
14. DENTAL PUBLIC HEALTH

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If you do not have oral health, you're simply not healthy.

—C. Everett Koop, former U.S. Surgeon General

PUBLIC HEALTH PROMOTION

1. What is the definition of public health in its broadest sense?

In 1988 the Institute of Medicine defined public health as “what we, as a society, do collectively to assure the conditions for people to be healthy.”

2. What are the three tenets of public health?

1. A problem exists.
2. Solutions to the problem exist.
3. The solutions to the problem are applied.

3. Public health efforts are usually directed toward acute problems such as infectious disease or chronic diseases such as cancer. What public health strategies are similar for these and most other diseases?

- (1) Surveillance, (2) intervention, and (3) evaluation.

4. What constitutes a public health problem?

A public health problem usually fulfills two criteria of the public, government, or public health authorities:

1. A condition or situation that is a widespread actual or potential cause of morbidity or mortality, and
2. A perception exists that the condition is a public health problem.

5. Describe the current infection control recommendations.

Recommendations for infection control undergo frequent revision, and the reader is urged to refer to the most up-to-date source. For current recommendations, please check the Oral Health Program at the Centers for Disease Control and Prevention website: <http://www.cdc.gov/nccdphp/oh/ichome.htm>. The principles behind infection control involve **exposure control**, which refers to personal protective barriers such as gloves, masks, and eye protection. In addition, **heat sterilization** of all dental equipment, including handpieces, is required. Finally, the **handling and disposal** of all potentially infectious material must be properly performed. (See chapter 12.)

6. What are primary, secondary, and tertiary prevention?

Primary prevention involves health services that provide health promotion and protection with the goal of preventing the development of disease. Examples are community-based fluoridation for caries prevention and smoking cessation programs.

Secondary prevention includes services that are provided once the disease is present to prevent further progression. Such services include dental restorations and oral cancer screening.

Tertiary prevention services are provided when disease has advanced to the point where loss of function or life may occur. Definitive surgery or radiation therapy to treat oral cancer and extractions of diseased teeth to eliminate infection are examples.

7. What is health promotion?

Health promotion is a set of educational, economic, and environmental incentives to support behavioral changes that lead to better health.

8. How has health promotion been achieved

Examples of health-promoting activities include community fluoridation and sealant programs. On the individual level, health promotion is encouraged through oral hygiene procedures.

9. Give examples of community-based dental public health programs geared toward school children.

School-based fluoride delivery, dental screening, hygiene instruction, and sealant placement.

10. Before the implementation of any community-based program, the process of planning and evaluation is necessary. What are the basic steps involved in planning for a program?

Planning involves making choices to achieve specific objectives. Thus, a planner should review a list of alternative programs, assess the effectiveness of the program under consideration, examine the community to determine if the program is needed, and initiate the process to implement the program.

11. What skills must a person possess before managing dental public health programs?

The implementation of a public health program requires such skills as planning, marketing, communications, human resources management, financial management, and quality assurance.

12. Differentiate among need, demand, and utilization of oral health services.

Need can be defined as the quantity of dental treatment that expert opinion deems necessary for people to achieve the status of being dentally healthy. **Demand** for dental care is an expression by patients to receive dental treatment. **Utilization** is expressed as the proportion of the population that visits a dentist.

13. What factors influence the need and demand for oral health services in the U.S.?

Demographic and other variables influence the use of dental services. Such variables most notably include gender, age, socioeconomic status, race, ethnicity, geographic location, medical health, and presence of insurance. Women utilize more dental services than men, although the reasons are unclear. Dental visits are most frequent for patients in their late teenage years and early adulthood, with a gradual tapering of visits with increasing age. Socioeconomic status is directly related to the use of dental services. There are fewer dental visits in patients of lower socioeconomic status and in nonwhite or Hispanic populations.

14. The utilization of health care has been explained through behavioral models. One model demonstrates how variables influence the utilization of health care from the individual's perspective. What factors play a role in explaining a person's health care utilization?

