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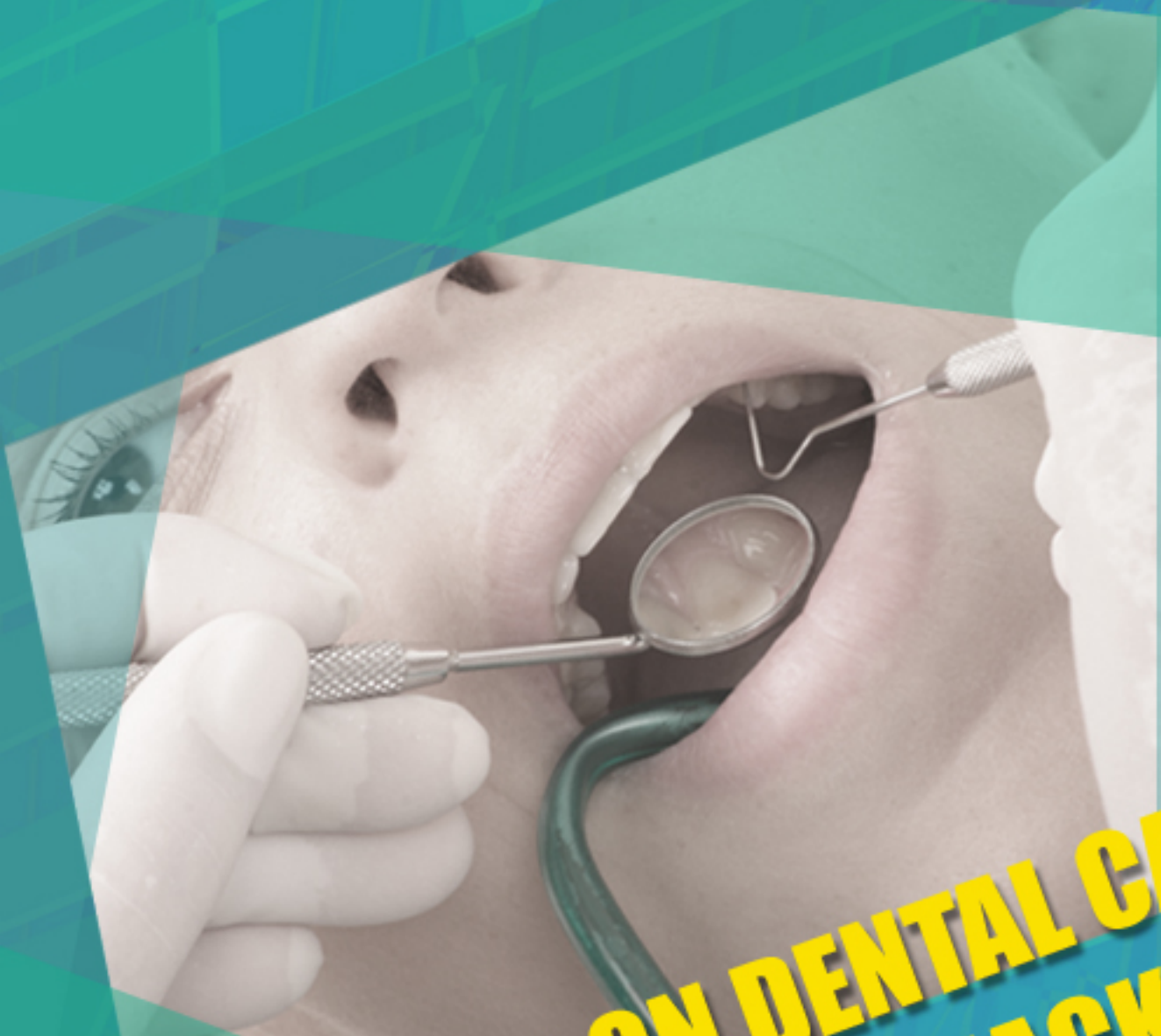

A PRIMER ON DENTAL CARE: QUALITY AND QUACKERY

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Prepared for
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Experts on dental health fraud suspect that over a billion dollars a year is spent on dubious, unnecessary, and poor-quality dentistry.

Dental diseases are among the most common ailments in the United States, accounting for over $70 billion in bills.[1] The majority of dentists work in the privacy of their own office where they usually are not subject to review by knowledgeable colleagues. This situation, plus the fact that the harm done by poor dental care may not become apparent for many years, makes it difficult for consumers to evaluate the quality or the necessity of the treatment they receive.

