

Dental Hygiene Process of Care

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The dental hygiene process of care is a systematic, problem-solving approach to the provision of quality oral health care. This process provides a framework for evidence-based decision making and sound clinical judgment while identifying and resolving client needs within dental hygiene practice.¹ The dental hygiene process is a standard of practice recognized by the American Dental Hygienists Association (ADHA) and is an educational standard of the American Dental Association (ADA) Commission on Dental Accreditation.^{2,3} This chapter reviews components of the dental hygiene process of care: assessment, diagnosis, planning, implementation, evaluation, and documentation, including prognosis and legal-ethical considerations.

Basic concepts

Dental Hygiene Paradigm¹

A. A *paradigm* is composed of major concepts selected for study by a discipline

B. The paradigm for the discipline of dental hygiene includes four concepts⁴:

1. Clients—recipients of dental hygiene care; include persons, families, groups, and communities from all age, cultural, gender, and economic groups
2. Environment—external factors that affect the client’s optimal oral health; includes economic, psychological, cultural, physical, legal, educational, ethical, and geographic dimensions
3. Health and oral health—status of the overall health and the oral wellness or illness of the client
4. Dental hygiene actions—interventions that a dental hygienist initiates to promote wellness, prevent and control oral disease, and encourage active client participation and collaboration

C. Dental hygiene practice—based on a systematic process of care that involves assessment, diagnosis, planning, implementation, and evaluation (Fig. 15-1)

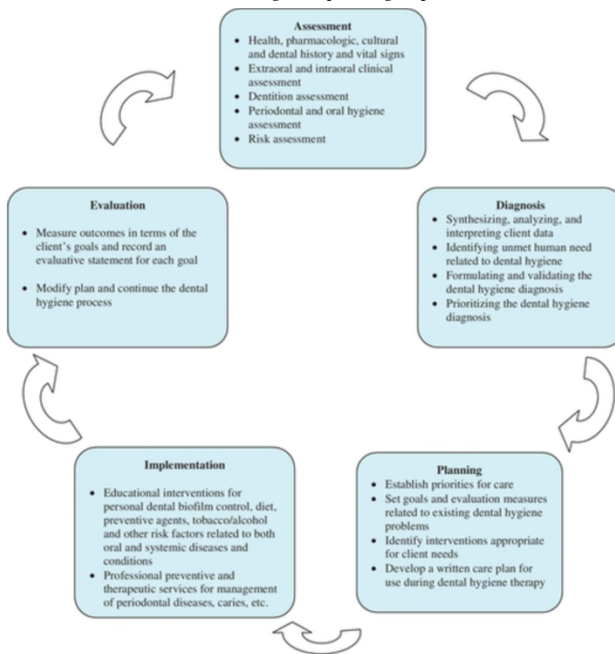


FIG 15-1 Dental hygiene process-of-care algorithm.

D. The dental hygiene process of care provides a logical system for determining the health and disease status of a client and for selecting appropriate interventions and measuring treatment outcomes
 E. The dental hygiene process of care is integrated with a client’s comprehensive dental hygiene diagnosis and care plan

Human Needs Theory and Assessment^{1,5-7}

See the section on “Human Behavior Principles” in Chapter 16.

- A. Most widely known model in the discipline of dental hygiene—human needs conceptual model; requires assessment of each client’s human needs as the framework for providing care
- B. Based on the theory that human activity is dominated by behaviors aimed at need fulfillment; an internal drive exists in all humans to satisfy unmet needs; unmet needs motivate specific behaviors to eliminate the perceived deficit; the model encourages establishing an environment that is more client oriented than task oriented
- C. The human needs model uses eight needs relevant to oral health that should be considered in the implementation of the dental hygiene process of care (Fig. 15-2)

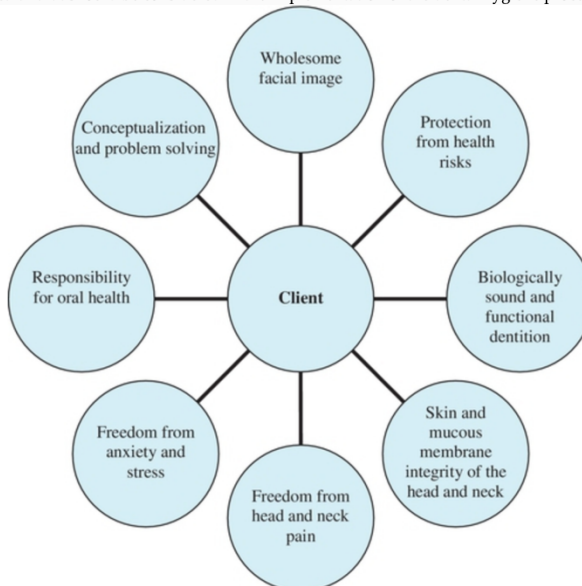


FIG 15-2 Eight human needs related to oral health and disease. (Modified from Walsh MM, Darby ML: Human needs theory and dental hygiene care. In Darby ML, Walsh MM, editors: *Dental hygiene theory and practice*, ed 4, St Louis, 2015, Saunders.)