1. **Predisposing factors**, such as (1) demographic variables (e.g., sex, age); (2) societal variables (e.g., education, job); and (3) health beliefs (e.g., how susceptible to disease the person believes that he or she is, how serious he or she believes the consequences of the disease to be).

2. **Enabling factors**, which allow the services to be used, such as personal income, community resources, and accessibility to health care.

3. **Need factors**, which determine how the services should be used (i.e., presence of disease).

15. What is the prevalence of smokeless tobacco use among adolescent males and females?

Surveys indicate that 40–60% of adolescent males have tried smokeless tobacco and that by 11th grade 5–35% report regular use. In contrast, less than 5% of adolescent females report using smokeless tobacco. It is important to note the wide geographic variability in the rates. The Northeast experiences the lowest usage, and the highest reported use is in the South.

16. What risks are associated with smokeless tobacco?

Smokeless tobacco increases the risk of developing oral cancer. It contains nicotine and is as strongly addictive as cigarettes. The use of smokeless tobacco leads to the development of leukoplakia in mucosal areas where the tobacco is placed. There is about a 5% chance of leukoplakia becoming cancerous. Leukoplakia may resolve with early cessation of smokeless tobacco use.

17. What is meant by the term “acidogenic”?

Particular foods have the ability to reduce the pH of plaque when consumed and are considered to be acidogenic. The reduction in pH is considered a necessary condition for the development of caries. Such foods contain a high proportion of refined sugars (e.g., candy, soda).

18. Describe how the benefits of fluoride were first discovered.

In the early 1900s Dr. Frederick McKay, having recently graduated from dental school, moved to Colorado, where he observed an unusual blotching of tooth enamel in many of his patients. This pattern was localized to communities that got their drinking water from artesian wells. He also observed that this blotching was associated with decreased caries activity. Eventually fluoride was identified as the responsible agent. This finding led to fluoridation trials demonstrating that artificial fluoride prevents dental caries.

19. Water fluoridation is one of the few public health measures that saves more money than it costs. Why is water fluoridation so cost-effective?

Fluoridation is a low-cost and low-technology procedure that benefits an entire community. It requires no patient compliance and is therefore easy to administer. The major costs are associated with the initial equipment purchase; later costs are for maintenance and fluoride supplies. It has been calculated that the direct annual costs for fluoridating American public water systems range \$0.12—1.31 per person, with an average of \$0.54 per person. For each dollar invested in fluoridation, \$80 in costs for dental treatment are avoided.

20. What are the major mechanisms of action for fluoride in caries inhibition?

1. The topical effect of constant infusion of a low concentration of fluoride into the oral cavity is thought to increase remineralization of enamel.
2. Fluoride inhibits glycolysis in which sugar is converted to acid by bacteria.
3. During tooth development, fluoride is incorporated into the developing enamel hydroxyapatite crystal, which reduces enamel solubility.

21. What percentage of the U.S. population is served by community systems providing optimal levels of fluoridated water?

About 62—54% of the total U.S. population has an optimally fluoridated water supply.

22. What is the recommended level of fluoride in the water supply?

The U.S. Public Health Service sets the optimal fluoride level at 0.7 ppm.

23. At what policy level is the decision to fluoridate the water supply made?

Local governments make the decision. However, seven states have laws requiring water fluoridation.

24. A parent of a 6-year-old child asks about fluoride supplementation. The child weighs 20 kg and lives in a fluoride-deficient area with less than 0.3 ppm of fluoride ion in drinking water. What do you recommend?

You should prescribe sodium fluoride, 1-mg tablets, to be chewed and swallowed at bedtime.

25. What are the recommended fluoride supplementation dosages for children?

Tablets are available in doses of 1.0 mg and 0.5 mg for children and toddlers. For infants, supplemental fluoride is available as 0.125-mg drops.