Experts on dental health fraud suspect that over a billion dollars a year is spent on dubious dentistry. The February 1997 issue of *Reader's Digest* contained an article, "How Honest Are Dentists?" that illustrated the vast potential for unnecessary over-treatment by unscrupulous dentists. The author, William Ecenbarger, went to 50 dentists in 28 states and asked what dental treatment he needed to have done. He brought a recent full set of x-rays and told the dentists he was satisfied with the way his teeth looked. He had previously been examined by an expert panel of dentists (I was a member of the panel) and told he had 2 teeth that needed repair. Many of the dentists he saw told him he needed numerous crowns, the dentist in New York City recommended 21 crowns and veneers on the lower 6 front teeth at a cost of $29,850. Only 21 dentists performed an oral cancer screening and only 14 did the recommended periodontal screening. In addition, a number of the dentists missed the 2 teeth that needed treatment and recommended other work.

ACSH believes that unnecessary and unscientific dentistry poses a substantial risk for the American public. This report identifies the main problem areas and suggests what can be done about them.

Genuine Credentials

There are over 110,00 dental offices in the U.S.A.[1] Dentists have either a D.D.S. (doctor of dental surgery) degree or the equivalent D.M.D. (doctor of medical dentistry) degree. The American Dental Association (ADA) recognizes 9 specialties. To be called a specialist, a dentist must undergo at least 2 years of advanced training accredited bv the ADA Council on Dental Education in one of these disciplines:

Endodontics: Diagnosis and treatment of diseases of the root pulp and related structures (root canal).

Oral and Maxillofacial Surgery: Tooth extractions; diagnosis and surgical treatment of diseases, injuries, and defects of the mouth, jaw, and face.

Oral Pathology: Diagnosis of tumors, other diseases and injuries of the head and neck.

Pediatric Dentistry: Dental care of infants and children.

Orthodontics: Diagnosis and correction of tooth alignment and facial deformities.

Periodontics: Diagnosis and treatment of diseases of the gums and related structures.

Prosthodontics: Diagnosis and treatment involving the replacement of missing teeth.

Public Health Dentistry: Prevention and control of dental disease and promotion of community dental health.

Oral and Maxillofacial Radiology.

Several other groups of dentists are trying to be recognized as official specialties but have not achieved recognition yet.

Dubious Credentials

Some dentists who have not completed specialty training but who limit their practice or emphasize an aspect of their practice refer to themselves as specialists. Many such dentists practice in a scientific manner and do high-quality work. However, some claim to be specialists in fields that are either unrecognized, unscientific, or both. These include "cosmetic dentistry," "TMJ disorders," "holistic dentistry," "bonding," "implants," and "amalgam detoxification." A few dentists base their claim of being a specialist on attendance at a weekend seminar.

Consumers should also be wary of three other types of credentials: 1) nutrition "degrees" from unaccredited correspondence schools, 2) "professional member" certificates from organizations with no scientific standing, and 3) certificates of attendance distributed at "continuing education" courses. Although the great majority of continuing education courses are valid, unscientific theories and unethical practices are taught at some of them.

The Relation of Periodontal Disease to Systemic Disease

In the 2000 Surgeon General's Report on Oral Health in America, it was noted that "the concept of oral health as secondary and separate from general health is deeply ingrained in American consciousness and hence may be pivotal and most difficult to overcome."[2] Yet recent news stories have discussed the connection between gum disease and both low birthweight babies and a higher risk of cardiovascular disease.[3]

There is very strong research showing a correlation between periodontal disease and serious general health problems. But, so far, scientists have not established a clear "cause and effect" relationship. We do know that periodontal disease causes inflammation. The amount of inflammation can be measured with a blood test for certain chemicals such as C-reactive protein and tumor necrosis factor-alpha. It has been shown that these and other chemicals that are indicative of inflammation are much higher in patients with periodontal disease.[4]

There is strong evidence of a connection between periodontal disease and diabetes.[5] Patients with diabetes have more severe periodontal problems and patients with periodontal disease have more severe diabetes.[6] There are also several studies in which successful periodontal therapy in diabetic patients resulted in better glycemic control.

At this time it appears that periodontal disease is also an important risk factor in the development of both cardiovascular disease and strokes.[7] Other established health risks are: smoking, family history, high blood pressure, obesity, diabetes, and physical inactivity.

Unfortunately, we do not know if treating periodontal disease successfully will lower a patient's risk of these serious diseases. But it is a safe bet that preventing periodontal disease from occurring at all will lower the risk of developing inflammatory chemicals that are risk factors for systemic problems.

