

Virginia Dental Journal

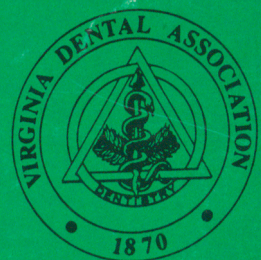
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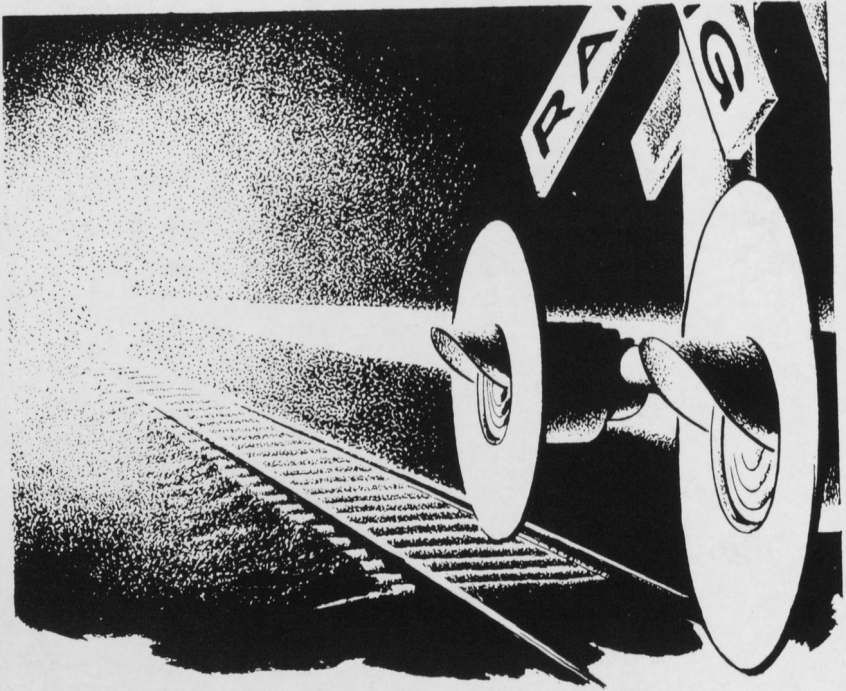
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Volume 61

June 1984

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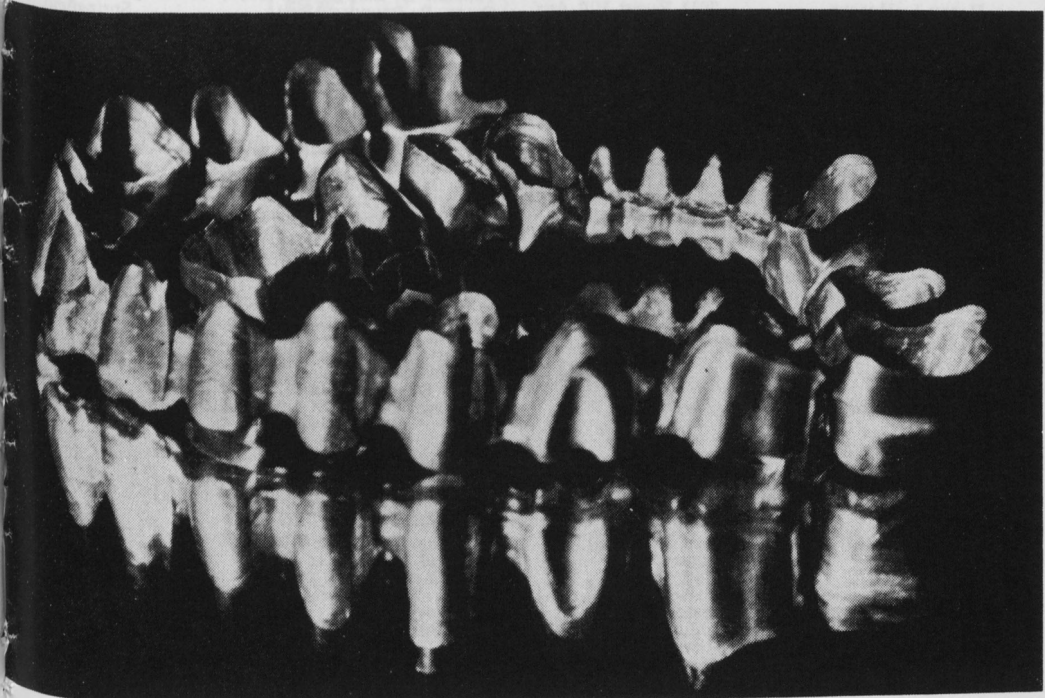
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COVER

Old, New Lighthouses stand together at Cape Henry, Virginia Beach, Virginia

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EDITORIAL

THE CHALLENGE OF PERIODONTAL DISEASE

Periodontal disease is a broad term used to describe a variety of pathologic conditions of the gingiva, periodontal ligament, cementum, and alveolar bone, which constitute the investing tissues of the teeth; we refer to these tissues collectively as the periodontium.

In its early stages periodontal disease begins in the soft gingival tissues producing gingivitis which is considered reversible. But with neglect and lack of treatment the disease progresses to destruction of the alveolar bone and the remaining supporting tissues producing periodontitis which is severe and usually results in irreversible loss of these structures.

Epidemiological studies show that periodontal disease is widespread. At one time or other it can be diagnosed in 55 to 85 percent of children and up to 95 percent of adults. In adults, 35 years of age or older, 80 to 90 percent of tooth loss is caused by damage resulting from periodontal disease and 70 percent of all tooth loss is by way of such disorders.

Yet, periodontal diseases are treatable and under proper conditions, in most instances, are controllable. Numerous studies have conclusively demonstrated that dentitions can be maintained in a healthy, functional state with present conventional methods of treatment. These same studies show that even severely involved teeth can give many years of useful service through treatment, reasonable plaque control, and continuing maintenance care. There are rare conditions where therapy is not effective in arresting the disease, however, the progression of the disease may be slowed though the teeth are ultimately lost. And in spite of the potential success for treatment of all periodontal disease 40 percent of U.S. populations have lost all their teeth through the disease by age 60.

Why is our "track record" so low in controlling periodontal disease? The answers are many and complex. First of all there exists a large disparity between the demand for care and the actual clinical need. The population is unaware of the level of its dental needs, particularly in the case of periodontal disease. Dentists consume a much larger percentage of time treating restorative and prosthetic problems as compared to periodontal therapy. And according to a study of dental education in the U.S. published by the ADA in 1977 the average curriculum time devoted to restorative and prosthetic courses far outweighs the time given to teaching periodontology. We certainly need much more patient education to alert the public to its needs of periodontal treatment and maintenance. Perhaps this can better be accomplished by developing more vigorous mass marketing approaches presently being suggested by a number of groups. But the individual dentist has the responsibility for safeguarding the periodontal health of his patients with acceptable preventive and treatment procedures. That responsibility includes informing his patients of their periodontal needs for therapy.

George W. Burke, Jr., DDS

CALENDAR OF EVENTS

(Mark your calendar now for these future meetings)

VIRGINIA DENTAL ASSOCIATION 115th ANNUAL MEETING

September 20-23, 1984, Hotel Roanoke, Roanoke

AMERICAN DENTAL ASSOCIATION 125th ANNUAL MEETING

October 20-25, 1984, Atlanta, Georgia

VDA LEADERSHIP CONFERENCE

November 9-11, 1984, Williamsburg Hilton, Williamsburg

COVER

OLD, NEW LIGHTHOUSES STAND TOGETHER AT CAPE HENRY, VIRGINIA BEACH, VIRGINIA

Though built in 1879, the "new" lighthouse is called so because the "old" one, still standing nearby, was built in 1791. The "new tower" houses one of the world's most powerful lights, visible 20 miles at sea. The "old" one no longer serves the seaman, but gives the visitor who climbs to its top a spectacular panorama of Virginia Beach, the sea and history. It was authorized by the first congress of the new nation and is the oldest federal lighthouse. Near its base is a stone cross marking the site of the first landing in the new world by the Jamestown colonists in 1607.

LETTER TO THE EDITOR

THE CASE AGAINST SEALANTS

Dear Doctor Burke:

This letter is to state my feelings about all the publicity and promotion of sealants on teeth.

1. In the late 1920's we had what was taught, prophylactic odontotomy. This meant a little widening of any fissure that potentially might start a decay process. The toothbrush bristles had a little better chance to clean the fissure. Now, I understand, this is to be done before the sealant is used.

2. The sealants wear and have to be replaced depending, I feel, on the amount of bruxing the person does. The uneven bite which must necessarily result might even begin a bruxing habit that might carry over when the occlusals are clear and thus wind up with traumatized pulps and/or T.M.J. problems.

3. As many cavities begin interproximally, the factor of proper eating, i.e. nourishing foods and minimizing refined carbohydrates must be instituted in any case.

4. The cost of applying and maintaining sealants is way above the cost of regular examination, routine bite-wing x-rays, prophylaxis and dental care education. The expense of an occasional filling to care for the pit or fissure that has started to decay is minimal in comparison.

After 53 years in general dentistry, I have observed that more children and young adults have good teeth and mouths. Fluoridation and oral care education have accounted for this, in my book.

I heard Dr. Buonocore present the case of sealants at MCV a number of years ago. Although the wonderful plastics we have today are a great advance in veneers and restorations, I must disagree with their use as pit and fissure sealants.

The American Fund for Dental Health has seen fit to contribute \$42,790.00 to the University of Maryland for a study to develop strategies for increasing the use of sealants for this purpose. I will be interested in observing the reaction of practitioners to this expenditure and its results.

In regard to sealant treatment, I do understand the increased number of dentists and that business is business. However, I don't condone it.

Leon Slavin, D.D.S.

P.S. After reading the extensive coverage of the topic of sealants in the last issue of *JADA* my position has not changed. *LS*

DENTISTRY'S HERITAGE*

Dr. Harry Lyons, who served as ADA president in 1956-57, came to that office from the dental school of the Medical College of Virginia, where his tenure as dean spanned almost two decades between 1951 and 1970.

A 1923 alumnus of the school, Dr. Lyons progressed from instructor to assistant, associate, and finally full professor between his graduation year and 1931, eventually becoming head of the department of oral pathology, diagnosis and therapeutics, and periodontia. In addition to serving on the school's faculty, he maintained a practice in periodontics in Richmond, Va, for more than 20 years.

Dr. Lyons held the presidency of dental organizations including the American Association of Dental Schools, the American College of Dentists, and the Virginia Dental Association. He was one of seven original founders of the American Fund for Dental Health.

Dr. Lyons has served as consultant to such federal agencies as the Veterans Administration and the Food and Drug Administration, as well as to the surgeon general of the US Navy.

The recipient of numerous awards and honors, Dr. Lyons received the ADA's Distinguished Service Award in 1980. He is the Association's oldest living past-president.



Dr. Lyons

The 125th anniversary of the American Dental Association is, indeed, an occasion to celebrate by noting its accomplishments and contributions. I, too, have reason to celebrate: as the oldest living past-president, I have 60 years of membership. This affords me many reasons for gratitude.

By its unique organization the American Dental Association has molded the dental profession into a unified structure with its base in every town and hamlet and its peak at the national level. This affords the Association a tower of strength that has made a number of important attainments possible.

The accomplishments of the ADA are too numerous to list in a brief statement. They range from service to the individual member to molding the qualities of the entire profession as a national asset. The fields cover education, research, practice, ethics, legislation, public awareness of dental health—and on and on.

The ADA looks with excitement to the future, which is just as important as its accomplishments of the past. It has developed a set of long-term objectives aimed, as in the past, to the further development of the profession and its health service to the public.

The American Dental Association deserves an accolade of the highest order. I salute it now—and always.

*Reprinted from American Dental Association News dated 9 April 1984.

