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Special and Medically Compromised Patients in Dentistry: An Overview

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Special and medically compromised patients present a unique population that challenges the dentist's skills and knowledge. Without adequate training and an understanding of the various medical complications and handicapping conditions, many dentists will become frustrated and elect not to treat these individuals in their offices. This is unfortunate for both the dentist and the patient, as ultimately both parties can benefit from a caring, working relationship. These patients can usually be managed with minimal alteration in the dentist's treatment protocol; however, a reasonable understanding of the patient's condition is a prerequisite so that any necessary precautions can be taken and appropriate therapies implemented. Close consultation with physicians and/or medical specialists is frequently indicated, requiring the dentist to know when and with whom these consultations are needed. Providing comprehensive dental care for this population is not only rewarding, but is also a community service that health care providers are obligated to fulfill. Due to advances in health care, increased life expectancies, changing social attitudes, and other factors discussed throughout this text, the dental practitioner now has a greater chance of encountering special and medically compromised patients (Figure 1-1). This chapter will provide a brief overview of current and predicted changes in the population that will directly impact on the dental health care system.

Although all the patients we treat are special and unique individuals, the term "special patients" is often used to designate individuals with conditions differentiating them from the norm. These individuals may require additional attention and effort by the dentist and staff due to their mental and physical handicaps, as well as any underlying medical problems. Depending on the patient's condition, it can be difficult for the dentist to decide whether to treat the patients in the office or refer them to a specialist, a hospital, or a

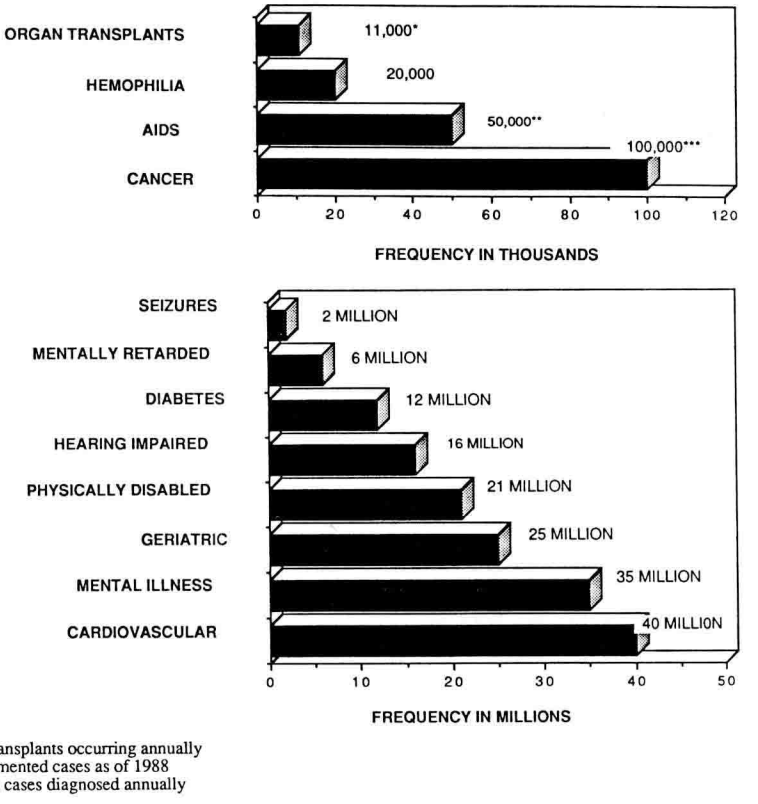

Figure 1-1 Prevalence of special and medically compromised people in the US.

university. Making this decision will depend heavily on the dentist's training and skills for managing the special and medically compromised patient. Other considerations include the severity of the individual's involvement, the availability of other resources (eg, specialists, hospitals), and the types of dental therapies required. For some patients, such as those with potentially life-threatening conditions, it may be more appropriate for dental care to be provided in a hospital where medical assistance is readily available. A majority of special and medically compromised individuals can receive routine dental care with minimal risk as ambulatory patients in the private office.