Smoking

Smoking has obviously been shown to be a major causative factor for lung cancer and cardiovascular disease. It is also strongly associated with the development and exacerbation of periodontal disease. Smoking will cause far greater loss of bone around the teeth of patients with periodontal disease, and smoking makes the prognosis for successful treatment far worse. Chewing tobacco is also a major cause of oral cancer and should be strongly discouraged in athletes who are often role models for young people [*Editor's note: As ACSH has noted elsewhere, though, switching to smokeless tobacco can yield a net reduction in overall cancer risk for those smokers who are otherwise unable to quit cigarettes*].

Tooth Whitening

It seems that Americans are almost pathologically concerned with how white they can get their teeth. The normal color of teeth is yellow-white. Almost all bleaching products contain hydrogen peroxide in different concentrations. The more concentrated the peroxide, the less time it has to be in contact with the teeth. One hour bleaching employs very concentrated peroxide, around 38%. At this strength, it can burn the gums severely, so the dentist has to spend a great deal of time placing a protective membrane over the gums before the peroxide is applied. Because of this, the cost is high — between $350 and $1500. You can also have custom trays made. These are clear plastic and fit snugly over the teeth. The patient is given 15% to 20% peroxide to put into the trays and they are then placed over the teeth. This technique takes about an hour a day for a week and the trays can also be worn while asleep. There are also over-the-counter whitening products such as white-strips. These have a much lower concentration of peroxide and therefore need to be worn for far longer, but they do work and are much less expensive.

All whitening products can cause the teeth to become temporarily sensitive to hot and cold. If this happens simply lessen the time that the peroxide is on the teeth. Overuse of any tooth-whitening product can weaken the enamel so it's very important to carefully follow the dentist's or manufacturer's instructions.

Implants

Dental implants have a checkered history. Many years ago they were marketed without proper testing and had a very high failure rate. The newer implants that have been used for approximately 25 years have a success rate of well over 90%. They are usually made of titanium and are shaped somewhat like the root of a tooth. When they are properly done, a patient can expect them to last a very long time.

Unfortunately there are dentists doing implants who are not properly trained. There is no recognized specialty in implantology, although the American Dental Association has been petitioned to establish one. It is doubtful whether the ADA will do so, since so many different groups are doing implants, including general dentists, oral surgeons, and periodontists.

As a general rule, it is probably safer to have the surgical part of the implant procedure done by someone who has great experience doing surgery in the mouth, such as an oral surgeon or a periodontist. They are best equipped for unexpected problems such as bleeding. Usually a general dentist or prosthodontist then constructs the replacement teeth, which will attach to the implants.

It is recommended that a patient needing implants seek out dentists with experience and ask how many implants the dentist has done, what type of implants will be used, what the total cost will be (usually around $3000 to $4000 per implant), and how long the procedure will take.

Bonding

Bonding is a technique for attaching a number of different materials to the tooth. It is a safe and useful technique for repairing broken, chipped, or discolored front teeth. However, it does have limitations. The teeth should not have periodontal disease and bonding cannot correct severe orthodontic problems.

Bonding is accomplished by using an acid to etch the tooth, after which a type of acrylic plastic is placed on the tooth. Almost all dentists now use a light to make the plastic set. This allows dentists to shape and color the restoration and is a major cosmetic breakthrough. Thin porcelain “laminates” can be attached to the teeth using a bonded plastic “glue.” This often allows patients to change both the shape and color of their teeth without having crowns (caps) made.

The Dental Exam and X-Rays

The dental exam has been an area often undervalued by the public and neglected by some dentists. Many patients have become accustomed to paying very little for a cursory yearly dental exam.

The examination is a vital part of a dental visit. It provides the information the dentist must have to develop a diagnosis and a plan of treatment. The dentist looks carefully at the patient’s face, bones, teeth, gums, cheeks, tongue, palate, and floor of the mouth. With the fingers, the dentist feels the tissues, particularly any swollen, irritated areas, and tests the teeth for movement or looseness. A sharp explorer (the curved instrument many patients call a “pick”) is used to check for cavities and defective fillings or crowns. A calibrated periodontal probe shows if the gums are tightly attached to the teeth or if there are periodontal problems such as bone loss or pockets around the teeth. Special biting instruments are useful in diagnosing cracked teeth. And some dentists have tiny closed-circuit cameras that can project a magnified image of your teeth on a color TV set.

X-rays are absolutely essential for a proper exam. A full set of x-rays (14 to 18 separate films) should be taken every 5 to 7 years and bite-wing x-rays (2 or 4 separate films) should be taken every year or year and a half. Some dentists use an x-ray machine that moves around your head and takes a picture of the entire mouth. These are called panorex x-rays and are very useful for orthodontists and oral surgeons but are not very good at detecting decay or periodontal problems.