CLINICAL CONTROVERSIES

Dr. Francis J. Filipowicz
5700 W. Grace Street, Suite 109
Richmond, VA 23226

DRUG THERAPY FOR PERIODONTITIS

Numerous studies over the years have confirmed the fact that periodontal disease is associated with bacteria. Some reports show that the disease is caused by an overgrowth of indigenous bacteria while others report that there are specific types of bacteria solely responsible for periodontal destruction. To date, several micro-organisms have been implicated and identified, but not confirmed.

Dr. Paul Keyes and others have examined the microscopic field of healthy gingival crevices and have found a predominance of tranquil, non-moving bacterial forms. In contrast, samples from periodontal lesions reveal as Keyes described it, "a highly organized micro-society of static and motile forms". "Static forms", he said, "branch out into the pocket as seaweed does from a rock". On these branches are found, "millions of Spirochetes which align themselves side by side and coordinate movement in a rippling motion" which he has described as "Spirochetal pumping". Clustered around the Spirochetes are motile Rods and Amoebas.

Keyes lists five differences between health and disease:

- | | |
|------------------|-------------------------|
| 1.) types | 4.) behavior/kenetics |
| 2.) number | 5.) pyogenic population |
| 3.) organization | |

With all this emphasis on bacteria and periodontal disease, it is not surprising that gingival changes have been noted in response to antibiotic therapy. The antibiotic of choice in the last several years has been Tetracycline. Tetracycline has a spectrum which includes staphylococci or pyogenic organisms. Clinically, it is very effective in drying up suppurative periodontal pockets when used in conjunction with conservative local therapy. However, some periodontal lesions do not respond to this therapy.

A Canadian periodontist, Dr. Trevor Lyons, has reported successful gingival responses to antiparasitic drugs. The drug of choice is Metronidazole (Flagyl). The target of this drug is *Entamoeba gingivalis*. This could be the same organism observed by Dr. Keyes under his phase microscope. Dr. Lyons feels that this parasite appears resistant to other drugs and thrives in gingival crevices where the biochemistry is just right. There is no clue as to what kind of biochemical changes favor the growth of this parasite. Consequently, management by antibiotic therapy is the most effective at this time.

In conclusion, no antibiotic therapy will succeed if not used in conjunction with local measures such as scaling, root planing and effective plaque removal by the patient. Also, the deeper the defect, the less successful are the results.

THE VIRGINIA RESIN BONDED BRIDGE: A RESTORATIVE MATERIALS REPORT

*Peter C. Moon, Ph.D.**

The changes in dental procedures and materials have been rapid in the last ten years. There is little reason to expect they will slow down in the future. This presents a continuing need to the practitioner and teacher to learn and test the potential of new materials and procedures. At a dental school this is one of the faculty's underwritten requirements. In an effort to make our observations and research more generally available to Virginia practitioners, Dr. William Crockett, Director of Operative Dentistry, and I have considered writing articles for the Virginia Dental Journal on areas of current interest. This article represents the first effort of what we hope will be a continuing process.

For several years the Maryland bridge procedure has been used to retain bridges on abutment teeth by etching the enamel. The procedure is proving very useful when cases are selected judiciously and sufficient isolation is practiced during bonding. Eighty bridges have been placed at MCV using this procedure over a two year period. The few bond failures experienced have been limited to the enamel bond and were related to inadequate isolation or unusual enamel etching characteristics.

However, there are several characteristics of the Maryland bridge procedure which limit its general applicability, make it sensitive to laboratory procedures, and less convenient to use for the patient and dentist. An alternative method of providing retention to the metal framework has been developed by the author over the last three years. The procedure call the "Virginia resin bonded bridge" has the advantage of permitting the dentist to select any possible casting alloy for the framework. He (she) is not limited to a few electrochemical etchable nickel chromium alloys as in the Maryland bridge procedure. The selection of a non-nickel alloy frees the dentist of a concern for potential nickel sensitivity^{1,2} by the patient when the bridge is placed or sometime in the future when it could develop. Also, the electrochemical etching step is eliminated in the Virginia bridge procedure. The electrochemical etching procedure requires the laboratory to maintain the chemical quality of the solutions and to carefully examine the etch to ensure it is satisfactory. Failure to monitor these conditions can jeopardize the bond to the metal framework. It is desirable for the dentist to have a microscope to check the etch for himself. The microscope should be in the 40 to 60 times magnification range. In addition, the Maryland framework is normally

*Dr. Moon is Director of Dental Materials Science, School of Dentistry, MCV Station, Box 566, Richmond, VA 23298.

sent to the dentist for trial fitting and sent back to the laboratory for etching if it is satisfactory. With the Virginia bridge procedure if the bridge fits, it can be bonded on the same appointment that it is checked for fit. Also, the pattern retention can be examined with a lower magnification microscope—10 to 20 times.

Laboratory bond tests³ of the tensile and shear strength for the Virginia bridge procedure indicate a bond strength of 3000 psi. This bond value is similar to that reported for the Maryland bridge.⁴ Bond tests to extracted teeth gave evidence of bond failure at the enamel-resin interface and not at the resin-metal interface. The retention to the metal framework is greater than that to enamel. The retention to individual abutment teeth was from 100 lbs for anterior to 140 lbs for posterior.⁵ These values are way in excess of that expected during normal occlusion.

The laboratory tests were so encouraging that clinical testing was begun nearly a year and a half ago. The fifty clinical cases bonded during that time are performing satisfactorily. Dr. Jeff Hudgins was primarily responsible for the clinical testing as part of his research requirements for a graduate degree in Fixed Prosthetics at the Medical College of Virginia.

The laboratory procedure for developing the retention in the framework creates roughness in the pattern material and ensures that the roughness is carried forward into the investing, casting, and divesting steps. The bonding resin flows into the cast-

ing roughness and mechanically bonds. The resin has to be fractured to break the bond as it does not pull out. The roughness is developed by adhering cubic salt crystals (.15 to .25 mm on a side) at the interface between the stone cast and resin pattern. The crystals captured at the pattern interface are exposed by particle blasting and dissolved out with water to leave cubic holes behind in the pattern. An alcohol/water wetting procedure was developed to insure the investment flows during vacuum investing into the holes. The alloy primarily used for casting was a Palladium-Cobalt Alloy, Chemodent. The bond areas are divested using 60 mm alumina blasting followed by an ultrasonic cleaning in an investment solvent (see Figures 1 a. and 1 b.).

The bonding process for the Virginia bridge is altered from that used with the Maryland bridge. For the Maryland bridge, the self-bonding resin is brushed over the area of framework to be bonded. But for the Virginia bridge it should be scraped from the brush over an edge of the bond area and allowed to run down under gravity to fill up the cubic holes without trapping air. Additional resin can be scraped on the edge or the wetted bond areas to enhance flow. This procedure prevents air bubbles which can weaken the bond to some degree.

It is expected that the Virginia bridge procedure will become commercially available in the near future as information becomes disseminated. Research is continuing at MCV to refine and extend its applicability to other areas of Dentistry.

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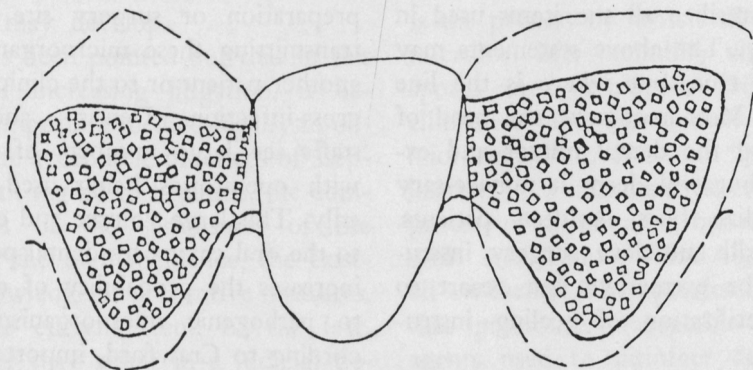


Figure 1A. Drawing of an anterior "Virginia bridge" showing the bond areas as viewed from the buccal direction through the abutment teeth.

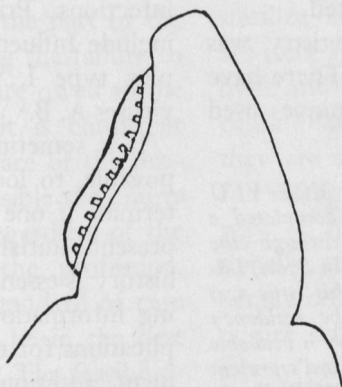


Figure 1B. Drawing of the cross section of an abutment tooth and framework bond area.

Asepsis in the Dental Operatory: Rationale and Practical Procedures

Melvin L. Ford, Captain, USAF, DC*

Why should the dental practitioner be concerned with obtaining the maximum aseptic techniques possible? Negative arguments include the fact that the oral cavity is already inhabited by a wide variety of microorganisms. More importantly, asepsis is not cost-effective and it is impossible to sterilize all the items used in dentistry. The above statements may well be true, but where is the line drawn? Most recognize the need of sterilizing the dental mirror and explorer, but will deem it unnecessary to sterilize burs between patients. They will autoclave surgery instruments for extractions but resort to cold sterilization of scaling instruments.

In the operating room, strict sterility cannot always be achieved. However, the general surgeons do not alter their technique whether a bowel resection or a skin graft is being performed. Maximum asepsis, even if impossible, is always attempted.

Think back to how dentistry was practiced fifty years ago. There have been advances in the techniques used

in all aspects and they should keep progressing. Asepsis is no exception. Practitioners and patients are becoming more aware of the need to progress toward the goal of total asepsis.

The problem is usually not manifested with introducing the patient's own microorganisms into a cavity preparation or surgery site, but in transmitting these microorganisms to another patient or to the clinician, i.e., cross-infection. Dentists and their staffs see large numbers of patients with operatories being used repeatedly. This large volume and exposure to the oral cavity by dental personnel increases the probability of exposure to pathogenic microorganisms. According to Crawford, important bacterial pathogens include *Streptococcus pyogenes*, "strep throat," *Staphylococcus aureus*, *Treponema pallidum*, *Neisseria gonorrhoeae*, *Mycobacterium tuberculosis*, and coliform bacteria which may cause surgical oral wound infections. Principal viral pathogens include Influenza viruses, Herpes simplex type I, type II, and Hepatitis viruses A, B.¹

It is sometimes difficult, if not impossible, to look at a patient and determine if one of the above entities is present. Initially an accurate medical history is essential. In addition to gaining information that will avoid complications for the patient during treatment, additional precautions must be taken for those individuals presenting

*Dr. Ford, a 1982 graduate of MCV/VCU School of Dentistry, recently completed a General Practice Residency through the USAF Medical Center located in Scott, Illinois. His paper published in this issue was one of the requirements of the residency program. A lengthy bibliography is available on request to the author. Dr. Ford's present address is: 1075 W. State St., E-205 Redlands, CA 92373.

with an infectious disease or history of one. Verbal confirmation of the information provided by the patient's health history is necessary.

The general public is becoming more educated and concerned with the problems which may result from inadequate aseptic techniques. In the past, patients have not associated the source of many infections with a prior dental appointment because of long incubation periods. However these patients and the practitioners are becoming more aware of the problems which may develop.

It has been pointed out that in this time of increasing litigation, it becomes important medico-legally to observe the acceptable practices of aseptics. With regard to hepatitis, the combination of the seriousness of the disease, the high incidence, the existing knowledge of preventive measures, and the current trend of the law, someday may result in a judicial determination that dentists can be held liable for transmitting hepatitis to their patients. However, the fact that a dentist transmits hepatitis to a patient does not alone create legal liability. There also must exist some negligent behavior on the part of the practitioner. That being the failure to exercise the duty of care owed to the patient and whether it is consistent with the standard of care of the profession or not. It is feasible the courts will impose liability regardless of the current practices of the profession, especially if a higher standard of care is possible and would be in the best interests of the patient. The feasibility of a higher standard may cause the

courts to perceive many commonly accepted sterilization and hygienic procedures inadequate, and hence negligent.²

For the protection of everyone, the dentist should voluntarily institute precautionary measures before these standards are imposed by the courts. If sound aseptic techniques are followed, the chance of transmissibility and associated problems are greatly reduced.

