence of depression and schizophrenia is 1.5-2 times higher. Anxiety disorders are also more common (11.4% compared to 3.2%). Some studies suggest that the rates of depression and anxiety in this population may be underestimated.
- **Behavioral problems:** The prevalence of behavioral problems is 3-5 times higher and can be associated with co-occurring mental health disorders. These include tantrums, aggression and screaming seen in those with anxiety or depression, especially for individuals with severe to profound intellectual disability.

## BEHAVIORAL SUPPORTS / SPECIAL COMMUNICATION TECHNIQUES

### Communication

The patient with intellectual disability generally processes both verbal and visual information more slowly than the general population. Therefore more time must be set aside by the dentist and staff for any preoperative, operative and postoperative explanations and instructions. Additionally, communication with the patient's caregivers, guardians, or other family members is essential in cases where the patient is not able to make his or her own treatment decisions or understand home care instructions.

### Health Education

As persons with intellectual disability often have short term memory deficits, dental professionals should reinstruct or re-explain information more often at subsequent appointments than one would expect with a child or adult without intellectual disability. The lack of recall of simple procedures or expectations is a common characteristic.

### Social Age

The practitioner should also remember to direct the communication to the patient's social age. Social age reflects the socialization skills acquired. For an individual with intellectual disability the social age will lie somewhere between the mental age and chronological age.

### Verbal Instructions

Patients with intellectual disability often have trouble with abstract terminology. Therefore any instructions should be as simple and concrete as possible in order to center the attention of the patient.

## **Visual Instructions**

Since persons with intellectual disability often have difficulty with verbal information, visual instructions, before and during treatment, help support the patient to have a more successful dental visit compared to verbal instruction alone. It has been demonstrated that patients with intellectual disability who are having difficulty following directions have an easier time when visual demonstration of the proposed procedure is used. Whether this increase in ability to follow instructions is due to the differences in presentation (visual versus verbal) or to the centering of attention is unclear and likely variable from patient to patient.

## **Visual and Tactile Feedback**

Additional emphasis on communication modifications are indicated for the patient with multiple disabilities. Visual feedback with deaf patients, as well as tactile feedback with patients who are blind, are important communication techniques.

## **Positive Reinforcement**

In an attempt to modify the effects of the experience and expectation of failure, rewards are used extensively for patients with intellectual disability. Rewards, usually verbal compliments for desired treatment behaviors (positive reinforcement) are used with far greater frequency and for a broader range of behavior than for patients without intellectual disability. The character of the verbal reward is dictated by the mental age and socialization level of the patient.

## **Shaping**

Instruction prior to and during any procedure is usually divided into easy steps. The blending of new or novel instruction with old or familiar information facilitates this process. “Shaping” or rewarding successive approximations of desired treatment behavior is part of this process.

## **Non-contingent Escape**

Using techniques such as counting during short segments of a procedure where the patient can anticipate a break (a brief escape from the procedure) can reduce a patient’s anxiety, give the patient a break for a brief recovery from the unpleasant stimulus, and allow him or her to complete an otherwise difficult procedure in small steps. The guidance must be clear and understandable for the patient, such as consistent counting to 10. This fixed time period is not based on the patient’s behavior and is considered “non-contingent escape.” This is most effective for patients with mild or moderate intellectual disability who are able to understand when breaks will be given. When the escape period (the break) is based on the patient’s behavior, it is considered “contingent escape.”

## **Distraction**

Some patients benefit from distraction during uncomfortable or undesired procedures. This is most effective in short durations where the patient can be distracted from the anticipation of an injection or other anxiety-producing procedure. This is less effective for patients with co-occurring intellectual disability and ADHD.

## **Environmental Stimuli**

Many patients with intellectual disability, particularly those with autism or attention deficit/hyperactivity disorder (ADHD), exhibit a set of characteristics including hypermobility and hyper-distractibility. When these patients are placed in a relatively non-stimulating environment, they are often more able to cooperate. This non-stimulating environment is one in which extraneous auditory, tactile and visual stimuli are reduced to a minimum.

## **Perseveration**

Perseveration is the continued repetition of words, phrases, or certain physical movements. For patients with perseveration tendencies, avoiding distraction and demonstration of various parts of the dental equipment such as light switches and air/water syringes may be beneficial.

## **Consistency of Staff**

Patients with intellectual disability often have difficulty when placed in a new or unfamiliar environment due to difficulty with stimulus generalization. Therefore, many patients are better able to cooperate when they are provided treatment consistently in the same dental operator and by the same dentist, dental hygienist and/or dental assistant each time.