Digital x-rays use a sensor rather than film, and the image is sent to a computer screen. Digital x-rays give excellent results and require far less radiation than regular x-rays. But patients should still have a lead apron placed on them.

Perhaps the most overlooked aspect of the dental exam is the search for abnormal tissue that might be cancerous. Cancer of the mouth and throat is a major cause of cancer-related death in the U.S., exceeding the annual death rates for cervical cancer and malignant melanoma.

There is a new way to easily evaluate any areas that the dentist suspects may be cancerous. It is known as a "brush biopsy" because the dentist uses a tiny stiff-bristle brush to scrape some cells off the questionable area. Those cells are rubbed onto a glass slide and mailed to a company that uses a computer to select those slides that need to be looked at by a pathologist. If the cells are abnormal, a fax is sent to the dentist within a few days and the patient is referred for further evaluation. In recent studies, this computer-assisted analysis detected nearly 100% of confirmed cancers.[8] Since the patient needs no anesthesia for this test and it is quite inexpensive, dentists now have a wonderful new technique for early detection of oral cancer.

In order to avoid misdiagnosis and improper dentistry, a thorough and meticulous exam is critically important.

Fluoridation

Recent surveys report that more than 94% of adults have had decayed teeth and 22.5% had root surface decay.[9] Decay is the most common disease of all humanity. Fluoride is one on the most common elements on earth and is an essential nutrient.

In growing children, fluoride will strengthen the hard structures of the teeth, both enamel and dentin. In adults, fluoride will only be absorbed by the enamel surface, giving the teeth temporary but substantial resistance to decay.

Fluoride that is delivered through community water systems at 1 part per million (ppm) has a large margin of safety. "Numerous studies done before and after supplemental fluoridation have shown no changes in death rates from cancer, heart disease, intracranial lesions, nephritis, cirrhosis, or any other cause. In addition, the normal disease and death rates of more than 7 million Americans who have lived for generations where the natural fluoride concentration was 2 to 10 mg/L (1 mg/L being the recommended dose) is compelling evidence of fluoridation's safety."[9] [10] As Consumers Union has concluded:

> The simple truth is that there's no "scientific controversy" over the safety of fluoridation. The practice is safe, economical, and beneficial. The survival of this fake controversy represents one of the major triumphs of quackery over science in our generation.[11]

In the United States, 62.2% of the population has access to properly fluoridated water. More than 360 million people worldwide, spread throughout over 60 countries, also drink fluoridated water.[12] Dr. C. Everett Kopp, the former Surgeon General of the United States stated, "Fluoridation is the single most important commitment that a community can make to the oral health of its citizens."

Fluoridation should be encouraged in those communities that are still not fluoridated.

Dental Insurance

By the mid-1990s, over 40% of Americans over 2 years old were covered, to some degree, by private dental insurance.[13] Yet insurance has had only a limited effect on the oral health of the US population. There are many reasons, including: the working poor and unemployed, who usually have greater dental needs, are usually uninsured; many dentist do not participate in Medicaid, which provides only limited dental coverage, because of low reimbursement; most dental insurance plans have annual limits that are too low for comprehensive treatment; low quality, assembly line type practices are often major providers for those with insurance and quality assurance is more myth than reality; fee-for-service is a powerful incentive to maximize production leading to over-treatment; capitation plans often under-treat their patients.[14]

A review of dental insurance plans concluded that "any and all of the (insurance) programs can perform effectively, but only if the basic principles of quality assurance and cost containment are effectively applied. The problem is not to pour more money into health care, but how to reduce the incredible amount of excess and substandard treatment and outright fraud. Money saved by reasonable and sensible administration can then be reallocated to improve population coverage and benefits so that no one — no one — in the United States need be denied access to good health care."[14]

Dubious Dental Care

This section discusses a number of areas of dental practice that involve considerable controversy. "TMJ therapy" is a "no-man's-land" in which some practitioners act responsibly while others make extravagant claims and prescribe expensive treatment that is ineffective. "Biologic dentistry" is a hodgepodge of unscientific theories and treatments based on discredited science. And the allegations against silver-amalgam fillings are caused by greed and gullibility.

Inappropriate TMJ Therapy

A confusing muddle of diseases and conditions has been lumped under the term "TMJ" disorders. The most common symptom of "TMJ" is chronic facial pain (pain lasting more than 3 months), often accompanied by difficulty in fully opening the mouth. "TMJ" is actually the abbreviation for "temporomandibular joint," the hinge joint that connects the lower jaw to the skull. Since the joint itself may not be the source of the symptoms, the term "temporomandibular disorders" (TMD) is more accurate.