The terms disinfection and sterilization need to be clarified. Sterilization is the process by which all forms of microbial life, including viruses and spores are destroyed. Disinfection eliminates most but not all forms of microorganisms. The term "cold sterilization" is a misnomer describing the process of disinfection, but not necessarily sterilization.³ The ADA Council on Dental Therapeutics has stated that previously acceptable chemical agents used to disinfect dental and surgical instruments, i.e., quaternary ammonium compounds, are no longer effective. As frequently practiced with no standards on time of immersion, the use of most liquid chemical disinfectants at room temperature will not sterilize instruments. Although there are some agents such as 2% glutaraldehyde and sodium hypochlorite which can kill spore forms as well as viruses, they are only effective when used at full strength and there is no practical way of routinely testing this. Additionally, sterilization with these agents occurs only after several hours of exposure which may be impractical in a busy practice.⁴ However, certain expensive non-sterilizable instruments

such as plastic bite-blocks, radiograph positioners, rubber dam frames, etc., may well be suited for these chemical methods if time and solution concentration could be monitored.⁶⁶

Preventing the transmission of disease agents or "infection control," is the goal of asepsis. There are four major aspects of infection control procedures in the dental office. These are categorized as chairside asepsis, laboratory asepsis, the sterilization of intraoral instruments, and disinfection of operatory surfaces and non-sterilizable items.⁵ Miller points out that harmful infections result when the number of infecting organisms overwhelms the host's natural resistance. Since individual resistance is heavily dependent on the host response to the pathogen, one must make every effort to decrease the number of potential pathogens as close to sterility as possible. Host response is variable and unpredictable, therefore all patients should be treated as poorly resistant.⁶

HEPATITIS B VIRUS

Concerning the subject of infectious diseases in dentistry, hepatitis B virus (HBV) is the forerunner. Although there are many other disease entities which may be transmitted, HBV itself is reason enough to pursue total asepsis. However, if all possible precautions are taken to eliminate HBV transmission, prevention of other transmissible diseases is also achieved. Thus, research of asepsis in dentistry has often used HBV as the prototype for infectious diseases.

HBV is important because the practicing dental team is at a greater risk

of acquiring this serious disease than the general population. Crawford reports that HBV causes more death and practice disruption in dentistry than any other illness, with a mortality rate of about 10%.¹ The problem lies in the broad mode of transmission. There is evidence of nonparenteral spread as well as parenteral, including saliva.^{7,8}

There are numerous reports in the literature reporting HBV transmissibility between dentists and patients. With the close contact dentists have with oral secretions and blood, most will not argue that the incidence of HBV transmissibility is high in the dental setting. A widely accepted serologic survey reports 13.6% of dentists have acquired HBV.⁹ This compares to 3.5% of the general population.¹⁰ Reports also indicate that about 1-2% of dentists and 0.5% of the United States general population are asymptomatic carriers of HBV.¹¹

Certain important differences exist among the various strains of hepatitis virus. Clinical Hepatitis B differs from Hepatitis A in that the incubation period usually is longer, the onset more gradual, course of the illness generally is more severe, and the average mortality rate is significantly higher in Hepatitis B. No cross-immunity or protection has been demonstrated between Hepatitis A and HBV. In HBV infections, the parenteral entry of virus by one means or another seems to predominate, however infection via the oral route is more common than formerly realized. Symptoms of HBV include nausea, vomiting, fever, malaise, and hyperbilirubinemia. However, the most

prevalent response to HBV is subclinical. Results of serum antibody surveys indicate that only a small percentage of infected individuals ever develop clinical disease.¹²

Two major antigens and their respective antibodies are demonstrable in HBV infection. The virus surface antigen, HBsAg, has been shown to be specifically related to HBV infection, and is present not only in serum, but also in saliva and semen. HBsAg can generally be detected in the serum two to eight weeks prior to the appearance of jaundice and persists for a month or longer. Some individuals may become long-term carriers of HBsAg following recovery from clinical or subclinical infections. These cases often exhibit functional biochemical abnormalities indicative of chronic liver disease. The other major HBV antigen has been designated HBV core antigen or HBcAg. The complete Hepatitis B virus or Dane particle contains a core component which consists of HBcAg and another antigenic determinant "E" antigen (HBeAg). Surrounding this is a lipid rich envelope containing HBsAg.¹²

These specific markers can be detected in serum with various serological tests. Those individuals with no HBV serological markers are susceptible to contracting hepatitis. The acute phase of HBV is characterized by the appearance of HBsAg, and as mentioned before, individuals infected with HBV may become carriers. HBsAg antibody (HBsAb) forms and is detected about two weeks to two months after HBsAg disappears. HBcAg antibody or HBCAb will be

detected shortly after onset of clinical disease, and individuals who recover completely will have detectable levels of HBcAb and HBsAb for many years (Fig. 1). The presence of HBsAb with or without HBcAb is indicative of immunity.¹³ The identification and widespread availability of HBeAg allows one to predict the magnitude and duration of infectivity of HBsAg carriers. The presence of the HBeAg in HBsAg carriers indicates the infectious virus is present and correlates with high infectivity. When HBeAg disappears, infectivity is decreasing, and when the antibody HBeAb appears, the individual is no longer infectious.¹⁴

An important development in reducing HBV infections is a Hepatitis B vaccine designated Heptavax-B* by the manufacturer. This vaccine, isolated from HBV carriers by purification of the HBsAg rendering it free of whole infectious virus has been found highly safe and effective.¹⁵ This exogenously administered HBsAg in the form of vaccine leads to antibody formation.¹⁴ It has been strongly recommended that HBV susceptible persons receive the Hepatitis B vaccine. Of all the health care fields, dentists, oral surgeons, and dental hygienists are perhaps the highest risks of HBV infection.¹⁶

Additionally, the possible spread of HBV through blood or saliva which are constantly encountered in the dental operatory indicates that all instruments which can withstand steriliza-

*Heptavax-B, Merck, Sharp and Dohme

tion by heat methods should be sterilized between patients. Rothstein and Goldman believe this will at least insure the destruction of HBV on these surfaces and decrease the chances of cross contamination significantly. For instruments and surfaces that cannot be heat sterilized, certain disinfectants such as 2.0% glutaraldehyde (Cidex)** or 1.0% hypochlorite have been shown to be virucidal if used properly. Fresh solutions and sufficient exposure time must be used. Cidex requires ten hours while hypochlorite only takes thirty minutes, thus making it more practical. A disadvantage is that hypochlorite corrodes metal and thus limits its use. There is a need for the development of practical and effective chemical disinfectants that are virucidal, in the meantime the above must be used with the proper exposure time wherever possible to insure the inactivation of HBV.¹⁷

Remaining Pertinent Pathogens:

In addition to the common everyday transmissible diseases which include coryza and influenza, there are other pathogens which may cause significant problems to both the dental staff and patient. Herpes Simplex is very common and contact may lead to respiratory, finger, skin, and eye infections for the dentist. Epidemiologically, Herpes Simplex has been shown to be related to socioeconomic status; lower classes having a higher prevalence. Thus, the type patient one may see would vary the risks of contact.¹⁸ Studies also indicate that the

prevalence of herpes simplex virus increases with age.¹⁹

Stern and others recognized that primary herpetic infections could occur on the fingers of adults.²⁰ These lesions, termed Herpetic Whitlow, are deep infections which may result from contaminated punctures. The wound appears to heal after a few days of pain, but a week later this area becomes inflamed, painful, and develops small vesicles and bullae. Lymphadenopathy and fever can be present. After healing, recurrence is possible. Care must be taken not to spread the disease to other parts of the body, especially the eyes. Herpetic Keratoconjunctivitis is a potentially serious eye infection which may lead to visual impairment or blindness. Primary lesions occur on the eyelid and recurrent lesions are confined to the cornea as ulcers.²² A recent survey showed that although the frequency of herpes labialis and herpes infection of the eye were lower in dentists than in a control population, Herpetic Whitlow was more frequent.²³

Hartman and others report that gonorrhoea is the most common of the venereal diseases. This highly contagious disease is not limited to the urogenital tract. Extragenital complications may include arthritis, and other sites include the oral cavity and pharyngeal regions. Although in the oro-pharyngeal area the tonsils and pharynx are the most frequent site, the lips, gingiva and tongue may be involved. Awareness of this disease is important for the dentist because of the possibility for infection and cross contamination to other patients.²²

**Surgikos Inc., Arlington, TX

Syphilis has become the third most common reported venereal disease. It is highly contagious in its primary (chancre) and secondary (mucous patches) stages due to the large amounts of *Treponema pallidum* in its lesions. It can be in an infectious stage while presenting with no signs or symptoms.²² The incidence of accidentally acquired syphilis is higher in dentists than in any other professional group due to the amount of direct contact which is its mode of transmission.²⁴

Other diseases include tuberculosis (*Mycobacterium tuberculosis*) which is a predominantly air-borne disease which may be readily transferred from an infected patient in aerosols created by operative procedures in the dental setting.²² It is estimated that each year a dentist will see at least one unknown tuberculosis patient which approximates to one in every 1500 patients.²⁵ Thus all possible precautions should be taken to control aerosols.

Certain skin infections due to fungi (particularly *Candida albicans*) may affect dental personnel. These organisms are normal inhabitants of the oral cavity and may grow well in a moist environment such as wet nail beds or hands.²² Patients who are immunosuppressed or receiving antibiotic therapy are at a higher risk, and this information is readily available from the medical health history. Other skin diseases such as head lice (*Pediculus humanus capitis*), scabies (*Sarcoptes scabiti*), ringworm (*Microsporum audouini*), and impetigo (*Staphylococcus aureus*) should be recognized and indicate

cleaning the dental chair between patients. Disposable head rest covers should also be used.²⁶

CHAIRSIDE ASEPSIS

Infectious disease can be spread by other means besides the obvious route of cross contamination due to direct contact with blood, saliva or mucosa. Infectious particles located in dental aerosols created by operative procedures can be inhaled by the dental staff. Clothing, skin surfaces, equipment and cabinet surfaces are exposed to the aerosols and droplet deposition (splatter), and are subject to contamination.²⁷ In terms of man-hours lost due to illness; the common cold; viral respiratory diseases, tuberculosis and miscellaneous airborne diseases constitute the greatest public health problems.²⁸

Most of these particles are bacterial in nature and may range from 0.5 to 10 micrometers in diameter. At this size they can penetrate to the terminal portions of the lung where they can produce a harmful, cumulative effect over an extended period of time.²⁹ Particles which are not inhaled can remain suspended in the air for periods up to six weeks.²²

There is evidence, however, that dental aerosols may not be as directly implicated in the transmission of all viral infections as previously thought. Studies suggest that transmission of HBV in the dental setting is more likely to occur through contact with contaminated surfaces than by aerosols.³⁰ There also have been no reports of widespread infection problems of dental personnel as a result of

inhaling pathogens aerosolized and splattered from the oral cavities. In fact, dentists may exhibit an immunity to the typical low grade pathogens because of the diffuse nature of exposure.³¹ However, this is a viable source of contamination, and with a few precautions can be reduced or eliminated.