The diversity of the special patient population and their health care problems often requires the intervention of numerous medical and dental disciplines. Although it is unrealistic to expect dentists to be experts in all fields of dentistry and medicine, it is essential that they have at least a general understanding of the problem and what treatment modalities might be available. This text has been written to help provide the dental practitioner with this foundation of knowledge. As ground work, it is important to have

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some understanding of the population to be discussed and the population trends that will face us in the near future.

An increasing concern and interest has developed in the area of dental care for the elderly which has been attributed largely to the changing population demographics. The number of elderly people in the United States is growing, and the rising mean age reflects a shift from a predominantly younger population to an older population. Approximately 25 million Americans are over the age of 65, and it is estimated that by the year 2030, 52 million people will exceed the age of 65.[1] The increase of elderly people in our society is primarily due to the aging "baby boom" population. This change will influence the types of patients seen in dental practices as well as altering the types of services required. Studies conducted in the elderly population have shown that there is a need for quality comprehensive dental care, especially for those confined to a nursing home, who have poor access to dental services.[2] The elderly suffer from many concurrent acute and chronic diseases which, in a subset of this population, results in debilitation and frailty.[3] In addition to the medical and psychiatric problems frequently associated with aging, this population of patients often require modified dental management approaches to address such problems as root surface caries, xerostomia, and periodontal disease. Therapies such as dental implants and ridge augmentation will continue to change the nature of dentistry for the adult and elderly by providing a means to optimize the stomatologic system in edentulous or partially edentulous patients.

The infectious dental patient has taken on a new meaning in the 1980s as a result of Acquired Immunodeficiency Syndrome (AIDS). There is no doubt that the AIDS epidemic has had and will continue to have a tremendous impact on dentistry. Barrier control in the past was usually minimal in most dental practices, with "wet-fingered dentistry" being considered the norm. Now there are federal guidelines that mandate adequate barrier protection for the patient and dentist, with penalties for lack of compliance.[4] Practitioners are faced with the fear of exposure to the AIDS virus, increased overhead due to added expenses related to barrier protection, and logistic problems such as shortages of protective gloves. AIDS has brought on a host of difficult ethical issues regarding whom the practicing dentist is obligated to treat and what level of dental care these individuals should receive. Again, many of these issues are being dealt with in the courts or by state and federal governments, which may leave many practitioners feeling as though they are losing some control over their practices. Unfortunately, all predictions indicate that the situation is going to worsen and that within the next few years there will be several hundred thousand AIDS patients and over a million people infected with the virus in the United States.[5] It is essential that dental practitioners have a working knowledge of AIDS and other communicable conditions, including the epidemiology, pathogenesis, and protocols for management in the dental office.

The number of individuals receiving organ transplants is growing every year. The increased number of transplant recipients and the improved success rates make it more likely that dental practitioners will encounter these patients. Kidney transplantation has been considered a standard and highly

successful medical procedure for years. Since the first human heart was transplanted in 1967 by Christian Barnard, the success rate has continued to improve, largely due to advances in immunosuppressive therapy that reduce the likelihood of rejection. Heart transplants are now available at major medical centers throughout the United States. As a result of new immunosuppressive regimens, liver transplants, which only a few years ago were doomed to rejection, are now becoming a viable therapy and are increasingly common. Multiorgan transplantation is still uncommon, although work is continuing in this area. The dentist should be involved with the transplant patient before and after transplant surgery to optimize the patient's oral and general health. One of the primary causes of death in transplant patients is infection, with one potential source being the oral cavity. The dentist can help ensure that oral disease is eliminated or controlled before transplantation and the initiation of immunosuppressive therapy.[6] After transplantation, the dentist should provide optimum preventive therapy and carefully monitor the patient's periodontal and caries status. In the future, dentists will be called upon more frequently to assist in the health care of transplant patients, requiring the practitioner to be familiar with treatment protocols and possible oral side effects of immunosuppressive therapies.