TMJ disorders have been described as dentistry's "hottest" area of unorthodoxy and out-and-out quackery.[15] Pains in the face, head, neck, and even remote parts of the body have been erroneously diagnosed as TMJ problems. Some practitioners also claim that a "bad bite" causes ailments ranging from menstrual cramps, impotence, and scoliosis to a host of systemic diseases.

The correction of a "bad bite" can involve irreversible treatments such as grinding down the teeth or building them up with dental restorations. The most widespread unscientific treatment involves placing a plastic appliance between the teeth. These devices, called mandibular orthopedic repositioning appliances (MORAs), typically cover only some of the teeth and are worn continuously for many months or even years. When worn too much, MORAs can cause the patient's teeth to move so far out of proper position that orthodontics or facial reconstructive surgery is needed to correct the deformity. TMJ expert Charles S. Greene, D.D.S., of Northwestern University Dental School, cautions that plastic appliances should be used only when necessary, for limited periods of time, and never while eating.

MORAs are different from "night guards," which cover all the teeth and are used to prevent abnormal wearing down of the enamel in people who grind their teeth while sleeping. Similar appliances (bite splints) may be prescribed to relieve muscle strain in patients with TMD. Night guards and bite splints do not cause teeth to become misaligned.

Plastic appliances are sometimes misprescribed when a patient's joint makes a clicking or grinding noise, even when there are no other symptoms. Research shows that joint sounds without pain or restricted or irregular jaw movement do not indicate any disease process and that no treatment should be undertaken in these circumstances.[16]

Some dentists use electronic instruments to diagnose and treat TMJ disorders. The diagnostic procedures include: surface electromyography (EMG), jaw tracking, silent period durations, thermography, sonography, and Doppler ultrasound. Use of these procedures for diagnosing TMJ is not supported by scientific evidence. Similarly, treatment with ultrasound or TENS (transcutaneous electrical nerve stimulation, in which a low voltage, low amperage current is applied to painful body areas) has not been proven effective.[17] [18]

Some dentists obtain TMJ x-ray films as part of their routine dental examination. These films should be obtained only when there is a history of trauma or progressive worsening of symptoms, but not as a routine screening procedure.[19]

There are also physicians who refer patients with facial pain to unscientific "TMJ specialists." Still worse is the collusion of self-styled "TMJ experts" with attorneys. Some dentists solicit personal injury attorneys by offering to certify accident victims as having accident-related TMJ injuries — including "mandibular whiplash," a diagnosis not recognized by the scientific community. Attorneys have even been invited to free medico-legal seminars with a brochure stating that a patient "was awarded a settlement of over $100,000 for TMJ injuries alone...based on...emotional and physical distress resulting from the TMJ injury." Ultimately, the insured public has to pay for such abuse with higher premiums.

There is considerable evidence that for patients with real TMJ problems, safe, simple, inexpensive treatments (such as warm moist compresses, cold compresses, ibuprofen, simple jaw exercises, and a soft diet) will produce similar high rates of improvement as do unsafe, complex, irreversible, expensive treatments.[20]

Dr. Joseph Marbach, the late former director of both

the Facial Pain Clinic at the Harvard School of Dental Medicine and of pain research at Columbia University's School of Public Health, warned against surgery as a treatment for TMJ disorders. Some procedures remove the disc between the skull and the lower jaw; others surgically reshape the joint or even replace the entire joint with an artificial one. Surgery should be considered for tumors, "frozen jaws," or other definitively diagnosable problems that can only be resolved through surgery. Patients should always ask how likely it is that the surgery will make the symptoms worse or cause other complications. Since surgery is irreversible, other alternatives should be exhausted first. If surgery is recommended, it is prudent to obtain a second opinion. A consultation with a member of the oral surgery department of a dental school would be ideal.

Biologic Dentistry and NICO

Recently, a lawsuit alleging malpractice, conspiracy to commit fraud, and intentional misrepresentation was filled against a number of dentists, an osteopath, and the manufacturer of a unproven diagnostic device called the Cavitat.[21] The lawsuit alleges that this group caused a patient to have a number of teeth unnecessarily extracted to treat a disease called neuralgia-induced cavitational osteonecrosis (NICO), which the lawsuit claims does not even exist.