Supplemental Fluoride Dosage Schedule

AGE	CONCENTRATION OF FLUORIDE ION IN DRINKING WATER		
	< 0.3	0.3 - 0.6	>0.6 PPM
6 mo to 3 yr	0.25 mg	0	0
3-6 yr	0.50 mg	0.25 mg	0
6-16 yr	1 mg	0.50 mg	0

26. What are alternatives to systemic fluoride supplementation (i.e., tablets)?

- Topically applied gels of 2.0% NaF, 0.4% SnF, 1.23% acidulated phosphate fluoride (APF)
- Mouth rinses of 0.2% NaF weekly, 0.05% NaF daily, 0.1% SnF daily
- Daily dentifrice

27. In prescribing fluoride supplementation, what tradeoffs must be considered?

The benefit of caries reduction must be considered against the risk of fluorosis. Fluorosis occurs with the presence of excessive fluoride during tooth development and causes discoloration of tooth enamel. Affected teeth appear chalky white on eruption and later turn brown. This risk is especially important during the development of the incisors in the second to third years. To avoid this problem, you must assess the fluoride content of the drinking water before dispensing fluoride supplementation. The fluoride in water along with any supplemental fluoride must not exceed 1 ppm. If 1 ppm is exceeded, the probability that fluorosis may develop increases as the fluoride concentration increases.

28. Where is ingested fluoride absorbed?

Eighty percent of absorption occurs in the upper gastrointestinal tract.

29. What are the manifestations of fluoride toxicity?

The ingestion of 5 gm of fluoride or greater in an adult results in death within 2 hours if the person does not receive medical attention. In a child, ingestion of a single dose greater than 400 mg results in death due to poisoning in about 3 hours. Doses of 100—300 mg in children result in nausea and diarrhea.

30. How much fluoride is contained in an average 4.6-ounce tube of toothpaste?

Either sodium monofluorophosphate or sodium fluoride toothpaste contains approximately 1.0 mg of fluoride per gram of paste. Therefore, a 4.6-oz tube of toothpaste contains 130 mg of fluoride. A level of 435 mg of fluoride consumed in a 3-hour period is considered fatal for a 3-year-old child. Therefore, only a little over 3 tubes of toothpaste need to be consumed to reach a fatal level.

31. What is the rationale behind the use of pit and fissure sealants in caries prevention?

Occlusal surfaces, particularly fissures, have not experienced as rapid a decline in incidence of caries as proximal surfaces because fluoride's protective effect is confined to smooth surfaces only. It has been observed that sealing the fissures from the oral environment prevents the development of occlusal caries. Sealants should be part of an early preventive program for protecting permanent molars.

32. What proportion of U.S. children have received dental sealants?

Less than 30% of U.S. children have received dental sealants. In addition, only half the states have school-based programs to extend this service to the neediest children.

33. Do dentists have an obligation to report child abuse?

Yes. Dentists are morally, ethically, and legally obligated to report a suspected case of child abuse. Reports should be made to the local department of social services, although this may vary from state to state.

34. Where is the dentist's code of ethics found?

The American Dental Association (ADA) established a code of ethics that describes dentistry's responsibility to society. The code is published in the *Journal of the American Dental Association*. The code deals with issues of patient care, fees, practice guidelines, advertising, and referrals. The ADA Principles of Ethics and Code of Professional Conduct can be found at the ADA's website: <http://www.ada.org/prat/code/ethic.html>

35. What does the ADA code of ethics state about the removal of dental amalgam to prevent mercury toxicity?

“The removal of amalgam restorations from the non-allergic patient for the alleged purpose of removing toxic substances from the body, when such treatment is performed solely at the recommendation or suggestion of the dentist, is improper and unethical.”

36. How does the Americans with Disabilities Act affect dentists?

- Dentists cannot deny anyone care because of a disability.
- Offices must undergo architectural changes to allow access for the disabled.
- Employees are protected against dismissal due to a disability.
- Offices must accommodate disabled workers to perform jobs.

EPIDEMIOLOGY AND BIOSTATISTICS

37. Define epidemiology.

It is the study of the distribution and frequency of disease or injury in human populations and the factors that make groups susceptible to disease or injury.