Simple practical methods can control these aerosols and splatter without decreasing the quality of dentistry; on the contrary, these precautions may increase the quality of care. Common sense dictates not to perform elective dental treatment for a patient suffering from a respiratory infection or other contagious disease. Before an operation is started, have patients rinse their mouths with a germicidal mouthwash. A 90% reduction in pathogens is possible.³² Use of the rubber dam to isolate the mouth from the teeth being treated results in a 99% reduction in infectious aerosols produced.³³ Efficient face masks provide some protection from inhalation or ingestion of larger aerosol particles and protect the patient from any respiratory infection the patient may have.³⁴ Additionally, to decrease aerosol production created with the use of high speed rotary instruments, employment of the high speed suction provides a 99% reduction.²⁸

Through aerosols and splatter, infectious particles may be transmitted from the oral cavity to the eyes. Of particular concern are the herpes viruses and *Staphylococcus aureus*. To prevent infection and injury to ocular tissue, protective eyewear for both the dental team and patient should be

utilized. If safety glasses are used, they should be fracture-proof or shatter resistant. Side shields will offer added protection.³⁵

A frequently unrecognized potential danger is microbial contamination of the water system in dental units and accessories. Apparently, there are two possible sources of the contamination; normally occurring aquatic types of bacteria, and microorganisms found in saliva. Studies on bacterial colonization of dental units have reported concentrations of microorganisms in water samples from air-turbine handpieces and air-water syringes.³⁶ Gross and others found that water samples from ultrasonic scalers, high speed handpieces and water syringe lines contained microbial concentrations of up to 2.6 million, 3.3 million, and 190,000 colony forming units (cfu) per ml respectively. A survey of water supplies in private dental offices found them to be unfit for human use by the United States Army's limits of potability of 500 cfu/ml. The organisms found were primarily oral streptococci and enterococci.³⁷

Many dental units contain water retraction valves that create a negative pressure in the water line to prevent drippage when the rheostat is released. These valves can draw water back into the line for a short distance. If this occurs intraorally, it may be possible to aspirate microorganisms that are found in saliva into the water line, where they may multiply and be passed to other patients. Problems would occur in situations where patients have entities such as upper respiratory infections, hepatitis, or tu-

berculosis.²⁷ As with all types of contamination, debilitated and compromised patients may incur more of a risk, especially during surgical procedures.³⁸

Although there has been concern for the production of bacteremias in patients where contaminated water has been forced into gingival crevices or surgery sites, a recent study found that waterborne microorganisms did not contribute significantly to the incidence of bacteremias following ultrasonic root preparation using tap water versus sterile water.³⁹ It must be remembered, however, that this was only one source of tap water, and other supplies may not yield similar results.

Gross and others showed that flushing water lines for two minutes reduces microbial levels, but complete elimination was not achieved. Thus, they recommend flushing dental units and accessories in excess of two minutes prior to the start of daily procedures. Also, modification of dental unit water line design is needed to decrease contamination for the patient.³⁷

Miller and Palenik suggests that the type of patient contact a dentist undergoes daily demands proper and frequent handwashing. The dentist's skin flora can be categorized as resident or transient (host or foreign). Most resident flora is on superficial skin layers, but some can be found deeper. These deeper microbes must be inactivated by an antiseptic as they cannot be removed by soap. The orally obtained transient flora can also be removed by handwashing. Removal of these microbial contaminants from the hands is

heavily based on mechanical action and not the presence of the active agent. A liquid-type soap/antiseptic should be used and not soap bars.⁴⁰ Common sense dictates washing diligently at the beginning of the day and then in-between each patient.

The fingernail area seems most difficult to maintain in a hygienic state. Studies have shown that various scrub methods do not reduce bacterial counts under the fingernails to acceptable levels.⁴¹ The configuration of the fingernail encourages minute breaks in the epidermis, and the undernail area offers a potential site for the entrapment of infected material from patients.⁴² The utilization of gloves would solve this problem. Many argue against the routine use of gloves because they interfere with manual dexterity, and this may hold true with certain areas, i.e., endodontic procedures. However, many surgery specialties utilize gloves even during comparably delicate procedures.

A recent study by Allen and others demonstrated that trauma to the hands of dental practitioners occurs frequently, and that visual inspection will not disclose all breaks in the epidermis. Also shown was that the trauma occurs more frequently near fingernails with a high incidence of impacted occult blood which may be retained for five or more days.⁴² This is a viable mechanism for transmission of blood-borne infections such as HBV.

Many strongly recommend the routine use of gloves to protect the dental staff and patient from cross-contamination of unknown sources. However, it is up to the discretion of the dentist

whether or not certain procedures can be performed efficiently. It must be kept in mind that asepsis is not an all or none phenomenon, but that if gloves can be worn some of the time, it is better than none at all. This author recommends that one pair of gloves be utilized during a block of patients for routine dental work, washing between each patient.

It has been pointed out that proper clinical asepsis must extend outside the actual dental treatment area. Charts and other paperwork often pass back and forth between the reception office and operator. These records may be contaminated by improper handling and then returned for filing. The staff can soil areas throughout the office which in turn serve as reservoirs for pathogenic microorganisms. Dentists, while treating patients may improperly open a drawer, adjust a light, or straighten glasses on their face. Saliva and blood can be directly placed on these surfaces. By reducing the number of items touched (including paperwork and radiographs) during a procedure, the chance of cross-infection will be reduced.⁴³

Radiographs are often taken to the developing room covered with oral secretions and laid on top of the processing machine. This area should be disinfected and cleaned similar to the operator. Simple handling precautions, including wiping the film dry with disposable towels can easily be accomplished if the film packet is constructed of plastic. Some intraoral film packets are constructed of paper; they absorb saliva and this can lead to

cross contamination in the processing area.⁴⁴

LABORATORY ASEPSIS

The chances of cross-infection extends also into the dental laboratory. In prosthodontic procedures, several materials, instruments, and pieces of equipment are used which cannot be sterilized. A potential for bacterial cross-contamination between the dental operator and the prosthetic laboratory has been established, constituting a potential health hazard.⁴⁵ Prosthetic appliances (including impressions) are routinely removed and resealed during treatment and then may be sent to commercial laboratories contaminated with microbial plaque and/or the patients' blood and saliva.⁴⁶ Wakefield demonstrated the contamination process by sending ten sterile fractured complete dentures to different dental laboratories for repair. Upon return, nine were found to be contaminated with potentially pathogenic microorganisms.⁴⁷ Kahn and others demonstrated the carry-over of oral flora from a contaminated denture to a sterile denture by the polishing wheel and pumice. Polishing dentures in succession without regard to sterile technique may result in the transfer of such pathogens as *Streptococcus*, *Spirochetes*, *Neisseria*, *Mycobacterium tuberculosis*, influenza virus, HBV, or fungi to one or more patients.⁴⁸ The possible sources of contamination for pumice at the laboratory lathe include adjusted and repaired dentures, direct contact by the technicians, aerosols and contamination in the tap water.⁴⁹

Means of reducing laboratory con-

tamination include scrubbing appliances in iodophor detergent or NaOCl after removal from the patient, and prior to delivery.⁴⁶ In an infectious case, the materials may be immersed in 2% glutaraldehyde for sterilization. However, certain impression materials such as Impregum, are not suitable for use with aqueous sterilization procedures.⁵⁰

It has been shown that the use of sterile pumice and rag wheels produces a significant reduction in bacterial cross-contamination.⁴⁹ This may not be very practical for routine use, although it may be advantageous to sterilize the pumice and rag wheel for any known communicable disease case. The rag wheel can be periodically sterilized to diminish the bacterial load that may accumulate during polishing procedures, fresh pumice used daily, and the pumice pan cleaned with a chemical disinfectant.⁴⁸ Other recommendations include using vacuum suction with a velocity of at least 200 feet per minute at the dental lathe, using a plexiglass shield to intercept splatter particles, and placing the lathe so that its splatter is directed toward a wall.⁵¹ It has also been shown that mixing a chemical disinfectant, instead of water with the pumice to make the polishing medium may be advantageous.⁵² Fisher and others have designed a hood for the dental lathe that greatly reduces contamination from the pumice polishing area.⁵³ However, if the impressions and prosthetic devices are properly cleaned and disinfected before polishing or any other procedure, most of the concern about the dental lathe would

seem unwarranted, except possibly for an infectious case.

STERILIZATION FOR INTRA-ORAL INSTRUMENTS

Keeping in mind the definition of sterilization, there are various methods to accomplish this. However, all practical methods can be over-challenged by soiled or heavily contaminated materials.⁵⁴ The presence of saliva, blood, dental materials, lubricants, or skin oil on instruments greatly reduces the effectiveness of any sterilization process. Thus all dental instruments must be thoroughly cleaned before undergoing sterilization.⁵⁵

It is recommended that a preliminary cleaning begin immediately after the dismissal of the patient. Miller and Palenik suggest immersing instruments in a trisodium phosphate solution. An isopropyl alcohol wipe should be used on aluminum items. This should be followed by a manual scrubbing in warm water with an alkaline, low sudsing detergent utilizing cleaning brushes. The ultrasonic cleaner is the superior choice. It reduces labor costs, is more cost effective, and minimizes exposure of the staff to pathogens in aerosols created by scrubbing.⁵⁵ The instruments must then be thoroughly dried. Carbon steel instruments may rust, opposed to stainless steel. With the instruments cleaned and dried, they are ready for sterilization.

There are four effective methods of sterilization which can be easily controlled and verified in office use. These are the steam autoclave, unsaturated chemical vapor sterilizer (Chem-

clave),* dry heat oven, and ethylene oxide gas sterilizer. These all differ in methods and there are certain advantages and disadvantages, but they all accomplish microbial death.⁵ Refer to Table I for a description of each method. Proper wrapping of either bulk or prearranged groups of instruments prior to sterilization is necessary to prevent post-sterilization contamination, as will be discussed later. The sterility of unwrapped instruments can be compromised by the settling of airborne microorganisms and dust particles.⁵⁶

Regardless of the type of sterilizer used, there can be many unpredictable flaws in the sterilization process. Human error, improper packaging or wrapping procedures, oversized packs, overloading of the sterilizer, and sterilizer malfunctions can prevent sterilization from occurring. Thus it is necessary to routinely monitor sterilization procedures.⁵⁷ The need to verify instrument sterilization was demonstrated in a study which showed that autoclaving procedures performed in one out of three private dental offices were not achieving sterilization.⁵⁸

There are two types of monitoring systems. Biological systems (spore tests) determine if the sterilizing procedure used actually kills benign bacterial spores. *Bacillus stearothermophilus* or *Bacillus subtilis* are used on strips or in vials to be run through the system, and then incubated to see if the spores were killed.⁵⁹ Chemical test systems utilize heat-sensitive chemicals

which change color rapidly after certain temperatures have been reached. These do not indicate sterility, but serve only as markers to identify items which have been processed.⁵⁷ Hospitals are required for accreditation purposes to use spore tests once a week; however the average dental office sterilizer can be tested a minimum of once a month, if other types of indicators (chemical) are used routinely.⁶⁰ When using the spore strip or chemical indicator strip internally, it should be placed in the "most demanding pack," or in the center of the sterilizer chamber.⁵⁷

As mentioned earlier, unwrapped, loose instruments may become contaminated. Paper wrapped, bagged, or cloth wrapped packages will have a shelf life of one month after proper sterilization. If processed in heat-sealed plastic bags, instruments will remain sterile for up to six months.⁶¹

For better efficiency, dental instruments should be wrapped and sterilized in functional sets. They can be opened prior to the procedure onto a sterile cloth, which can be packaged within the kit, or serve as an outer wrap. This decreases having to search for instruments in drawers and risking cross-contamination.

A weak link in the infection chain, as always pointed out, is the dental high-speed handpiece. This is the chief perpetrator in producing aerosols, yet older models cannot be effectively sterilized. Subsequently many will say that aseptic control in the dental operatory is unattainable. It must be remembered that asepsis is not all or none, and that if there are flaws in

*Chemiclave, MDT Corporation Gardena

our procedures, we must concentrate on the other attainable aseptic techniques and try to alleviate potential problems that the weak links may cause.

Manufacturers have been trying to produce an autoclavable handpiece, and there are some on the market. A recent study evaluating some of these found that a standard autoclave procedure would effectively sterilize the handpieces, but that a deterioration of speed was evident over a simulated three month period.⁶² An autoclavable handpiece in which the performance is not affected, and that is simple to prepare for sterilization, must be encouraged. This would be a major breakthrough in dental asepsis.