NICO has been defined as a syndrome of chronic facial pain caused by loss of blood supply within the jaw, resulting in bone cavity formation. Promoters of NICO state that it is similar to a recognized condition called avascular osteonecrosis (AO).[22] AO can occur in bones that do not have a lot of collateral blood vessels, such as the hip, but the human mouth is inundated with blood vessels and, because of this, most experts do not believe that AO can occur in the jaw bones.

Pain and conditions in other parts of the body far from the jaws have also been blamed on NICO jaw cavities. Treatment normally consists of extracting all teeth that have root canal therapy and surgical exploration of the jawbone and packing of the surgical defects with antibiotic gauze or injecting the "cavitations" with antibiotics for up to 9 weeks. There is no scientific evidence to support these claims.[23]

Post-graduate seminars sponsored by an association of "biologic dentists" have persuaded a number of dentists and some physicians to diagnose NICO in patients with numerous different symptoms. According to an article in *Milwaukee Magazine*, a group of local patients filed suit against several practitioners who diagnosed them with NICO, resulting in unnecessary tooth extractions and invasive and destructive jaw surgeries.[24]

Patients who are diagnosed with NICO should get second opinions, preferably from a local dental school. And patients should refuse to have asymptomatic root-canal-treated teeth extracted because of this very questionable diagnosis. Insurance carriers should refuse reimbursement for NICO-related treatments and for the use of the Cavitat diagnostic device. Aetna has already taken this step.

Silver Amalgam Toxicity

"Silver" fillings, usually called "amalgams," are made by mixing an alloy of silver, tin, copper, and zinc with mercury in about a 50/50 ratio. Although the vast majority of dentists recognize that silver fillings are safe, some dentists and "holistic" physicians blame a large number of diseases — such as multiple sclerosis, immune deficiency diseases, and emotional conditions — on the minuscule amounts of mercury that may leak out of fillings.

Anti-amalgam dentists often use a mercury vapor detector to convince patients that they need "detoxification." To use this device, the dentist has the patient chew vigorously for up to ten minutes, which may cause a tiny amount of mercury to be released from the surface of the filling. Although this exposure lasts for just a few seconds and most of the mercury will be exhaled rather than absorbed by the body, the machines give a falsely high readout, which the anti-amalgamists interpret as dangerous.[25] The most commonly used device, the Jerome mercury tester, is an industrial probe that multiplies the amount of mercury it detects by a factor of 8,000. This gives a reading for a cubic meter of air, a volume far larger than the human mouth. The proper way to determine mercury exposure is to measure blood or urine levels. Scientific research has shown that the amount of mercury absorbed from fillings is insignificant.

Anti-amalgamists also may use a voltmeter to measure supposed differences in the electrical conductivity of the teeth. One such device — the "Amalgameter" — was investigated by the FDA because literature accompanying it recommended using the device to determine the order in which silver fillings should be removed. The FDA wrote the company: "there is no scientific basis for the removal of dental amalgams for

the purpose of replacing them with other materials as described in your leaflet...We consider your device as being directly associated with...a process that may have adverse health consequences when used for the purposes for which it is intended."[26] Although the dentist who manufactured this product has stopped production, these and similar gadgets are still in use.

There is overwhelming evidence that mercury-amalgam fillings are safe.[27] Although billions of amalgam fillings have been used successfully, fewer than fifty cases of allergy have been reported in the scientific literature since 1905.[28] Yet anti-amalgam dentists often recommend that amalgams be replaced with plastic, gold, or porcelain fillings — a very profitable recommendation but one that can lead to serious complications. A number of patients have needed root canal therapy and even lost teeth after the unnecessary removal of amalgam fillings.

Because anti-amalgam advocates have not been able to win in the court of science, they are trying to win in the political arena by attempting to have gullible legislators pass laws making it a crime for dentists not to inform patients that silver fillings contain "poisonous mercury." A recent scientific review of the amalgam controversy concluded that "the evidence supporting the safety of amalgam restorations is compelling."[27]

Holistic Dentistry

The word "holistic" once meant treatment of the whole person with due attention to emotional factors, lifestyle, and prevention. But today some dentists have subverted this definition to include many pseudoscientific and outright fraudulent methods. Many holistic dentists seem more interested in medical than in dental procedures and make health claims that are clearly beyond the scope of dental practice.[29]

Prevention is an important goal of health care, especially in dentistry, since dentists understand how to prevent or control most major dental diseases. But prevention is an area easily abused by quacks. "Holistic" dentists typically claim that disease can be prevented by maintaining "optimum" health, or "wellness." In the dental office these schemes usually involve the purchase of expensive nutritional supplements, plastic bite-altering appliances or invasive and unnecessary dentistry such as having all the teeth crowned to "increase" athletic performance. "Wellness" is something that quacks get paid for when there is nothing wrong with the patient.