38. Differentiate between incidence and prevalence.

Incidence is the number of new cases of disease occurring within a population during a given period. It is expressed as a rate: $(\text{cases})/(\text{population})/(\text{time})$

Prevalence is the proportion of a population affected with a disease at a given point in time, i.e., $(\text{cases})/(\text{population})$.

Example: A dentist counts the number of patients presenting to the office with newly diagnosed periodontal disease in a 6-month period. Ten of the 100 people who came to the office had periodontal disease. The incidence rate is calculated as 10/100 in 6 months, or 0.2 per year. The range for incidence rates is from zero to infinity. The prevalence of periodontal disease may be obtained by counting all patients with periodontal disease in the same period—that is, if 50 of the 100 patients have periodontal disease, the prevalence is 50%. Remember, incidence is a rate and requires a unit of time, whereas prevalence is a proportion and is expressed as a percentage of the population.

39. What is meant by test sensitivity and specificity? How are they calculated?

Frequently dentists wish to know if disease is present and may use some diagnostic test to arrive at an answer. In dentistry, the most frequent test is the radiograph. Radiographs are imperfect in that they do not distinguish all diseased from disease-free surfaces. Sensitivity and specificity are measures that describe how good the radiograph is in such differentiation. **Sensitivity** measures the proportion of persons with the disease who are correctly identified by a positive test (true-positive rate). **Specificity** measures the proportion of persons without

disease who are correctly identified by a negative test (true-negative rate). Sensitivity and specificity are inversely proportional; as the specificity of a test increases, the sensitivity decreases. An ideal test would have both high specificity and sensitivity, yet tradeoffs can be made depending on the condition being tested. Sensitivity and specificity can be calculated from a 2 x 2 table as illustrated below. Sensitivity = $TP/TP + FN$; specificity = $TN/FP + TN$.

	<i>With Disease</i>	<i>Without Disease</i>
Test positive	True positive (TP)	False positive (FP)
Test negative	False negative (FN)	True negative (TN)

40. What is meant by positive predictive value (PPV)?

The PPV reflects the proportion of persons who have the disease, given that they test positive. It measures how well the test predicts the presence of a given disease. The PPV is calculated from a 2 x 2 table as follows:

$$PPV = TP/TP + FP$$

This calculation takes into account the prevalence of disease.

41. What does the p value represent?

The probability that the observed result or something more extreme occurred by chance alone. Therefore, a p value of 0.05 indicates that there is only a 5% likelihood that the result observed was due to chance alone. Traditionally, a p value of 0.05 is considered statistically significant. If the p value is > 0.05, chance cannot be ruled out as an explanation for the observed effect. It is important to remember that chance can never be ruled out absolutely as an explanation for the observed results. A statistically significant result indicates that chance is not likely.

42. What is relative risk? Odds ratio?

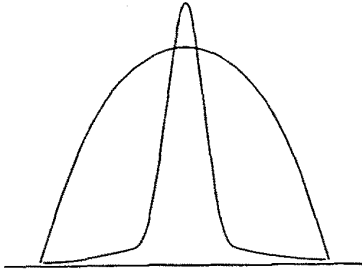
The **relative risk** measures the association between exposure and disease. It is expressed as a ratio of the rate of disease among exposed persons to the rate among unexposed persons. Relative risk estimates the strength or magnitude of an association. The calculation of relative risk requires incidence rates, provided by cohort studies.

The **odds ratio** provides an estimate of the relative risk in case-control studies; because disease has already occurred, the incidence of disease cannot be determined.

43. How do the mean, median, and mode differ?

The three terms are measures of central tendency and are used to provide a summary measure to characterize a group of people. The **mean** represents the average. It is calculated by adding together all of the observations and then dividing by the total number of measurements. The mean takes into account the magnitude of each observation and, as a result, is easily affected by extreme

values. The **median** is defined as the middle-most measurement (50th percentile)—i.e., half the observations are below it and half are above. Therefore, the median is unaffected by extreme measures. The **mode** is the most frequently used observation.



Two distributions with identical means, medians, and modes. (From Pagano M, Gauvreau K: Principles of Biostatistics. Boston, Harvard School of Public Health, 1991, with permission.)