There are nearly one million new cases of cancer diagnosed in the United States each year.[7] As a result of diagnostic and therapeutic advances, the survival rate for many types of cancer has dramatically improved, resulting in an increase in this segment of the population. With extensive research being conducted in the areas of cancer diagnosis and treatment, this trend is expected to continue. Dentists may be familiar with the potential oral devastation following head and neck radiation due to xerostomia, osteoradionecrosis, and rampant caries. Many practitioners, however, are less familiar with the possible oral infections and mucositis which can result from certain forms of cancer and chemotherapies or with the dental management of cancer patients.[8] Cancer patients often require special dental intervention and treatment because of blood dyscrasias, immunosuppression, infection, and specific oral manifestations of the disease and/or therapies to achieve optimum oral and general health. Since mucositis and oral discomfort often accompany chemotherapy, the dentist can play an integral part in the management of cancer patients.[9]

The hemophilias are a group of conditions caused by deficiencies in specific blood clotting factors and are the most common inherited bleeding disorders. Although in the past many dental practioners were fearful of treating this population, the availability of specific concentrated blood products permits bleeding to be controlled with replacement therapy in most cases. With the exception of those hemophiliacs who develop inhibitors to transfused blood factors, most hemophiliacs can receive comprehensive dental care in the dental office. Unfortunately, managing hemophiliacs has taken on a new dimension for dentists because a large percentage of those patients who received concentrated blood factors prior to 1985 are now infected with the AIDS virus.[10] Since all blood and blood products are being screened for the AIDS virus, the risk of infecting additional patients is remote. Maximum barrier protection is essential in all transfusion patients, not only because of

AIDS, but also because of the high potential for hepatitis, which cannot be screened for in blood products.

Cleft lip with or without cleft palate continues to be the most common oral birth defect.[11] To achieve optimum esthetics and function, teams of medical and dental professionals interact to provide a multidisciplinary treatment approach. Unfortunately, due to the complexities of habilitation and the variability of each cleft, there remains no concensus on the most appropriate therapeutic approaches. Despite the team approach to managing cleft palate patients, many, if not most, of these individuals seek their routine dental care in the community through private practitioners. Therefore, the dentist should be familiar with the various presentations of clefts, hereditary conditions and physical abnormalities frequently associated with clefting, and possible therapies available for rehabilitation.

Hereditary conditions that affect the dentition present both diagnostic and treatment challenges for the dental practitioner. The field of genetics is changing rapidly as new tools like molecular genetics increase our understanding of basic gene defects and aid in the diagnosis of conditions. Clinical knowledge of the oral manifestations and variability of characteristics associated with specific disorders continues to move forward, thereby helping establish a realistic prognosis and treatment approach for patients with inherited dental conditions. As a primary health care provider, the community dentist should be able to diagnose the more common hereditary dental conditions and identify those individuals who require referral for additional diagnostic and/or therapeutic services. The dentist must also be familiar with hereditary disorders having a propensity for significant systemic involvement that may affect the dental treatment.

Individuals who are severely affected may benefit from multidisciplinary dental and medical management so that the dentition, soft tissue, and any associated skeletal abnormalities are addressed. Patients having syndromes with significant systemic involvement may need to be managed in the hospital using general anesthesia so that full mouth rehabilitation can be accomplished. To illustrate this, 20 years ago most patients with severe forms of epidermolysis bullosa received full mouth extractions as the recommended dental therapy, due to the rapid breakdown of the dentition and fear of causing tissue blistering.[12] With appropriate anesthesia management, these patients can now benefit from full mouth restorative treatment, allowing them to maintain their dentition and have a more appropriate diet.[13] Advances in dental therapies such as cosmetic bonding, pit and fissure sealants, antiplaque agents and combinations of orthodontics and orthognathic surgery have provided the means for achieving function and esthetics in patients with hereditary conditions of the dentition.