## **STABILIZING AND PROTECTIVE DEVICES (refer to Module 6 for more complete information)**

With most children, medical stabilization is rarely used. With many children or adults with intellectual disability, the use of stabilizing and protective devices can prevent

physical movements that would interfere with safe dental treatment and allow treatment to proceed when other techniques alone are unsuccessful. Thus, medical stabilization is often employed for persons with movement disabilities, especially cerebral palsy, and those with severe or profound intellectual disability who are unable to cooperate for dental treatment. Likewise, the ability of a patient with intellectual disability to keep his or her mouth open sufficiently to allow for dental treatment is sometimes limited. This can be circumvented by using a mouth prop. The Molt® mouth prop and the Open Wide® mouth prop with a wrap-around handle are popular and effective choices for dental professionals.

The use of stabilizing and protective devices should never be used in a punitive manner nor for the convenience of the dental staff. Additionally, medical immobilization should supplement, never supplant, other behavioral supports and communication techniques (such as positive reinforcement). Temporary medical immobilization for dental services are the least restrictive option for patients not amenable to behavioral supports alone as outlined in the preceding paragraphs. The use of temporary medical stabilization and protective immobilization for medical or dental treatment is in no way analogous to the use of behavioral restraints to address general maladaptive behavior.

## **SEDATION (Refer to Module 5 for more complete information)**

### **Sedative Medication**

Light or moderate sedation is recommended to support certain patients with intellectual disability through dental procedures. The use

of sedative medication should supplement, never supplant, other supportive techniques. With the majority of patients with intellectual disability, medication is used to reduce anxiety and fear, thus creating an environment where learning the desired behavior and tolerating necessary care can take place. In contrast to this, learning of desired behaviors is less likely for those with the most severe intellectual disabilities and the medication serves as an adjunct to other behavioral and physical support techniques, such as positive reinforcement and medical stabilization. The specific drugs of choice are usually based upon the experience and preference of the individual practitioner as well as the medical and dental needs of the patient.

### **Inhalation Analgesia**

Inhalation analgesia is helpful in minimizing anxiety or fear with many individuals with intellectual disability. Nitrous oxide-oxygen analgesia is safe and convenient when administered by appropriately trained providers and also raises the pain threshold which is a valuable adjunct to treatment where only mild discomfort is expected (e.g., prophylaxis). Inhalation sedation is also helpful when used in conjunction with other types of sedation regimens. This technique may be less effective for patients who breath through the mouth.

### **Oral Sedation**

Oral sedation is the most common method of administering sedative medications. It is also the most variable in effectiveness and in occurrence of undesirable side effects. The most common oral drugs used are the anxiolytics, such as diazepam and triazolam.

Since oral medications cannot be titrated, the possibility of occurrence of over sedation is a concern. The effectiveness of oral sedation is usually limited to mild and moderate dental anxiety.

### **Intramuscular Medication**

Intramuscular (IM) medication is usually more effective than the oral route, but it is less convenient to use and dosage also cannot be titrated. For those patients with severe dental anxiety resulting in significant difficulties cooperating for dental care and who will not take oral medication, the IM route of administration may be the only alternative to general anesthesia. Some drugs used include ketamine, midazolam, and other benzodiazepines. The IM route can also be helpful in gaining sedation prior to insertion of an IV.

### **Intravenous Medication**

Intravenous (IV) medication is the most effective method of light to moderate sedation for patients with severe maladaptive dental behaviors. The dose can be titrated and side effects and over sedation are less of a possibility. The most common intravenous drugs used are the anxiolytics used alone or in conjunction with a narcotic. The need for special permits and training to administer parenteral sedation decreases the likelihood of use of intramuscular or intravenous sedation by the general practitioner. Additionally, patients who are unable to cooperate for dental procedures are often unable to cooperate for the insertion of an IV line or may be too medically complex for sedation in a dental office setting.

## **General Anesthesia**

When other methods of behavioral and physical supports have been considered or tried and failed, general anesthesia should be considered. For patients with certain medical conditions or medically complex patients, general anesthesia should be administered in a hospital setting. To avoid the psychological trauma to the patient and financial expense created by hospitalization, provision of dental care under general anesthesia should be the last resort, accomplished only after other methods have been considered or tried and failed. The presence of intellectual disability does not modify the provision of general anesthesia except for certain accompanying medical conditions, difficulty in intubation due to airway anatomy, difficulty placing an IV and difficulty in inducing general anesthesia in the anxious patient (e.g., a patient who is resisting a face mask or other preoperative procedures).

### **PREVENTIVE THERAPY (Refer to Module 11 for more complete information)**

The practice of good preventive measures is extremely important in the care of the person with intellectual disability. For a significant percentage of patients with intellectual disability, dental treatment is difficult because of dental anxiety, movement disorders, or physiological conditions (such as hypergag reflex or risk of aspiration), therefore preventive measures can save the person from considerable distress.