44. Which of the following is most appropriate to test for differences between the means of two groups: ANOVA, *t*-test, or chi-square?

A *t*-test is used to compare the means between two groups. The ANOVA, or analysis of variance, compares the means in greater than two groups. The chi-square test is used to show differences in proportions.

45. Confidence intervals are often provided when data are reported. What do they indicate?

Confidence intervals (CI) represent the range within which the true magnitude of the effect lies with a certain degree of certainty. For example, a relative risk of 2.1 may be reported with a 95% CI (1.5, 2.9). This indicates that the study determined the relative risk to be 2.1 and that we are 95% certain that the true relative risk is not < 1.5 or > 2.9. If the 95% CI includes the null value (1.0), the result is not statistically significant.

46. Compare cross-sectional, case-control, and cohort studies.

Cross-sectional studies are a type of descriptive epidemiologic study in which the exposure and disease status of the population are determined at a given point. For example, the caries status of U.S. adults aged 45–65 in the year 1992 may be determined by a national dental survey and examination.

Case control and cohort studies are analytical epidemiologic studies. In **case-control studies** participants are selected on the basis of disease status. The “cases” are persons who have the disease of interest, and the control group consists of persons similar to the case group except that they do not have the disease of interest. Information about exposure status is then obtained from each group to assess whether an association exists between exposure and disease.

In cohort studies participants are selected on the basis of exposure status. Study participants must be free of the disease of interest at the time the study begins. Exposed and nonexposed participants are then followed over time to assess the association between exposure and specific diseases.

47. Which type of study—cohort, case-control, retrospective, or clinical trial—most closely resembles a true experiment?

In a clinical trial, the investigator allocates the participants to the exposure groups of interest and then follows the groups over time to observe how they differ in outcome. This method most closely resembles an experiment.

48. Discuss the importance of blinding and randomization in experimental studies.

Randomization and blinding are two methods of reducing bias in research studies. In a **randomized study** all participants have an equal likelihood of receiving the treatment of interest. For example, patients are randomly assigned to two groups, one of which receives a particular treatment and the other, placebo. Several techniques are available to ensure randomization of study participants. In a **double-blind study**, both the investigator observing the results and the participants are unaware of which individuals are assigned to which group. One means of achieving a blinded study is use of placebos.

49. Distinguish between split-mouth and crossover designs.

In **split-mouth studies**, different treatments are applied to different sections of the mouth. The effects of treatment must be localized to the region receiving the treatment. In **crossover studies**, patients serve as their own control and receive treatments in sequence—treatment A and then treatment B—and the disease course is compared between the two periods. The disease under investigation must be assumed to be stable during the period of treatment.

50. What is the difference between interexaminer and intraexaminer reliability?

The validity of an examination depends on the reliability of the examiner. Intraexaminer reliability refers to the ability of a single examiner to record the same findings in the same way over time. Interexaminer reliability refers to the ability of different examiners to record the same finding in the same way.

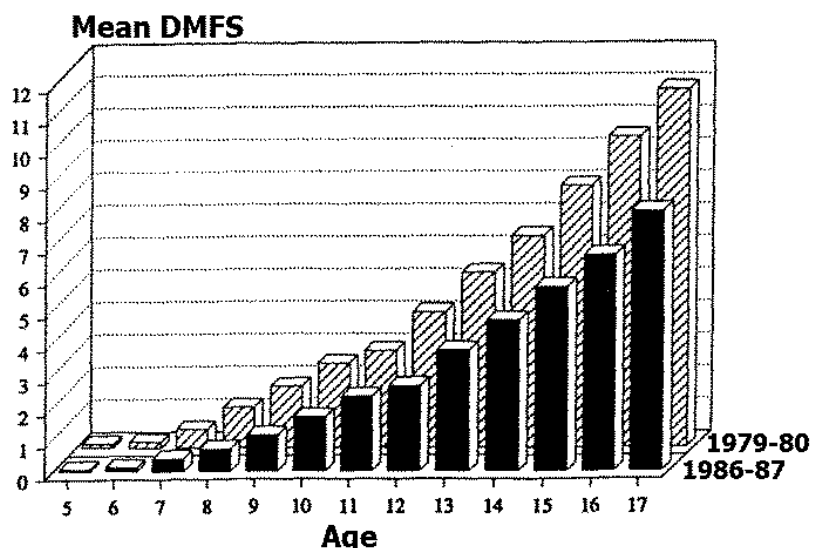
51. List and describe the most commonly used dental indices.