In the United States, there are six million mentally retarded persons with 100,000 newborns joining this group yearly.[14] In the past, large numbers of mentally retarded children and adults were placed in institutions. Over the last decade or so, there has been a general movement across the United States to mainstream mentally retarded individuals. The steady increase in the number of mentally retarded and/or physically handicapped persons in the community has directly influenced dental health care to this population.[15] Dental services

are typically provided for institutionalized mentally retarded patients; however, as a result of deinstitutionalization, access to dental services has become a problem for many of these individuals. The only dental services that may be available in the community for the mentally retarded patient are through the private sector.

Handicapped patients often have multiple physical or medical problems that require certain precautions. Approximately 35% of children and adults with cerebral palsy have a seizure disorder and there is a high incidence of congenital heart defects in the Down syndrome population.[16,17] Poor cooperation and behavior in response to dental treatment is common when working with the mentally retarded. Understanding basic behavior management techniques can remedy some behavior problems, allowing these patients to be treated in the dental office; however, without the use of hospital services and general anesthesia, many of these patients will not receive the comprehensive treatment they need. Other considerations for this population include having a barrier-free office which is easily accessible for the physically handicapped and being familiar with patient positioning and wheel chair transfer techniques.

Approximately 35 million Americans, almost one out of every six, suffer from some form of mental disorder.[18] Mental illness can range from a mild neurosis to more complicated disturbances such as schizophrenia and manic depression. It has been estimated that stress-related symptoms account for two thirds of office visits to family doctors.[19] The use of psychotropic drugs accounts for nearly 10% of all prescriptions for ambulatory patients in the United States.[18] A common finding in this population is medication-induced xerostomia, which may necessitate specific dental intervention, while certain personality disorders, such as bulimia, can demonstrate specific oral findings diagnostic of the disorder.[20] Treating a mentally ill patient in the dental office may require a psychiatric consultation in order to enhance the doctor-patient relationship and, consequently, the delivery of dental treatment.

Additional medical problems which are prevalent in the population and may require special approaches to dental care include diabetes, seizure disorders, and cardiac problems. It is estimated that 40 million Americans have cardiovascular disease and the 5% of the population suffers from diabetes.[21] Given the magnitude of these medical conditions, it is likely that dental practitioners will encounter these patients with regularity. It is, therefore, imperative that the dentist be knowledgeable of the most current management techniques, including bacterial endocarditis prophylaxis and handling the compromised cardiac patient. The diabetic patient's oral health status and appropriate dental therapy are often closely tied to his or her systemic health and level of control. Studies indicate that over one million Americans have recurrent seizures.[22] The occurrence of a seizure during dental treatment is disruptive at best and life threatening at worst. The dentist must be familiar with the various types of seizure disorders and be prepared to manage the patient who unexpectedly seizes in the dental office. As with all medical conditions, a thorough evaluation of the patient's health status is critical in determining the risks of dental therapy and in taking steps to prevent office emergencies.

Those with a visual or hearing impairment constitute a large segment of the special patient population. Statistical data on the numbers of deaf and blind

children and adults may vary, depending on whether those who are partially deaf and blind are included. In the United States, including Puerto Rico and the Virgin Islands, there are approximately 490,200 individuals who are legally blind, according to a 1977 survey,[23] and 8% of the civilian, noninstitutionalized population in the United States experiences some degree of hearing loss, based on a 1982 survey.[24] With an increase in the geriatric population, the number of people with sensory impairments will probably also increase. When treating a deaf or blind patient, the dentist must take advantage of the patient's available communicative skills. Merely understanding the patient's sensory impairment and how to appropriately interact with the patient in the dental setting can make a difference in the success of the dental experience.