Besides the handpiece, there are other non-sterilizable items, including operatory surfaces. Disinfection may be the best method of asepsis available for these surfaces. It is important to use a disinfectant that is virucidal for HBV, and will also eliminate bacterial spores.¹⁷ It would be desirable to have flat surface areas, and avoid coverings which are porous, stippled or sculptured. Equipment to be cleaned include all operative equipment (lights, three way syringes), auxiliary equipment (x-ray machine), cabinets, fixtures, and heavily contaminated surfaces which include sinks and cuspidors.⁶³

Some desirable qualities of disinfectants are presented by Miller and Palenik. These include nontoxicity to human tissue, readily kills all pathogenic microorganisms, nondestructive to materials being treated, stable, reasonable shelf-life, and relatively inex-

pensive.⁶⁴ A list of disinfectants and pertinent information is found in Table II. A convenient method to disinfect surfaces is to use 5% iodophor diluted in 70% isopropyl alcohol, and this has been shown to be an effective surface disinfectant.⁶⁵ It should be re-emphasized that quaternary ammonium compounds are not acceptable for disinfection of instruments and environmental surfaces in dentistry.⁴

SUMMARY AND CONCLUSION

In summary, the goals of dental asepsis need to be always kept in mind. There is no reason in neglecting to obtain a medical health history to screen out possible infectious cases. This substantially reduces the risks of cross-contamination. Items that make direct contact with the patient's mucous membrane, saliva, or blood should be disposable whenever possible. Nondisposable critical items must be sterilized between patients. For non-sterilizable critical items, disinfection between patients is the minimally acceptable alternative. Items that do not come in direct contact with the patient require periodic disinfection; daily is feasible. Based upon the evidence presented, the air/water syringe and high-speed handpiece should be flushed for two minutes each day to reduce contamination. Proper chairside aseptic procedures include reducing the number of items touched during an appointment and using disposable coverings whenever possible. In the laboratory, asepsis is very difficult to maintain. The chain of infection must be broken at critical points in the handling of prostheses

whenever possible. It is practical to utilize the ragwheel and pumice techniques as described. Prostheses that have come in contact with the patient's oral cavity can easily be disinfected.

This paper has attempted to rationalize and describe the procedures to provide dental asepsis. Cross-contamination and the spread of disease can be problems; but if a few precautions are taken, and common sense prevails, these problems are decreased. At this time, it is largely up to the discretion of the dental practitioner to what ex-

trêmes one must take to attain the goal of total asepsis; however, in the future, as consumers become educated and certain groups begin to dictate new policies, procedures described in this paper may become standards that all must follow. In most health providing clinics, including hospitals, it is already mandatory. Although the field of dentistry sometimes lags behind other specialties, which has been true in the subject of asepsis, it can also make strides to further improve clinical conditions for all health providers.

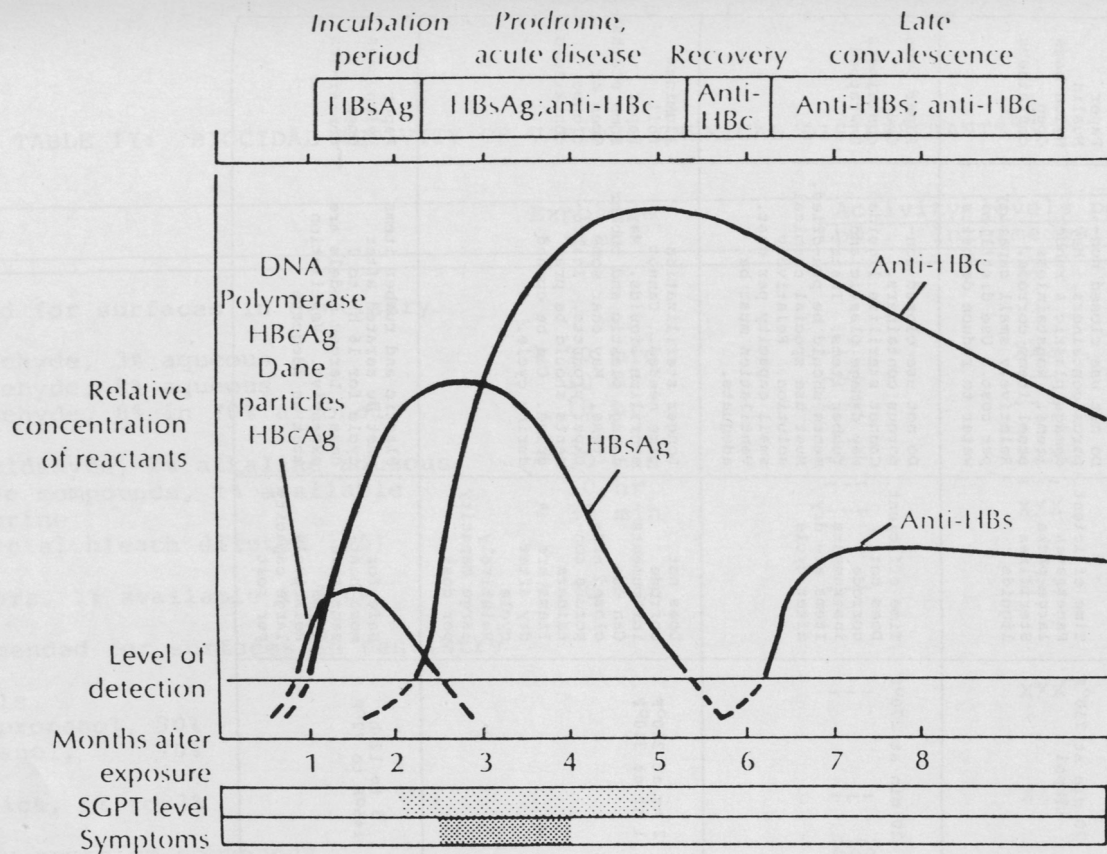


Fig. 1. Serologic patterns observed in acute viral hepatitis B infection. (Adapted with permission from Hollinger, F. B., and Graham, D. Y.: Viral hepatitis: types A, B, and non A/non B, *Drug Ther.*, p. 46, September 1978.)

TABLE I: ACCEPTABLE METHODS OF STERILIZATION⁵

METHOD	STANDARD CONDITIONS	ADVANTAGES	DISADVANTAGES PRECAUTIONS	PACKAGING MATERIALS
STEAM AUTOCLAVE	20 min at 250°F 15 psi	Time efficient Penetrates large packs Sterilizes liquids	Do not use closed non-porous containers. May damage plastic & rubber items. Nonstainless steel items corrode. Relatively small capacity per cost. Use distilled water to reduce deposits.	Paper Muslin Nylon bags Open containers
UNSATURATED CHEMICAL VAPOR	20 min at 270°F	Time efficient Does not corrode instruments Items are dry after cycle	Do not use closed non-porous containers. Cannot sterilize liquids May damage plastic and rubber items. Instruments should be pre-dried. Must use special chemical solution. Relatively small capacity per cost. Ventilation must be adequate.	Paper bags Open containers Unwrapped
DRY HEAT OVEN	2 hr at 320°F 1 hr at 340°F	Does not corrode instruments Can use closed non-porous containers Items are dry after cycle Relatively large capacity per cost	Longer sterilization time needed. Cannot sterilize liquids. May damage plastic and rubber items. May char some paper products. Instruments should be pre-dried. Can be opened during cycle.	Aluminum foil Paper Some cloths Open or closed containers
ETHYLENE OXIDE GAS	3 to 12 hr 145°F to 72°F	Safe for most heat-sensitive items. Relatively large capacity per cost	Plastic and rubber items must be aerated after cycle for 16 hr to 7 days. Larger models are expensive. Ventilation must be adequate	Paper Nylon bags Open containers

TABLE II: BIOCIDAL ACTIVITY OF VARIOUS CHEMICAL DISINFECTANTS⁶⁴

Chemical	Exposure time	Activity levels possible*		
		Low	Intermediate	High
Recommended for surfaces in dentistry				
Formaldehyde, 3% aqueous	≈ 30 min	---	XXX	---
Formaldehyde, 8% aqueous	10 hr	---	---	XXX
Formaldehyde, 8% in 70% alcohol	10 hr	---	---	XXX
Glutaraldehyde, 2% alkaline aqueous	≈ 30 min	---	XXX	---
Chlorine compounds, 1% available chlorine	10 hr	---	---	XXX
(commercial bleach diluted 1:5)	≈ 30 min	---	XXX	---
Iodophors, 1% available iodine	≈ 30 min	---	XXX	---
Not recommended for surfaces in dentistry				
Alcohols		---	XXX	---
Isopropanol, 90%				
Ethanol, 70%				
Phenolics, 1% to 3%		---	XXX	---
Quaternary ammonium compounds		XXX	---	---

* In the absence of gross organic soil.

GUIDELINES FOR PERIODONTAL THERAPY*

The American Academy of Periodontology offers the following Guidelines for Periodontal Therapy. These Guidelines are intended to fulfill the Academy's obligation to the public and to the dental profession to set forth the clinical objectives in periodontal therapy. They are designed, moreover, to give guidance to state legislatures and agencies which regulate the practice of periodontology.

These Guidelines should be considered in their entirety and are, of course, voluntary. It should be recognized that adherence to the Guidelines will not obviate all complications or post-care problems in periodontal therapy. Further, these Guidelines should not be deemed inclusive of all methods of care or exclusive of methods of care reasonably directed to obtaining the same results.

Research has provided irrefutable evidence that chronic inflammatory periodontal disease is a treatable disease. The great majority of patients can retain their dentitions over their natural lifetime with thorough treatment, reasonable plaque control and continuing maintenance care. There are rare situations when traditional therapy is not effective in arresting the disease. In these instances the progression of the disease may be slowed but ultimately the teeth will be lost.

The ultimate judgment regarding the propriety of any specific pro-

cedure must be made by the practitioner in light of all the circumstances presented by the individual patient.

I. *Introduction*

Periodontics is that branch of dentistry which deals with the diagnosis, treatment and prevention of pathologic conditions affecting the root, and the supporting and surrounding tissues of the teeth: the gingiva, the periodontal ligament and the alveolar bone. The goal of periodontal therapy is to preserve the natural dentition in health and comfortable function. The currently accepted clinical signs of a healthy periodontium include the absence of redness, swelling, bleeding, exudate, and a maintenance of the functional periodontal attachment over a period of time.

II. *Recognition, Diagnosis, and Planning for the Treatment of Periodontal Diseases*

All patients should receive a thorough, systematic periodontal examination. This should include a medical and dental history, and a clinical and radiographic examination. The following information is essential in developing a diagnosis of periodontal health, gingivitis (case Type I), early periodontitis (case Type II), moderate periodontitis (case Type III) or advanced periodontitis (case Type IV).

- 1) Gross periodontal pathosis — evaluation of the topography of the gingiva and related structures.

*September, 1983, *The American Academy of Periodontology*

2) The existence and degree of gingival inflammation.

3) Periodontal probing depth in order to assess the attachment level and to provide information on the health of the subgingival area, e.g., presence of bleeding, purulent exudate, periodontal pockets.

4) Presence and distribution of bacterial plaque and calculus.

5) Condition of tooth proximal contact relationships.

6) Degree of mobility of teeth.

7) Presence of malocclusion.

8) Condition of existing dental restorations and prosthetic appliances.

9) Interpretation of a satisfactory number of diagnostic quality periapical and bitewing radiographs.

The diagnosis is used to develop a logical plan of treatment in order to eliminate or alleviate the signs and symptoms of periodontal diseases, and thereby prevent or slow further destructive changes. The treatment plan should be used to establish the methods and sequence of delivering appropriate periodontal treatment, and an estimate of both the short and long term prognoses. The plan should include:

1) The periodontal procedures to be performed.

2) Treatment that may be performed by others, e.g., endodontic therapy.

3) Provision for reevaluation during and after active periodontal therapy.

4) A consideration of adjunctive restorative and prosthetic treatment.

5) A recall program of Supportive

Periodontal Treatment for Type III and Type IV cases.

III. *Informed Consent and Patient Records*

The patient should be given the following information:

1) The diagnosis, proposed therapy, any reasonable alternative treatment, and the prognosis with and without proposed therapy.