Measurements of dental caries are made with the **DMF index**. The DMF is an irreversible index and is used only with permanent teeth. *D* represents decayed teeth; *M*, missing teeth; and *F*, filled teeth. The DMF index can be applied to teeth (DMFT) or surfaces (DMFS). The DMFI score may range from 0 to 32, whereas the DMFS score may range from 0 to 160. The primary dentition uses the **def index**, where *d* represents decayed teeth; *e*, extracted teeth; and *f*, filled teeth.

Gingivitis is most commonly scored with the **gingival index** of LOE and Silness. It grades the gingiva on the four surfaces of each tooth. Each area receives a score from 0 to 3, where 0 = normal gingiva; 1 = mild inflammation, no bleeding on probing; 2 = moderate inflammation; 3 = severe inflammation, ulceration, and spontaneous bleeding.

52. What is happening with the prevalence of caries in the United States?

The prevalence of caries has been declining in children during the 20th century. Results of the National Health and Nutrition Examination Surveys (NHANES) during the 1970s and 1980s show that the prevalence of caries has decreased significantly in the U.S. Elsewhere, the caries rate is also declining. A decline in adult caries is not as evident, because most adults grew up before the decline started. Fluoridation has received the most credit for the decline.



DMFS values for United States school children, aged 5—17 years, in 1979—1980 and 1986—1987. (From Burt BA, Eklund SA: Dentistry, Dental Practice and the Community. Philadelphia. W.B. Saunders, 1992, with permission).

53. In 1994 a New York Times article stated, “Half of today’s schoolchildren have never had a cavity.” Is this statement accurate?

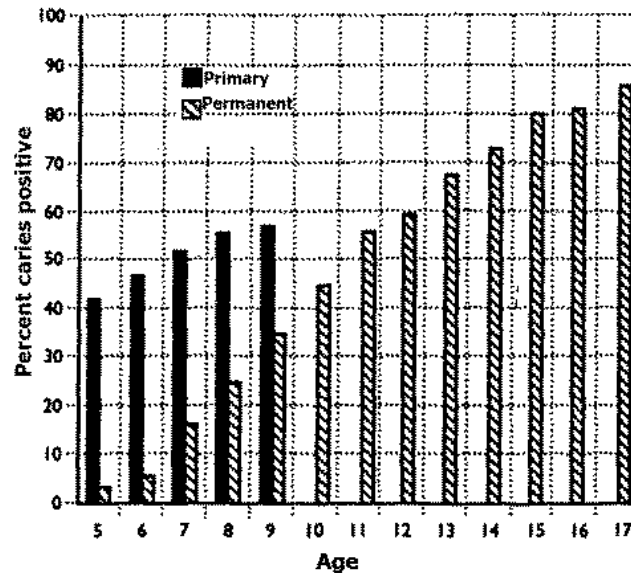
The 50% estimate is overly optimistic because it ignores caries in the primary dentition. In fact, 50% of children have had caries by the time they are 8 years old. In addition, most of the research methods used to assess caries prevalence rely entirely on visual means and omit radiographs. As a result, most caries studies underestimate the true burden of disease. Eighty-five percent of American children experience decay by the time they are 17 years old. Low-income people exhibit more dental disease and more delay in treatment than those with higher incomes. (See figure, top of next page.)