The role of dentistry in the hospital setting is increasing as a result of an increase in the number of dentists managing patients who require hospitalization to receive comprehensive dental care.[25] The dentist serving on a hospital staff is expected to understand and adhere to the hospital's rules and regulations and hospital protocols for admitting, treating and discharging patients. It is pertinent that the dentist be knowledgeable of general anesthesia and anesthetic procedures, including the medications that are commonly used in the operating room by the anesthetist. The dentist also must be aware of the possible risks involved in treating patients using general anesthesia, in order to minimize potential complications. Many of the types of patients discussed throughout this text can benefit from dental treatment using general anesthesia. In the future, dentistry will continue to become more involved with dental care for nonambulatory and severely medically compromised individuals in the hospital setting.

Of the utmost importance when working with the special or medically compromised patient is emphasizing the need for excellent preventive dental care. Our best efforts should be directed toward teaching good preventive dental measures to these individuals. The dentist should tailor the preventive program to meet the specific needs of each patient on an individual basis. Recall visits, for example, may need to be more frequent than every six months. The dentist needs to evaluate the patient carefully in order to determine the degree of self-help that the patient is capable of achieving. Those with a physical disability or mental retardation may require supervision to help them maintain good oral hygiene. Encouragement and reinforcement by the dentist is mandatory in order to ensure a high level of patient motivation and to attain the best results in preventive care.

CONCLUSION

This chapter has briefly outlined some of the population and disease trends that are changing the nature of dentistry, the types of patients dentists treat, and the modalities available to manage these patients. The dentist of the future will be required to have a broader understanding of the relationship between oral and systemic health and the potential ramifications of dental therapy for the special and medically compromised patient. Many dentists are expanding the services they offer, due to changes in dental disease (caries

reductions) and an increase in the number of practicing dentists. The patients discussed in this text constitute a considerable portion of the total population that, unfortunately, has been largely underserved by the dental profession. In the past, there was an abundance of patients requiring routine dental care, making it unnecessary for many dentists to accept special patients into their practice. Dentists often lacked adequate training, leaving them uncomfortable with the management of patients in this population. Dental practitioners who accept the responsibility of treating these patients must have the skills, expertise, and knowledge necessary to provide quality comprehensive dental care. The remainder of this text will discuss in greater detail the predicted population and disease changes, as well as possible dental interventions and treatment approaches. It is hoped that by reading this text, dental professionals will be better prepared to manage special and medically compromised patients and have the interest to pursue other sources of information to further their intellectual and clinical skills in this exciting field of dentistry.

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2

Dental Management of the Mentally Retarded Adult

Gary Belanger
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From ancient times, the mentally retarded have been a mystery to society. In recent years, great strides have been made in understanding of the etiology, pathology, prevention and treatment of many forms of mental retardation. Despite these advances, dental management of the person who is mentally retarded has not changed for almost a generation. Dentists willing to treat these patients still have a limited diagnostic and therapeutic armamentarium available.

The changing health care milieu has complicated dental care for the mentally retarded person. The normalization philosophy has increased the number of moderately and severely retarded persons seeking dental care outside the institution. Attention to patient rights has caused a more critical view of restraint and physical force. Behavior intervention programs have necessitated reduction in large, behavior-altering doses of medication, eliminating a major source of control. Public licensing boards and liability insurance carriers have also limited pharmacologic management capabilities of dentists. The dentist now deals with a larger, more demanding group of patients with, apparently, fewer management options. But the dental profession has also benefited from advances and changes in patient management as a result of research and deinstitutionalization. Some examples are:

1. Clearer etiologies of retardation, lending greater information about risks of dental care, applicable medications, prognoses, related conditions, and performance capabilities of affected persons.
2. Improved patient social skills as a result of placement in community settings and school programs. Deinstitutionalization has been shown to improve language skills, social interaction, and responsibility, among other traits.[1] These have a direct impact on dental behavior.