2) Recommendations for treatment to be performed by other dentists or physicians.

3) The reasonably foreseeable inherent risks associated with treatment, including failures and the ultimate loss of teeth in a small percentage of cases despite treatment.

4) After active therapy, the need for supportive periodontal treatment due to the episodic and recurrent nature of periodontal disease.

Adequate records are essential, starting with the initial examination and continuing for as long as the patient is under care.

IV. *Treatment Procedures*

In periodontics, a whole range of therapy exists. No one treatment approach can provide the only means of treating any one, or all, of the diagnostic case types. Further, one treatment plan may be appropriate for one section of the mouth, while another therapeutic approach is more suitable elsewhere.

In addition to the diagnostic procedures listed previously, all plans for active treatment should include:

1) Training for the patient in daily personal dental care.

2) Removal of supragingival and accessible subgingival calculus by periodontal scaling. Root surface irregularities and root surfaces altered by periodontal pathosis are treated by the comprehensive service of periodontal root planing. In some instances, these procedures may be incorporated in surgical treatment.

3) Finishing procedures which include post treatment evaluation, and review and reinforcement of personal daily dental care.

The following are courses of treatment that may be indicated in addition to the above outlined procedures.

1) Pocket reduction: These procedures are designed to reduce or eliminate periodontal pockets and create an acceptable gingival form:

a. Soft tissue: gingivectomy, various flap procedures

b. Osseous tissue: ostectomy, osteoplasty

c. Dental tissue: root resection and odontoplasty

2) Grafting procedures:

a. Soft tissue defects: pedicle grafts, free grafts

b. Osseous tissue defects: various types of grafts and regenerative procedures

(The above procedures are performed to maximally reduce pathological gingival defects, to establish a physiologic gingival form, and to correct deformities of the alveolar bone.)

3) Occlusal therapy where indicated: minor tooth movement, occlu-

sal adjustment, and devices to reduce occlusal traumatism.

V. Supportive Periodontal Treatment

Upon completion of active periodontal treatment, follow-up supportive periodontal treatment visits should include:

1) Update of medical and dental history.

2) Evaluation of current periodontal health status.

3) Assessment of the patient's bacterial plaque control effectiveness, and reinstruction where needed.

4) Elimination or mitigation of new or persistent etiologic factors by periodontal scaling, periodontal root planing as needed, and polishing procedures.

5) New or refractory areas of periodontal pathosis are considered for treatment, or the regular interval scheduling of supportive periodontal treatment is continued.

The patient should be kept informed of:

1) Areas of persistent, recurrent, or new periodontal disease.

2) Changes in prognosis.

3) Advisability of further active periodontal treatment.

VI. Factors Modifying Results

The results of periodontal treatment may be adversely affected by circumstances beyond the control of the dentist. Examples include certain medical diseases, inadequate plaque control by the patient, unknown or undetermin-

able etiologic factors which current therapy has not controlled, pulpalperiodontal problems, inability or failure of the patient to follow the suggested treatment or supportive program, and uncorrectable anatomic or iatrogenic factors.

The goals of periodontal therapy may be occasionally compromised when a patient refuses to have hopeless teeth extracted, or when a practitioner elects to temporarily retain a hopeless tooth that is serving as an abutment for a fixed or removable prosthesis or maintaining vertical dimension during active periodontal therapy.

A patient who is unable or unwilling to undergo comprehensive periodontal therapy or a medically compromised patient serve as two examples of individuals that may best be treated with a limited therapeutic program equivalent to supportive periodontal treatment.

VII. *Evaluation of Therapy*

Upon completion of the planned active treatment, records and a clinical assessment of the patient should reveal:

1) The patient has been counseled

on why they should and shown how they can perform an effective daily personal treatment program.

2) Procedures generally accepted as therapeutic have been performed to arrest the progress of the periodontal disease.

3) Periodontal root planing has left subgingival root surfaces without clinically detectable calculus deposits or rough areas.

4) Physiologic gingival crevices are without blood or exudate upon light probing and, ideally, can be maintained in health by daily patient care and the periodic professional service of supportive periodontal treatment procedures. The morphology of periodontal defects and anatomic and cosmetic limitations may preclude achieving such optimal results.

5) A recommendation for the correction of any tooth form, restoration, or prosthesis considered contributing to the periodontal disease process.

6) An appropriate recall program has been recommended to the patient for follow-up supportive periodontal treatment and is specific for their circumstances. The patient has been informed that a recall program is essential to the future or long term control of their periodontal disease.

MCV NEWS

R. F. Barnes, D.D.S. Associate Editor

The School of Dentistry had its Annual Homecoming at the Hyatt in Richmond on April 6th through the 8th and from all reports the MCV Alumni Association, MCV Foundation, and MCV Office of Continuing Education did another outstanding job in getting everyone together for fun, fellowship, and continuing education.

Doctors Hymann, Laskin and Sarantos are to be commended for their excellent presentations during the lectures given Saturday and the various class organizers did a great job in preparing the social events of homecoming for Friday evening. Some statistics that may be of interest to you: over two-hundred and fifty people attended the various Friday evening social events honoring the classes of 1979 back to 1934. Dr. Vernon Tillar of Emporia, Virginia was honored as representing the Class of 1934; the Class of 1979 had the most alumni returning followed by the Class of 1964 and 1959.

We at MCV appreciate the continued interest and support of our alumni; without that support our jobs here would be much tougher. We are looking forward to seeing you all next year at our Homecoming '85.

A MESSAGE

to

DENTAL STUDENTS AND SOME PRACTITIONERS

PEOPLE: craftsmen, tradesmen, merchants, laborers, artists, soldiers, sailors, aircraft pilots, dentists, lawyers, physicians, ministers.

How can you distinguish one from another? Important!

Is one better than another? No! Individuals differ in many ways, but they *may* all be *good* people. An unskilled laborer can be just as good a person as a devout minister. But, they are different. The hands of one may be calloused. The hands of another may be delicate and tender. Different, but not better, one over the other.

How can the public know that I am a member of a health service profession? The public should know and I want them to know.

Having been educated for a profession, I have been fortunate in that my education was above the level of my community. That should show in matters of general knowledge, speech, writing, community interest, personal manners and behavior.

Since my profession does not require me to engage in manual labor involving dust and dirt I should be a clean person physically from the tip of my toes to the top of my head. My garments, at work or rest, should likewise be different from those who labor in the soil.

In fashion of clothing would "running with the pack" and dressing for my professional activities in jeans, open neck sport shirts of bizarre color mixtures exposing my hairy chest be the "in thing" for me? Why can't I serve my patients just as well while dressed in shabby garments? And, what's harmful about a little dirt on my shoes? Why should I wear socks and shoes in hot weather?

I have lots of hair. Why not show off my long hair over my ears and down several inches over my collar? Does a little hair grease on the back of my collar matter? My wife or girl friend says that I look more mature with a beard and mustache. Why not please the little woman, even if hair is not the cleanest of body structures? Draping it over a patient's open mouth won't kill them, will it?

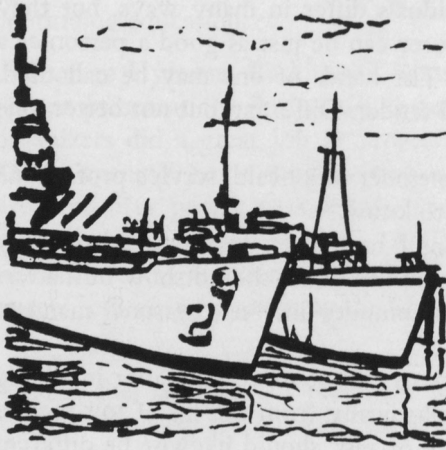
Well, marketing, advertising and huckstering dental care may bring a person into your office. But, whether or not that person becomes a loyal patient depends on many factors, not the least of which is the answer to the question:

DO I LOOK AND BEHAVE LIKE A PROFESSIONAL GENTLE-

PERSON?

Harry Lyons
April 1984

COMPONENT NEWS



COMPONENT I

TIDEWATER DENTAL ASSOCIATION

Lawrence H. Cash
Associate Editor

Tidewater hopes to send a large representation to Roanoke to support Manny Michaels and "his" State Meeting in September. Manny has worked long and hard this year and deserves his component's support.

The Southeastern Virginia Dental Symposium will return to the Conference Center in Williamsburg in 1985 after a sojourn to Norfolk's Waterside in 1984. The program theme will be "Practice Building for the Eighties" and will be held February 28, March 1 & 2, of 1985. Dr. Burt Press, a most exciting and interesting

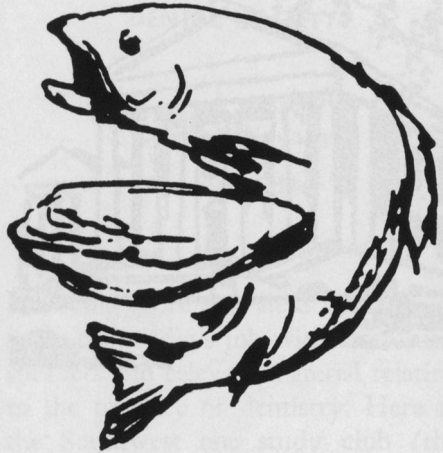
speaker will head up the program. MCV's new Chairman of the Oral Surgery Department, Dr. Daniel M. Laskin will be the speaker for the TDA's Fall Meeting November 16, 1984. His program will be directed toward the general practitioner on avoiding problems in oral surgery.

TDA's Children's Dental Health Month Program was a huge success again thanks to Bud Zimmer, and Chris Hamlin and the great cooperation they had from Component and Navy dentists.

COMPONENT II

PENINSULA DENTAL SOCIETY

Kenneth J. Stavisky
Associate Editor



We in Component II are up to business as usual. Our most recent involvement was the Southeastern Symposium with our sister Component I. Bob Kaltenbach, Ph.D., gave a timely talk on stress. Interestingly, Bob monitored his stress levels during the presentation with a credit card sized thermal element indicator; a modernization of the old clammy palm handshake technique. Dr. Jim Gutmann gave a dynamite Endo program, probably the most inclusive and well presented that we've seen around here in years. The Saturday morning returnees bore that

out. Next year, Burt Press in Williamsburg, hope to see more neighbors there.

Component II's slate for '84-'85 should be:

Buster Woodruff, President
Richard Barnes, President-Elect
Bill Bennett, Secretary
Custis Dailey, Treasurer
Ron Tankersley, Executive Councilor

Have a happy and auspicious summer, Component II sends their regards.



COMPONENT IV

RICHMOND DENTAL SOCIETY

Michael O. McMunn
Associate Editor

Spring has sprung and Summer vacations are just ahead. With the arrival of Spring, we have a new roster of leaders who will be guiding the Richmond Dental Society through the 1984-85 year. The following have eagerly accepted the responsibilities of their respective offices:

Richard D. Hylton, President
W. Baxter Perkinson, Jr., President-Elect
James R. Lance, Secretary
Kent G. Palcanis, Treasurer
Edward H. Radcliffe, Executive Councilor

Doctor Charlie Cuttino has done a superb job at the helm this year, and

we are proud to have him as a colleague and friend. He developed excellent programs for our monthly meetings and represented our Society at numerous meetings very ably. We expect that Charlie will be moving on to higher positions in the future. He is a good leader and is good for dentistry.

Speaking of people who are good for dentistry, Doctor Harry Lyons was featured in the ADA News recently and a reprint can be seen in this *Journal*. Doctor Lyons is a remarkable man and all of dentistry is fortunate to have him with us.

The members of the Richmond Dental Society wish you all a safe, warm, and enjoyable Summer!



COMPONENT VI

SOUTHWEST VIRGINIA DENTAL SOCIETY

David A. Kovach

Associate Editor

Dr. Arthur O. Rahn, chairman of the Department of Prosthodontics at the Medical College of Georgia School of Dentistry, presented our most recent quarterly meeting continuing education program at the Marriott Inn in Blacksburg. His program, entitled "Prosthodontics in 1984", was a VDA-MCV cooperative program and was well worth the time and the expense to attend. As with many of the facets of our profession, things are dramatically different in the decade of the '80's in the prosthodontic area of our practices.