54. What factors make a person susceptible to dental caries?

1. Host with susceptible tooth (mineral)
2. Agent—acid bacteria (*S. mutans*)
3. Environment—dental plaque (sucrose)

55. What did the Vipeholm study reveal about the effect of diet on dental decay?

This study, conducted in a mental institution in Vipeholm, Sweden, is considered unethical and will not be repeated. The study divided patients into groups who received different doses of sugars. The sugar differed in amount, form, frequency, and whether it was consumed between meals. The most significant finding of the study was that the form and frequency of sugar consumption were most related to the occurrence of dental caries—that is, frequent consumption of sticky sugars increased the occurrence of dental caries.



56. What can you tell the parents of a toddler to aid in the prevention of caries?

Sugars are the most cariogenic foods, and the consumption of sugars between meals is associated with a marked increase in caries, whereas consumption of sugars with meals is associated with a much smaller increase. To prevent caries, avoid free sugars in bottle feeds, ensure optimal fluoride levels in water, and restrict intake of sugars.

57. Root caries is seen predominantly in what patient population?

The elderly. The rising incidence of root caries can be attributed to the aging of populations in industrialized societies and the fact that most adults are retaining more teeth. Increased gingival recession with exposure of root surfaces leads to the development of root caries.

58. What is the prevalence of periodontal disease?

Gingivitis and periodontitis are universally prevalent; in most countries more than 70% of all adults are afflicted. Some data suggest that there is no difference in the prevalence of periodontitis between developing and developed countries. More recent data obtained during the 1980s show that the prevalence of severe periodontitis ranges from 7–15%, regardless of a country's economic state, oral hygiene, or availability of dental care.

59. What is a common factor in both caries and periodontal disease?

The presence of dental plaque is a causative agent in both diseases.

60. How common are oral cancers?

Oral cancer accounted for 4—5% of all cancers diagnosed in the U.S. in 1997. Approximately one million new cancers are diagnosed in each year, and of these, about 40,000 are cancers of the lips, tongue, floor of the mouth, palate, gingiva, alveolar mucosa, buccal mucosa, and oropharynx. Oral cancer is twice as prevalent in males as in females. The age-adjusted annual incidence of oral cancer in white patients aged 65 or older was 20/100,000 in 1980.

61. What are the risk factors?

Studies of oral cancer have identified smoking and other forms of tobacco as the primary risk factors. In addition, alcohol consumption is a risk factor that may act as a promoter with tobacco. The combination of heavy smoking and alcohol consumption increases the risk of oral cancer 30-fold.

HEALTH POLICY

62. Differentiate between licensure and registration.

Licensure is granted through a government agency to those who meet specified qualifications to perform given activities or to claim a particular title. Registration is a listing of qualified individuals by a governmental or nongovernmental organization.

63. What are the types of supervision for allied dental personnel as defined by the ADA?

1. **Indirect:** The dentist diagnoses a condition, then authorizes the allied dental personnel to carry out treatment while the dentist remains in the office.

2. **Direct:** The dentist diagnoses a condition, authorizes treatment, and evaluates the outcome.

3. **General:** General supervision is defined by practice acts within each state and may require that the dentist be available but not necessarily on the premise or site where care is delivered.

64. What are the basic components of the dental care delivery system?

A delivery system is a means by which health care is provided to a patient and consists of four main components: (1) the organizational structure in which doctors and patients come together; (2) how health care is financed and paid for; (3) the supply of health care personnel; and (4) the physical structures involved in the delivery of care.

65. To what does quality assurance refer?

Quality assurance is the process of examining the physical structures, procedures, and outcome as they affect the delivery of health care. It consists of

assessment to identify inadequacies, followed by implementation of improvements to correct the inadequacies and reassessment to determine if the improvements are effective.

66. Define structure, process, and Outcome as they relate to quality assurance.

Structure refers to the layout and equipment of a facility. Included are items such as the building, equipment, and record forms. **Process** involves the services that the dentist and auxiliary personnel perform for patients and how skillfully they do so. **Outcome** is the change in health status that occurs as a result of the care delivered.