The Academy of General Dentistry estimated that at least 5% of dentists were "holistic."[30] In addition to financial abuse, "holistic" dentistry can lead to misdiagnosis and/or incorrect treatment for serious and potentially life-threatening disease.

Holistic dentists promote a wide variety of food and diet fads that can be quite lucrative. An article in a dental trade journal asked: "Are you interested in doubling your net practice income? We almost did it last year...we used nutritional counseling as the vehicle."[31] Discredited diagnostic methods such as hair analysis, lingual ascorbic acid testing, testing for food allergies, pendulum divining, and other bizarre, occult practices are often employed to convince patients to purchase expensive supplements, vitamins and herbal preparations.[32]

One of the most wide-spread unscientific diagnostic techniques is called Applied Kinesiology (AK). AK proponents believe that every organ dysfunction is accompanied by a specific muscle weakness and that by testing the muscles the improperly functioning or diseased organ system can be detected. Its practitioners, many of whom are chiropractors, also claim that nutritional deficiencies, allergies, and other adverse reactions to food substances can be detected by placing the food in the patient's mouth. "Good" substances will make certain muscles stronger and "bad" substances will cause muscle weakness. Dentists who share these beliefs typically test muscle strength by asking patients to hold an arm parallel to the floor and then pushing down on the arm before and after vitamins, food substances, or a plastic bite appliance is put in the patient's mouth (with the amount of pressure applied by the dentist an easily misjudged or even deliberately varied factor). Treatment could be anything from a simple vitamin to an expensive full mouth reconstruction.

Although the theories of AK are so bizarre that testing them might seem a waste of resources, several investigators have subjected AK to controlled tests. One study found no difference in muscle response from one substance fo another,[33] while other studies found no difference between the results with test substances and with placebos.[34] [35]

The bones of the adult skull are fused yet there are dentists who claim that these bones can be manipulated. This is called "cranial osteopathy," and its proponents claim they can cure or prevent a wide variety of health problems ranging from headache and visual problems to an "imbalance" in leg lengths. The manip-

ulation is accomplished by pushing hard on the face and skull.[36] The only demonstrable results of this therapy are loss of money and extensive facial bruising.

Acupuncture is based on the notion that stimulating various points on or just beneath the skin can balance the "life force" and enable the body to recover from disease. Auriculotherapy is acupuncture of the ear and is based on the notion that the entire body is represented on the surface of the ear. Proponents claim that it is effective against facial pain and ailments throughout the body. It is accomplished by twirling needles or administering small electrical charges at points on the ear that supposedly correspond to the afflicted area or organ system. There are no properly controlled scientific studies to support auriculotherapy.

Reflexology, also known as "zone therapy," is based on the theory that pressing on the hands or feet can help relieve pain and remove the underlying cause of disease in areas far from the hands and feet. Proponents claim: 1) the body is divided into ten zones which begin or end in the hands or the feet; 2) each organ or part of the body is represented on the surface of the hands and feet; 3) the practitioner can diagnose abnormalities by feeling the feet; and 4) massaging or pressing each area can stimulate the flow of "energy," blood, nutrients, and nerve impulses to the corresponding body zone.[37] There is no scientific evidence to support these claims. Reflexology is also claimed to reduce stress. Since foot massage can be relaxing, this claim may have some validity. However, there is no reason to pay high fees to have this service performed in a dental office.

Promotion of Dubious Dentistry

Quackery, which has been defined as the promotion of false or unproven methods for profit, has a long and sad history, but up to thirty years ago was rare in dentistry. A number of factors have contributed not only to an increase in dental quackery but also to the misdiagnosis and over-treatment of dental patients. These include increased competition, advertising, higher cost for education and for opening a practice, lower incidence of tooth decay due to fluoridation and better oral hygiene, diminished dental education in the methods of science, and the failure of organized dentistry to develop guidelines and policies for maintaining high quality dental care. Some dentists with an entrepreneurial talent seem willing to embrace virtually any dubious practice that has profit-making potential.

Many dentists actually believe in the unproven techniques they promote. The instruction of dental students may be partially to blame. The scientific method, scientific reasoning, and statistics are not emphasized in dental education. Some dental schools are largely authoritarian — with an emphasis on memorizing facts rather than understanding their scientific basis. Enid Neidle, Ph.D., former director of scientific affairs for the American Dental Association, wrote that these factors leave many students "susceptible to the experiences of others," willing to accept the views of a perceived authority figure without demanding to know the science supporting those views.