Our next continuing education program and quarterly meeting will be held October 12, 1984, in Abingdon, home of the world famous Barter Theater. The program will deal with stress management in the dental practice. Why not plan to spend a pleasant fall weekend in the beautiful southwestern part of the Commonwealth? The fall foliage and the peaceful surroundings of historic Abingdon should provide a great deal of stress relief for those in attendance.

Local study clubs, especially in the rural parts of our Commonwealth, are

becoming more prevalent and are doing a tremendous job with interesting speakers and relevant material relating to the practice of dentistry. Here in the Southwest one study club (the Mercer, Tazewell, McDowell Study Club) which crosses into the state of West Virginia was fortunate to have Dr. Harold Goforth and our own Dr. Walter Pierce tell of their journey to Costa Rica to work with Methodist missionaries. They provided dental care to a large number of refugees under the most primitive conditions. This type of missionary work can only provide a great deal of good will for the profession and for the great nation that we live in.

Congratulations to the Roanoke Valley Dental Society for the excellent program which they sponsored on April 20. Jim and Naomi Rhode, of Semantodontics, Inc., give a most interesting and valuable program on practice management. Those of you who have not had the opportunity to hear the Rhode's should take the next available opportunity to do so. They are terrific.



COMPONENT VII

SHENANDOAH VALLEY DENTAL ASSOCIATION

E. Ross Testerman, Jr.
Associate Editor

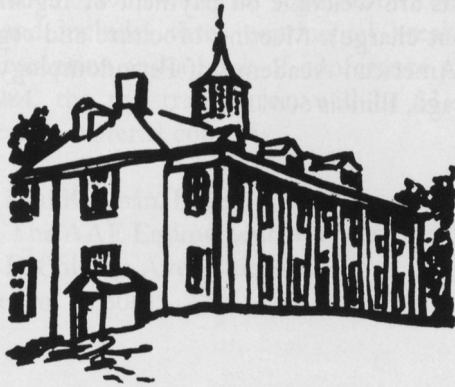
The spring meeting of the Shenandoah Valley Dental Association was held on March 30 at the Ingleside Red Carpet Inn in Staunton. An excellent program on "Contemporary Dental Practice Management" was presented by Dr. Baxter Perkinson. Dr. Perkinson is on the faculty at MCV as well as in private practice in Richmond.

We are pleased to welcome the following dentists into membership: Dr. Thomas A. Balmer, III, Charlottesville; Dr. Frank D. Barberio, Staunton; Dr. Joseph Capizzi, Keswick; Dr. Diane P. Chaldares, Waynesboro; Dr. Ronald G. Downey, Lexington; Dr. Conrad Bryant Jenkins, Charlottesville; Dr. Michael J. Kiesel, Front Royal; Dr. B. Blair Morris, Charlottesville;

Dr. Norman Clifton Rutter, Jr., Lexington; Dr. Douglas L. Starns, Charlottesville; and Dr. Anne Marie Shillinger, Staunton.

Dr. E. W. Michaels, President of the VDA, was present for the business meeting of Component VII. He discussed the ADA sponsored paid public education television program and answered questions. A film on this program was presented by Dr. Virgil Marshall.

The next meeting of Component VII will be held on Friday, August 10, at the Lee-Jackson Motel in Winchester. We will look forward to a program on Crown and Bridge as presented by Drs. Robert Eshleman and Hugh Douglas from MCV.



COMPONENT VIII

NORTHERN VIRGINIA DENTAL SOCIETY

David C. Anderson
Associate Editor

A lot of publicity has been generated out of the District of Columbia by a Vienna, Virginia man. It seems that in the early 1970's he was diagnosed as having periodontal disease. His treatment was prescribed as to: a.) brush with baking soda b.) rinse with salt water c.) rinse with hydrogen peroxide d.) floss and e.) use a water pick device.

For eight years he was monitored. For eight years he suffered abscesses and the periodontal condition deteriorated to the point where he sought a second opinion.

He is now \$37,500 richer and a number of teeth poorer. A fair ex-

change? He really doesn't think so. This patient is now contemplating "going public" on a wide scale to warn them of his experiences. A number of attorneys are watching with interest. The dental profession should do likewise.

We have celebrated our Annual Field Day with another rousing success. Of all the events our component sponsors this is the one where I see people most relaxed and congenial. Friendly competition with racquet and club seems to cement personal and professional relationships. A good thing in an era of devisiveness.

ANNOUNCEMENT

The American Academy of Periodontology will hold its Annual Meeting at the Hilton Hotel, New Orleans, Louisiana, September 19-22.

Attendance at the meeting earns hour-for-hour membership maintenance credit for members of the Academy of General Dentistry. Nonmember dentists, graduate students and hygienists are welcome on payment of registration fee (undergraduates admitted without charge). Meeting brochure and registration forms are available from: The American Academy of Periodontology, 211 E. Chicago Avenue, Room 924, Chicago, Illinois 60611.

TENNESSEE DENTAL ASSOCIATION ANNUAL SESSION

More than 2600 dentists, assistants, hygienists, auxiliary members, dental laboratory technicians and dental suppliers will converge on Nashville June 24-28 for the 116th Annual Session of the Tennessee Dental Association (TDA). This year's annual session, to be held at the Opryland Hotel, will consist of clinics, exhibits, social functions and a symposium addressing issues affecting dental care.

Featured speakers include Drs. Hilt Tatum, Tom De Marco, Ron Goldstein, Joseph Hourigan, Mike Fritz, Burt Press and Mr. Marvin Cutler. Topics to be discussed will include Implantology, Oral Surgery for the General Practitioner, Investments In The 80's, Periodontics, Esthetics in Dentistry, Office Design and Practice Management.

According to David Horvat, executive director of Tennessee Dental Association, "the agenda includes 56 table clinics providing up-to-date information about innovations, developments and new procedures in the dental profession." Dr. James Dobson will be featured in a film series entitled, "Focus on the Family."

More than 150 exhibitors will be on hand to display a variety of dental equipment and services.

Ronnie Milsap will be providing the entertainment on June 27 during a special "Country" evening. Dinner will be served and dancing will follow the show.

If you would like a complete preliminary program, preregistration form and hotel reservation card, please contact the Tennessee Dental Association, P. O. Box 120188, Nashville, TN 37212.

THE INTERNATIONAL CONFERENCE ON ORAL TRAUMA

The American Association of Endodontists Endowment and Memorial Foundation announces a major international conference addressing the multiplicity of problems encountered with patients receiving injuries to the mouth.

The conference will take place at the Registry Hotel in Dallas, Texas on November 8-10, 1984. The registration fee, if paid by September 15, 1984, is \$285 and includes three continental breakfasts, two luncheons, a Thursday night reception and a book of conference proceedings. If paid after September 15, 1984, the registration fee, will be \$315. For additional information and registration material contact:

W. Paul Radman, DDS
c/o The AAE Endowment and Memorial Foundation
211 E. Chicago Ave., Suite 830
Chicago, IL 60611

1984 GREATER NEW YORK DENTAL MEETING

November 24-29, 1984, are the dates to reserve to hear about the latest in practice techniques, research developments, dental office management, and much more at the 60th Annual Greater New York Meeting.

For registration information, hotel reservation forms, an advance program and other information, contact: The Greater New York Meeting, Suite 528, New York Hilton Hotel, 1335 Avenue of the Americas, New York, New York 10019, (212) 581-6611.

VIRGINIA DENTAL ASSISTANTS ASSOCIATION

The Past Presidents' Council, Virginia Dental Assistants Association, has formed a Speakers Bureau throughout the State.

If at any time someone would like to have a speaker on dental assisting, education, certification, etc., please contact one of the following:

Becky Brown, C.D.A.
Sec.-Treas., P. P. C.
4851 S. 27th. Road
Arlington, Va. 22206
Phone—703-578-3222

Evelyn Kane, C.D.A.
Chairman, P. P. C.
11 N. Washington Street
Winchester, Va. 22601
Phone—703-662-6454

ASDA GUIDE TO GENERAL PRACTICE RESIDENCIES

Because general practice residency programs in dentistry have become increasingly popular during the past decade, and because many dental students have been frustrated by the lack of a single source of descriptive information about these programs, the American Student Dental Association will release the first *ASDA Guide to General Practice Residencies* this spring. The point of the guide is to enable interested students to compare different GPR programs quickly and easily along many different criteria.

Elliot Abt, ASDA representative on hospitals, was both catalyst and coordinator of the project.

"There is a frequent misconception that GPR programs are similar in structure, emphasis, and content," Abt said. "Acting on this misconception, applicants who have been accepted in several different programs often select the program on the basis of location, reputation, or stipend. This can result in residents who are disappointed with some aspect of the general practice residency and program directors who are dissatisfied with the resident's attitude and productivity."

The *ASDA Guide* will compare and contrast nearly 300 hospital-based residencies nationwide along such criteria as:

- content and duration of medical rotations;
- patient mix, including the percentages of patients who are medically compromised, medically handicapped, physically handicapped, and welfare- or Medicare/Medicaid-dependent;
- approximate inpatient/outpatient ratio, which can have a big impact on a resident's relative preparation for hospital dentistry and private practice;
- clinical setting for the residency (professional building, hospital, or dental school);
- presence or absence of an oral surgery service at the institution, which can affect the amount of experience the resident receives in surgical procedures; and
- a breakdown of the time the resident spends in specific services, including ambulatory services; inpatient services; the operating room; the emergency room; and courses, seminars, conferences, and lectures.

The *ASDA Guide to General Practice Residencies* will also list for each program such practical items as first-year enrollment size, ratio of acceptances to applicants, program length, stipend, starting date, and application deadline.

Both the American Dental Association and the Academy of General Dentistry have provided financial support for the start-up costs of producing the *ASDA Guide*. The publication became available in May.

The *ASDA Guide* costs \$10 to ASDA members and \$15 to nonmembers. There is also a \$2 charge per book for postage and handling. To order the *ASDA Guide*, send your check or money order (payable to ASDA) along with your name and address to: ASDA, 211 E. Chicago Ave., Suite 840, Chicago IL 60611.

A NICE SMILE PAYS GOOD DIVIDENDS

What do Diana Ross, Barbara Walters, Linda Gray and every fifth person in the orthodontist's chair have in common? They're adults, willing to shell out a couple of thousand dollars and put up with the inconvenience and discomfort of mechanical apparatuses that straighten their teeth.

Orthodontists say adults are their happiest patients because many have wanted treatment for years. "I just smile and let 'em stick out," says Myra Pellegrin, a St. Louis grandmother.

Most patients are interested in an improved appearance and a healthier mouth. Well-aligned teeth are easier to keep clean, and chewing and speech may improve.

"We all live behind the masks of our faces," says Dr. Alfred Baum, a Los Angeles orthodontist whose interest in appearances led him to collect primitive masks as well as correct bites.

"There are weak faces; there are honest faces; there are evil faces. We all can recognize them. The truth is that a pretty girl leads a different life than a homely girl and a handsome man leads a different life than an ugly man."

While some grown-up orthodontic patients start late, children now are treated sooner. Dr. Robert E. Hirschfield of Miami, uses removable appliances—which he claims prevent or re-

duce the need for traditional braces—for children as young as 7.

Occasionally orthodontia, particularly combined with corrective surgery, leads to both a physical and psychological transformation. Dr. Lee Graber of Chicago, an orthodontist who has a doctorate in human growth and development, recommends counseling for patients facing a major change.

He cites the cases of two of his female patients with low self-esteem for whom treatment brought a change that contributed to their divorces.

Changes usually are less noticeable. Daryl Anderson, who played "Animal" on television's *Lou Grant*, had treatment because he feared a worsening overbite might lead to speech or gum problems. "I just had too many teeth. I don't look really different, although you might be able to tell it in full profile."