67. How do cost-benefit and cost-effectiveness analyses differ?

Cost-effectiveness and cost-benefit analyses are similar yet distinct techniques to help allocate resources to maximize objectives. **Cost-benefit analysis** requires that all costs and benefits be expressed in dollar terms to provide a measure of net benefit. **Cost-effectiveness analysis** allows alternative measures to value effectiveness. Objections to valuing life in terms of dollars led to the use of cases of disease prevented, life-years gained, or of quality-adjusted life-years. The result is a cost-effectiveness ratio that expresses the cost per unit of effectiveness.

68. What is adverse selection?

Adverse selection occurs when people at high risk for an illness are the predominant purchasers of insurance, especially when the risk for illness and the premium are based on a low-risk population. Thus, high-risk people are attracted to the insurance by its low rates, which allow them to avoid payments for a likely illness.

69. What is moral hazard?

Patients with insurance demand more medical care than patients who have to pay the cost themselves.

70. What is a community rating?

The premiums charged to all insurance subscribers are the same, regardless of individual risk. Regardless of who pays for medical care, the cost ultimately falls on the general public.

71. What are the different financing mechanisms for dental care?

Dentistry is financed mainly through fee-for-service self-pay; 56% of all dental expenses are paid out of pocket by the patient. Payment to the dentist by an organization other than the patient is called third-party payment. Third-party payers represented by private insurance pay about 33% of total dental expenses,

followed by government-financed or public programs (i.e., Medicaid, Veterans Affairs).

72. What is capitation payment?

HMO premiums are usually made on a capitation basis—that is, HMO providers receive a given fee per enrollee, regardless of how much or little care is delivered.

73. Explain the differences among IPA, PPO, and HMO.

All three represent managed-care practices. Managed care refers to forms of insurance coverage in which utilization and service patterns are monitored by the insurer with the aim of containing costs. An HMO (health maintenance organization) is usually a self-contained staff-model practice in which no distinction is made between the providers of insurance and the providers of health care. HMO premiums are paid on a capitation basis. In contrast, IPA (independent practice association) and PPO (preferred provider organization) represent groups of doctors who practice in the community and are distinct from the insurance provider. However, the insurance agency contracts with the providers for discounted rates and may refer patients to these providers exclusively. If a patient elects to go to a different provider from the one recommended by the insurance company, the patient may face a financial penalty such as an additional charge.

74. How do managed-care arrangements differ from the traditional model of dental care?

Traditional medical and dental care has been paid on a fee-for-service basis. The patient chooses any provider in the community, and the insurance company usually pays a certain percentage of the charge. In the current era of cost-consciousness, many insurance companies are modifying or eliminating this model altogether. Fee-for-service usually provides no incentive for either the patient or provider to contain costs.

75. How do Medicaid and Medicare differ?

Medicare, an entitlement fund, was created to provide health insurance to people 65 years old and over, certain disabled groups, and people with certain kidney diseases. Medicare has two parts, an institutional or hospital portion (Part A) and a noninstitutional portion or physician-services (Part B). Part A has no premium, but Part B is supplemental and voluntarily purchased. Medicare does not provide dental care.

Medicaid is a means-tested program to provide health insurance to poor people eligible for welfare assistance programs. Medicaid covers both hospital and physician costs without a premium or copayment. Medicaid is required by federal law to provide dental services to children. However, adult dental services are optional, and the decision whether to provide dental care is determined at a state level.

76. Which agency administers Medicare funds?

The Health Care Financing Administration (HCFA), a federal agency, is responsible for funding Medicare. It determines how much providers will be paid and what services are covered.

77. How are the funds for Medicaid provided?

Medicaid is a joint federal and state program with federal guidelines that allow states some flexibility in what services are provided and who is eligible. The federal government provides states with matching dollars.

78. What percentage of the gross national product (GNP) is spent on health care?

In 1995, 13.1% of the GNP was spent on health care. The GNP represents the total production in the United States.

79. What percentage of all U.S. health care expenditures is for dental care?

In 1990, the HCFA estimated that 4% (\$46 of \$988 billion) of all U.S. health care expenditures was for dental services. Approximately \$44 billion came from private funds and \$2 billion came from public funds, principally Medicaid.

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