3. Decreased aggression, due to behavior modification. Community placement is largely determined by behavior, so the deinstitutionalized individual who has maintained community placement has demonstrated consistent behavior.
4. A less medicated patient, more responsive to communication and less of a risk when medications are needed in the office setting.
5. The likelihood of an established behavior modification history with useful information on reward systems, effectiveness of behavior modification, behavior triggers, and other factors that might be used in an office desensitization program.

The dentist treating the mentally retarded person possesses more solid diagnostic information about behavior than previously. In many cases, a proven management protocol exists that can be used in the dental setting.

This chapter approaches treatment of the mentally retarded person much as one would approach the treatment of a patient with any other static condition affecting delivery of routine dental care. The major emphasis will be on mentally retarded adults, since they, more often than adolescents and children, are without resources for care. In addition, many techniques advocated for children in general can be used for the child who is mentally retarded. The reader should derive a method of behavior diagnosis and treatment planning from this chapter. The management of an overlying behavior disorder is much like the diagnosis of a dental affliction. The final therapeutic regimen chosen is the one most likely indicated by available historical and clinical data and the one most likely to result in the desired effect. The dentist should be able to decide how best to manage the patient after a single diagnostic visit. It is beyond the scope of this chapter to provide detailed management approaches or to try to provide more than a process for diagnosis.

DIAGNOSTICS

Definitions

The American Association of Mental Deficiency[2] defines mental retardation as "significantly subaverage general intellectual functioning existing concurrently with deficits in adaptive behavior, and manifested during the developmental period."

Critical to the definition are three items, each of which has general relevance to dental care delivery:

1. *Significant Impairment of Intelligence:* This is considered to be two standard deviations or more below the norm, which is an IQ of 70 or below. Those who do not work with the mentally retarded consistently have difficulty appreciating the translation of IQ scores to intellectual ability. For example, many mildly retarded individuals function well in society, hold jobs and live in a variety of independent or group settings. They can comply with the conditions of dental treatment. A label of mild retardation should tell the dentist that this

patient can be treated in the office with no modification, or perhaps with only nitrous oxide analgesia.

2. *Significant Impairment in Adaptation:* The requirement for adaptive malfunction is unknown to many health professionals. It refers to an individual's ability to perform specific cultural roles. Many persons who are mentally retarded function well in their social environment, a part of which is the dental office. The definitional significance to the dentist in this instance is that IQ scores are meaningless alone. In fact, to be provided a diagnosis of mental retardation, an individual must demonstrate both an adaptive impairment and an intellectual impairment concurrently. The individual's social adaptation plays a major role in how that person will function as a dental patient. Patients who have been institutionalized for a large part of their lives may demonstrate unexpected behavior. For example, they may act out to gain attention—a ploy used in large institutions to obtain human contact.
3. *Onset Before 18 Years of Age:* Eighteen years is considered the age of full mental ability. The right-to-education legislation of the 1970s (Public Law 94-142) made school-age intelligence testing a reality. The implications of this aspect of the definition for the dentist are several. The first is to recognize that age plays a major role in the diagnosis of mental retardation. For example, prior to the age of 3 years, the term mental retardation is rarely used, due to problems with testing procedures that cannot differentiate clearly between motor, sensory, and intellectual deficits. Another aspect is that persons who suffer trauma or develop intellectual deficits later in life may not be labeled mentally retarded. These persons, however, may show significant intellectual impairment. A health history should allow for these definitional quirks and ask for general intellectual functioning rather than mental retardation.

Epidemiologic Data

Rather than serve as curiosities, epidemiologic data can shape general expectations for behavior related to chairside dentistry. For example, the largest segment of the mentally retarded population falls into the mild range of involvement. A dentist who identifies a patient as mildly retarded would most likely have minimal behavior obstacles to overcome. Table 2-1 depicts incidence and characteristics of various levels of retardation and should serve as a general guide to office expectations for the patient who is mentally retarded.