Anderson, who had three teeth removed, has "invisible" braces. Plastic cleats are bonded to his teeth and a plastic "wire" is used. These braces function just like the familiar metal variety—the teeth are strung together on a curved wire that pulls them into alignment. Anderson had his braces temporarily removed for a performance of *King Lear*, but said no director has noticed he's wearing them during auditions.

ADA ANNUAL SESSION OFFERS FUN AND LEARNING FOR EVERYONE

Something of interest for every member of the dental family is on the agenda for the American Dental Association's 125th scientific session Oct. 20-23 in Atlanta.

Topping off the list of unique events requiring advance registration is the second annual ADA Fun Run, slated for 6:30 a.m., Tuesday, Oct. 23.

Dr. George Sheehan of Red Bank, N.J., noted cardiologist and nationally recognized guru of the running world, will lead the Fun Run, which is open to runners, joggers, walkers and even wheelchair riders from 8 to 80.

Registration fee is \$10, and participants will receive a special limited-edition T-shirt and certificate of achievement while supplies last.

Later that same morning, Dr. Sheehan, author of the best seller, *Running and Being*, will lecture on fitness as a feature of the ADA's scientific program at the Georgia World Congress Center. His presentation on "Exercise: Cult or Cure-all?" will emphasize what fitness can and cannot do for the individual.

A special tour of dental offices in Atlanta, featuring both group and solo practices, will be conducted from 9 a.m. to 2 p.m., Sunday, Oct. 21. Offices were chosen to illustrate a variety of office environments, designs, equipment and decor.

Open to everyone, the registration fee of \$25 per person includes a box lunch and bus transportation originat-

ing from the World Congress Center.

In another pre-registered event, dentists and their staff members are encouraged to participate as a team in the CPR basic life support program on Saturday and Sunday. The program consists of a 1½-hour lecture and film presentation followed by a 4-hour practical and written test. Registrants will receive study materials to prepare for the course. Successful completion of the course entitles the participant to receive a BCLS rescue card. Registration is limited. A \$25 donation per person helps to defray the costs of the materials.

Finally, just for kids 7-12, "Secrets—Creative Choices for Children" will be conducted again this year by Mark Rhode and his family from Phoenix, Ariz., Saturday through Tuesday.

This one-day program, from 9:30 a.m. to 2:30 p.m., will help kids understand how their choices and attitudes, friends and school, determine the type of adult they will become.

"Secrets" is a motivational, practical workshop that incorporates music, role-playing and creative experiences to add up to a truly fun day for youngsters. Registration fee of \$45 includes a box lunch.

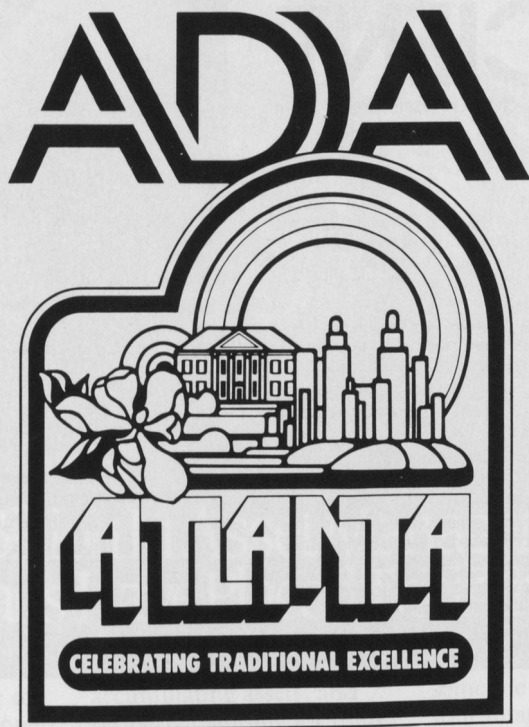
For further information and pre-registration forms for these events, call the ADA Council on Annual Session on the WATS line, extension 2658.

AMERICAN DENTAL ASSOCIATION

125TH ANNUAL SESSION

ANNUAL SESSION
OCTOBER 20-25, 1984

SCIENTIFIC SESSION
OCTOBER 20-23, 1984



125th ANNIVERSARY
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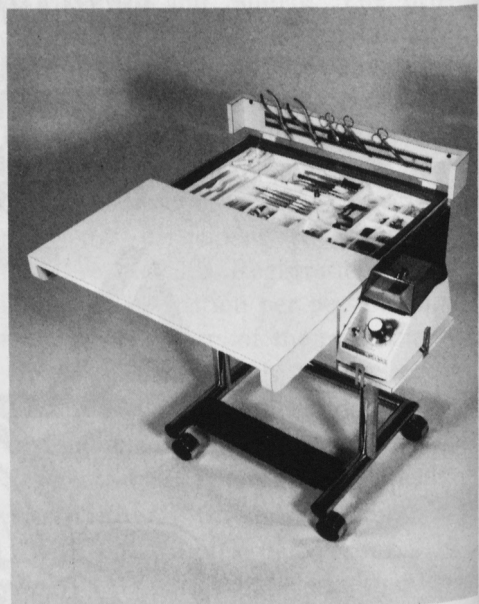
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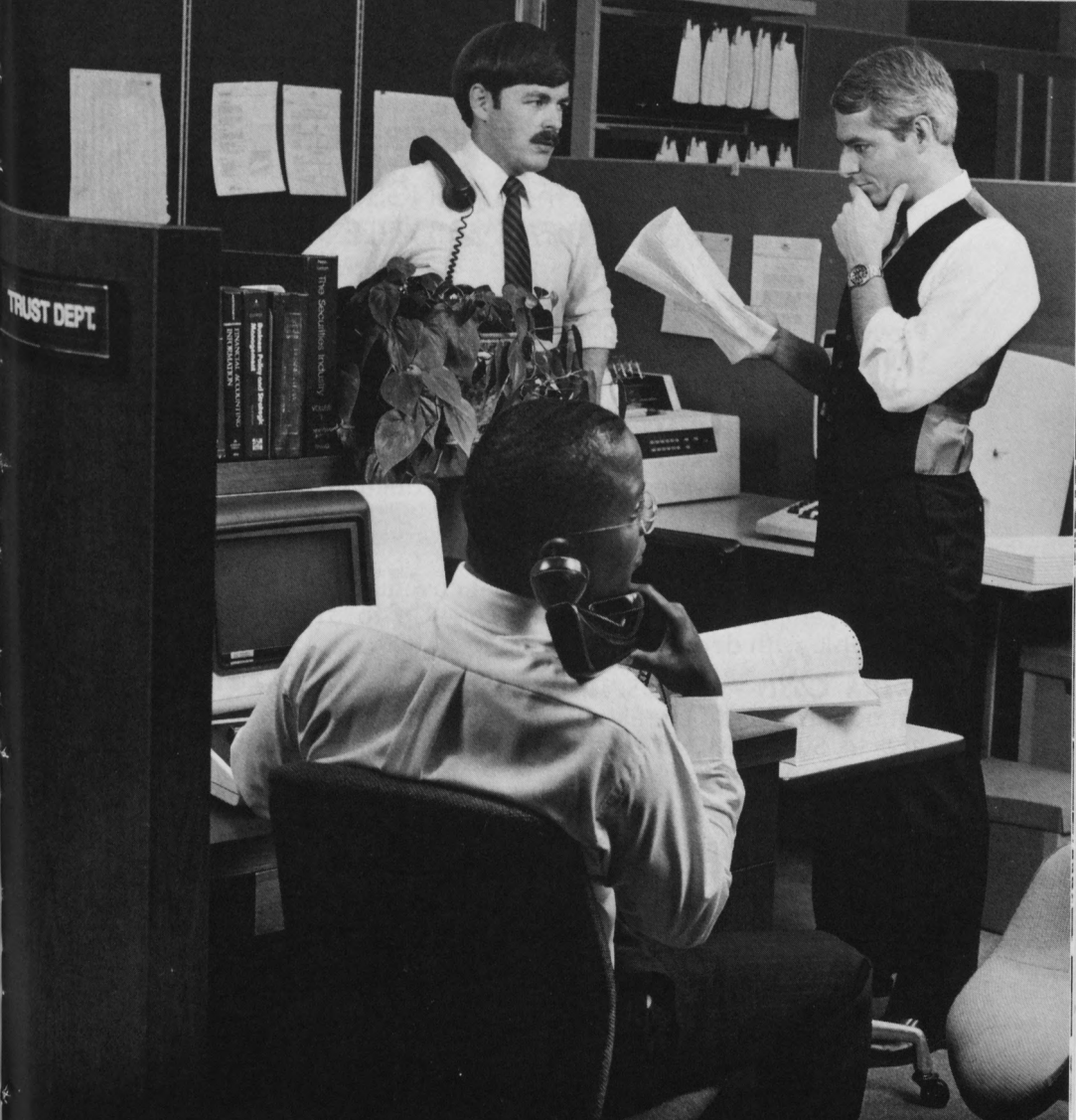
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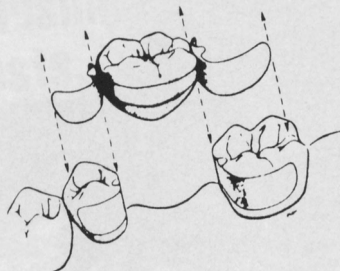
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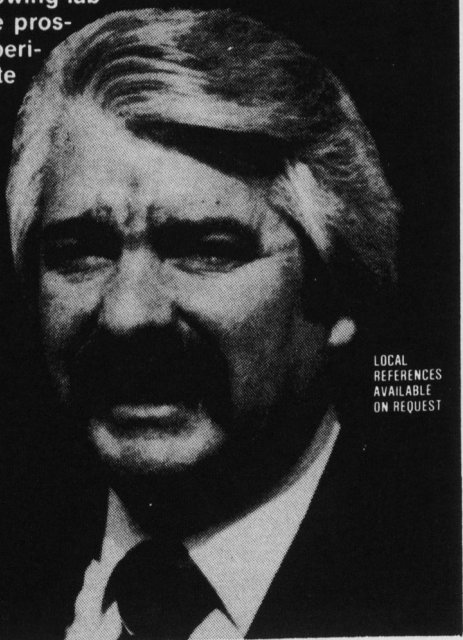
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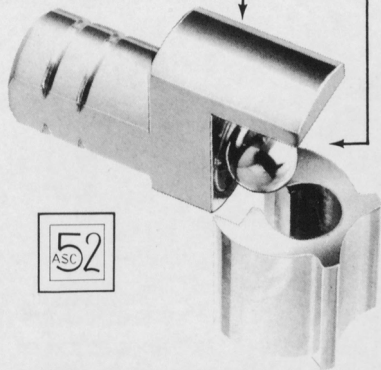
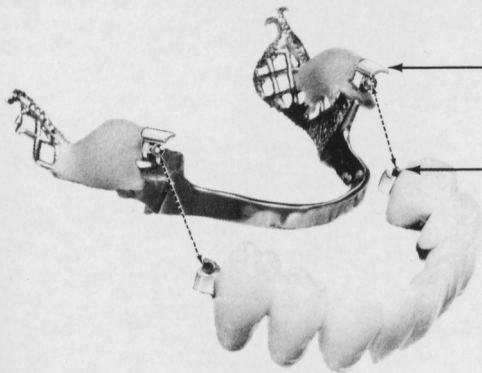
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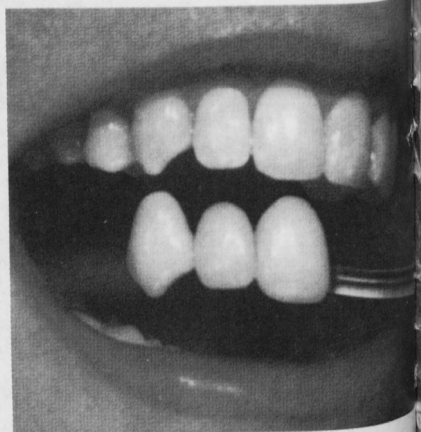
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