On the post-graduate level, quality control in continuing education courses is often lacking. Today, states often require many hours of such courses in order to renew a dental license. Although most are valid, courses on unproven and disproven topics are more common than they should be.[38]

When a prestigious dental school or reputable professional group sponsors a course eligible for official continuing education credit, it is easy to mistakenly conclude that the information will be valid. ADA officials have set up criteria for sponsors of CE courses but leave it up to the sponsors to vet the lectures. The Greater New York Dental Meeting, which is one of the largest in the world, allowed a lecture at the 2005 convention by a group that promotes the NICO diagnosis and the false doctrine that amalgam is poisonous and another lecture by an affiliated group on "Bi-Digital O-ring diagnosis," which is an unscientific method of "determining internal-organ 'representation areas' on the human tongue."[39] The chairman of the dental meeting replied that "we feel we have fulfilled our role in responsibly developing a well-balanced program for the dental profession to enjoy...[It] should not be construed as indicating endorsement or approval by the Greater New York Dental Meeting."[40]

Unfortunately, this kind of reasoning is all too common among those with the power to control these potentially dangerous lectures.

The media often promote quackery and experimental methods by not investigating thoroughly. Many science reporters do not have the educational background necessary to evaluate health topics. In one case, on CBS's *60 Minutes*, anti-amalgam advocates were allowed to terrorize the public with false allegations of the toxic effects of amalgam fillings. This led countless patients to seek unnecessary and risky replacement of their fillings.

Stephen Barrett, M.D., a leading expert on quackery, has labeled that *60 Minutes* segment "the most irresponsible program ever aired on a health topic." The program featured a woman who said that her severe symptoms of multiple sclerosis had disappeared the day after her amalgam fillings were removed. This is impossible, since drilling out the fillings causes a temporary increase in the amount of mercury in the body, not an overnight decrease, and mercury has nothing to do with causing MS.[27]

On the other hand, NBC-TV's *Dateline* did a story on amalgam fillings that was accurate and very critical of the *60 Minutes* segment. And *Inside Edition* used a hidden camera to show how a dentist tried to persuade the unnecessary removal and replacement of amalgam fillings in the reporter's mouth.

Recommendations

Public protection against unscientific and unnecessary dentistry is needed. Here are some recommendations:

To consumers:

- Remember that dentists are neither trained nor licensed to treat problems outside of the mouth and jaws.
- If a dentist tells you that silver-amalgam fillings are poisonous, find another dentist!
- Don't hesitate to get a second opinion when extensive dental work is proposed or unorthodox procedures are suggested.
- Don't let the dentist confuse elective cosmetic procedures with dentistry required to treat disease.
- If you suspect that you have been a victim of dental quackery or mistreatment, contact your local dental society and your state attorney general.

To dental educators:

- The best defense against quackery is an understanding of how scientific knowledge is developed and verified. Dental education should include instruction on the scientific method and the detection of quackery. Courses on consumer health should also be included in everyone's education.
- Teaching ethics needs to start with the way patients are treated in dental schools. All too often they are thought of by both teachers and students as a means to a diploma and nothing more. Overtreatment should be roundly condemned by organized dentistry.

To state dental boards:

- The false diagnosis of silver-amalgam toxicity and/or NICO has such potential for harm and shows such poor judgment on the part of the practitioner that ACSH believes dentists who engage in these practices should have their licenses revoked.

To legislators:

- Funding for state consumer protection and professional regulatory agencies should be increased.
- State laws should be strengthened so that dentists performing dubious dental procedures can be disciplined more quickly.
- State boards should be required to make disciplinary actions public.
- Insurance companies should not be forced to pay for inappropriate TMJ therapy or any other type of unscientific treatment.

To dental organizations:

- The American Dental Association should issue guidelines categorizing dental techniques as: 1) generally safe and effective, 2) experimental but based on sound scientific principles, or 3) unsound or disproven.
- Dental malpractice insurers should withhold coverage for claims arising from procedures classified as unsound or disproven.
- Third party insurers should not pay for unsound or disproven procedures and should closely monitor claims based on experimental treatments.
- Steps should be taken to stop the spread of misinformation to dentists through accredited courses. This can be accomplished by setting and enforcing standards for the sponsors of courses and lecturers. Unproven hypotheses and conjectures must be distinguished from factual information. The standards that exist today do not weed out questionable topics and speakers.

Some educators are concerned that overly rigid standards can stifle the development of important new ideas. However, these recommendations will not stifle scientific progress, since dentists can still take such courses but will simply receive no credit for them.

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