Table 2-2 is a compilation of factors leading to mental retardation. Familiarity with the range of causes serves several functions. The first is to indicate a level of severity. For example, inherited recessive disorders tend to manifest in more severe retardation with significant side effects. Lesch-Nyhan syndrome is an example of a genetic syndrome of severe retardation, accompanied by abuse. The second is to indicate patterns of behavior. Patients who have Down syndrome have been reported to be better in social interaction than individuals who are equally retarded from other causes, while patients

Table 2-1
Characteristics and Incidence of Retardation Levels

	Mild	Moderate	Severe	Profound
IQ*	55-69	40-54	25-39	24 and below
Incidence†	5,500,000	378,000	216,000	92,000
Percent of mentally retarded population	89	6	3.5	1.5
0-5 years: development‡	Can develop social and communication skills; minimal retardation in sensorimotor areas; often not distinguished from normal until later age.	Can talk or learn to communicate; poor social awareness; fair motor development; profits from training in self-help; can be managed with moderate supervision.	Poor motor development; speech is minimal; generally unable to profit from training in self-help; little or no communication skills.	Gross retardation; minimal capacity for functioning in sensorimotor areas; needs nursing care.
6-20 years: training and education‡	"Educable"; can learn academic skills up to approximately sixth grade level by late teens; can be guided toward social conformity.	Can profit from training in social and occupational skills; unlikely to progress beyond second grade level in academic subjects; may learn to travel alone in familiar places.	Can talk or learn to communicate; can be trained in elemental health habits; profits from systematic habit training.	Some motor development present; may respond to minimal or limited training in self-help.
21 years and older: vocational adequacy‡	Can usually achieve social and vocational skills adequate for minimum self-support, but may need guidance and assistance when under unusual social or economic stress.	May achieve self-maintenance in unskilled or semiskilled work under sheltered conditions; needs supervision and guidance when under mild social or economic stress.	May contribute partially to self-maintenance under complete supervision; can develop self-protection skills to a minimal useful level in controlled environment.	Some motor and speech development; may achieve very limited self-care; needs nursing care

*Test with 15 as standard deviation †Based on population estimates in 1971 at 203,000,000 in United States
‡From the President's Committee on Mental Retardation[3]

with Fragile X syndrome have been reported to display autistic behaviors, which are far more difficult to cope with in the dental setting.[5] Acquired intellectual impairment, such as that secondary to trauma, may indicate a patient whose socialization is more advanced, and that individual may be a better patient.

Table 2-2
Etiological Classification of Mental Retardation

Type	Example
Genetic	
Chromosomal abnormalities	Down syndrome, trisomy 18, trisomy 13
Disorders of amino acid metabolism	Phenylketonuria, maple syrup urine disease
Disorders of mucopolysaccharide metabolism	Hunter's or Hurler's syndrome
Disorders of lipid metabolism	Tay-Sachs disease
Disorders of carbohydrate metabolism	Fucosidosis, galactosemia
Disorders of purine metabolism	Lesch-Nyhan syndrome
Miscellaneous inborn errors of metabolism	I-cell disease
Consanguinity, incest, etc	
Hereditary degenerative disorders	Schilder's disease, retinal degeneration, etc
Hormonal deficiency	Congenital hypothyroidism, pseudo-hypoparathyroidism
Hereditary syndromes or malformations	Primary microcephaly, X-linked hydrocephalus
Neuroectodermatoses	Tuberous sclerosis
Unknown	
Acquired	
Prenatal	
Infection	Rubella, toxoplasmosis, cytomegalic inclusion disease
Irradiation	Microcephaly
Toxins	Ethyl alcohol, mercury
Unknown	Malformations, placental insufficiency
Perinatal	
Prematurity	
Anoxia	Birth injuries, hypoglycemia
Cerebral damage	Hemorrhage, trauma, infection
Infection	Meningitis, encephalitis
Postnatal	
Brain Injuries	Accidents, hemorrhage from coagulation defects or other cerebrovascular accidents, thrombosis, ruptured aneurism
Infection	Meningitis, encephalitis, brain abscess

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