Preventive measures consist of reducing cariogenicity in the diet, establishing good oral hygiene, and providing complete in-office preventive measures. A good preventive regimen for the person with intellectual

disability is not unique, and should emphasize the same measures as with the general population. There are sometimes challenges, however, to utilizing preventive techniques in this population. Some treatment adaptations may need to be made, such as increased attention to isolation and airway management when placing sealants in patients with dysphagia.

The Vipohlm study in Sweden demonstrated that the total amount of cariogenic food consumed, the number of times this food is consumed between meals, and the retentiveness of the food ingested are primary factors in causing tooth decay. Thus, dietary recommendations for these patients, as for the general population, should be aimed at reducing these factors when they are in excess. One pertinent problem in controlling the carbohydrate intake of children with intellectual disability is the tendency of some parents, guardians or caregivers to use sweets (such as candy or soda) as rewards or bribes for desired behaviors.

Preventive measures are of the utmost importance when planning for the oral health care of patients with intellectual disability. Once teeth are lost due to dental disease it is often difficult to replace them since many of these patients are unable to cooperate during lengthy dental procedures, or to properly use and care for an intraoral prosthesis. Furthermore, removable prosthodontic treatment may be contraindicated in patients with severe, retractable seizure disorders, sometimes seen in patients with intellectual disability.

Maintenance of good oral hygiene is difficult for many individuals with intellectual disability, as frequently they do not have

sufficient muscular coordination, manual dexterity, recognition of the importance of brushing and flossing, or understanding of the techniques of brushing and flossing. In many instances, oral hygiene becomes the responsibility of another person. The use of an electric toothbrush may be easier to manipulate by the caregiver or a patient who performs his or her own tooth brushing, especially for patients with cerebral palsy. However, it still requires active participation in order to accomplish effective plaque removal. The use of disclosing techniques is recommended for some individuals with intellectual disability who are fairly adept at oral hygiene procedures, but is often too difficult and messy for many patients with intellectual disability to use.

Although daily oral hygiene activities are often mandated by state and federal regulations, oral hygiene among individuals with intellectual disability is frequently inadequate. The ability to independently complete oral hygiene procedures (such as brushing and flossing) is related to physical and intellectual abilities. In some studies, individuals with mild intellectual disability had more oral hygiene problems than individuals with more severe intellectual disability. One theory was that those who required more supports and caregiver-responsible tooth brushing were more likely to complete daily oral hygiene activities. For individuals that need support for oral hygiene activities, the oral hygiene can be affected by the individual's cooperative ability and the workload, motivation, and knowledge of the caregiver.

Flossing, although often difficult, should be carried out. A floss holder with a long, broad handle is very helpful for many of these individuals and their caregivers.

As it is often more difficult to maintain effective home care for those with intellectual disability compared to those without intellectual disability, other preventive measures assume relatively greater importance. The preventive measures typically employed include sealants, topical fluoride applications (including fluoride varnish), fluoridated water, antimicrobial mouth rinse, dietary counseling, periodic professional prophylaxis, mouth guards, and protective helmets for those with seizure disorders.

Adjunctive measures, namely chemical plaque inhibitory agents, such as chlorhexidine gluconate may also be helpful. Chlorhexidine was first used in 1954 in Great Britain as an antiseptic cream for skin wounds. There are numerous chlorhexidine containing products available for a variety of antibacterial purposes. Mouth rinses with 0.1 and 0.2 percent chlorhexidine have been found effective in controlling supragingival plaque. The use of chlorhexidine oral rinse to reduce plaque and gingivitis in individuals with intellectual disability has been advocated since 1973, particularly in Scandinavian countries.

The efficacy of chlorhexidine has been established regardless of the vehicle used for delivery, e.g. mouth rinse, dentifrice, gel or spray. The selection of the vehicle becomes an important issue whenever the agent is used in special population groups. A mouth rinse may not be an appropriate vehicle if the patient is unable to rinse as prescribed, or experiences swallowing difficulties. A chlorhexidine dentifrice may prove safe and effective. Another option is to utilize the chlorhexidine oral solution on the toothbrush bristles as an alternative to toothpaste. Long term use of chlorhexidine may be appropriate for many in this population. The risks versus benefits of

long term chlorhexidine use need to be considered due to possible side effects such as tooth staining and taste changes.

More frequent clinical and radiographic examinations, when possible, are indicated for many patients with intellectual disability in order that dental disease may be diagnosed and treated during earlier stages of disease. Thorough oral prophylaxis and the application of topical fluoride or fluoride varnish should be used. The utilization of pit and fissure sealants as a measure for preventing the development of occlusal caries should be a routine part of any caries preventive regimen.

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