Health History Questions (Fig. 15-4)

A. Personal, social, and cultural histories related to health and disease

REQUEST FOR MEDICAL CONSULTATION

Date: _____

TO: _____

Physician's Name _____

Address _____

Address _____

CLIENT INFORMATION

RE: _____

Client's name _____

Address _____

Gender: _____ Birthdate: _____

Request: It is anticipated that dental hygiene treatment will extend for (# of appointments) over (time period) (weekly/monthly) for (appointment length) hour durations. Your Client reported (or we observed) the following:

_____ Cardiac arrhythmia, diagnosed _____	_____ Diabetes, Type 1, glucose level _____
_____ High blood pressure (readings(s)/date) _____	_____ Diabetes, Type 2, glucose level _____
_____ Congenital heart disease (CHD) _____	_____ Total joint replacement (type & date replaced) _____
_____ Anticoagulant therapy, (medication dose/name) _____	_____ Other: _____

The treatment planned for _____ includes:

- _____ Deep scaling and root planing/debridement (hemorrhage will occur)
- _____ Use of local anesthetic agent
- _____ Use of nitrous oxide-oxygen analgesia
- _____ Other: _____

Our concerns for _____ include the need for:

- _____ Antibiotic prophylactic according to the AHA guidelines (2007)
- _____ Evaluation of high blood pressure prior to dental hygiene care
- _____ Evaluation of prothrombin time prior to dental hygiene care; INR score _____
- _____ Evaluation of glucose level of control. Please provide most recent diabetes laboratory test results _____ H1A_{1c}
- _____ Other: _____

Dentist _____ Registered Dental Hygienist _____

RECOMMENDATIONS: Please indicate the definitive diagnosis and/or level of control. Also provide applicable laboratory test results in the space provided:

Physician Signature _____ Date _____

Adapted with permission from Idaho State University, Department of Dental Hygiene

FIG 15-4 Request for medical consultation.

B. Dental history information should include:

1. Main concern—why the client is seeking dental or dental hygiene care
2. In the case of new clients, the date of the last dental or dental hygiene visit
3. Areas of pain or discomfort identified during the health history interview, but not associated with the client's main concern
4. Nervousness or anxiety about treatment; history of an upsetting experience; the client's need for freedom from anxiety and stress should be addressed
5. Pain, swelling, or gingival bleeding
6. The client's satisfaction with his or her teeth and oral health
7. Past or current orthodontics, periodontal surgery, extractions, temporomandibular joint (TMJ) problems, occlusal equilibration, fixed and removable dentures
8. Oral habits such as clenching or grinding, biting lips or cheeks, mouth breathing, and holding foreign objects between teeth

C. Radiographic history information (see Chapter 6)

1. Purpose—the radiation exposure history of the client should be obtained to make safe decisions for radiographic prescriptions
2. Information should include:
 - a. Whether the client is regularly exposed to radiation in his or her work environment
 - b. The dates and total number of dental and medical films exposed during a 5-year period

Health History Information

See Chapters 7, 8, and 19 for more detailed discussions of health conditions.

A. Screening questions are designed to assess risk factors or undiagnosed diseases to enable a clinician to determine the need for a physician consultation or referral before dental hygiene care (Table 15-1)

Table 15-1

Health History Screening Questions

Risk Factor Category	Sample Questions	Significance of Finding
Overall health	How do you rate your general health? Has there been any change in your general health within the past year? Have you been under the care of a medical doctor during the past 2 years? What is the date of your last physical examination? Have you ever been hospitalized or had a serious illness?	Hospitalization history can provide a good record of past serious illnesses that may be significant to dental hygiene care Knowledge of why a client was hospitalized is used to evaluate the client's ability to tolerate stress involved during treatment Knowledge of any problems for which the client required medical intervention can increase the ability to evaluate the patient's condition before treatment
Weight fluctuation history	Have you unintentionally lost or gained more than 10 pounds in the past year? Are you on a medically recommended diet?	Unexpected weight changes may indicate heart failure, hypothyroidism, hyperthyroidism, or uncontrolled diabetes Information may identify an underlying systemic problem, such as diabetes, hyperthyroidism, or cancer
Cardiovascular disease	When you walk up stairs or take a walk, do you ever have to stop because of pain in your chest or shortness of breath or because you are very tired? Do your ankles swell during the day? Do you require more than two pillows to sleep, or do you have an elevated bed?	Clients with cardiovascular disease are more susceptible to physical or emotional challenges during dental hygiene care These signs may indicate possible valvular disease, arrhythmia, or congestive heart failure
Diabetes	Are you on a medically recommended diet? Do you have to urinate more than six times a day? Are you frequently thirsty? Does your mouth frequently become dry? If yes, what is the probable cause?	Determine family history or potential for diabetes; consultation with a physician may be indicated Complications of diabetes include blindness, hypertension, kidney failure, and delayed healing
Tuberculosis or other respiratory diseases	Do you have a nonproductive persistent cough? Do you have a productive persistent cough? Do you have night sweats? Do you have difficulty breathing?	May indicate current or past history of tuberculosis History of the disease must be defined, and medical consultation may be indicated
Hematologic disorder	Do you bruise easily? Do you have a tendency to bleed longer than normal? Have you ever had a blood transfusion?	Need to determine whether a blood disorder is present; medical consultation may be indicated Concerns about delayed healing, prolonged bleeding, and infection
Latex allergy	Have you experienced a skin reaction (redness, rash, hives, or itching) to adhesive tape, adhesive strips, kitchen gloves, or rubber or latex products? Have you experienced swelling of the lips, tongue, or skin after dental treatment, after blowing up a balloon, or after contact with rubber or latex products? Have you experienced a runny nose, itchy eyes, scratchy throat, or difficulty breathing after contact with rubber or latex products? Do you have an allergy to bananas, kiwis, potatoes, tomatoes, avocados, chestnuts, or other foods?	Need to assess risk for reaction May need medical consultation to determine risk of anaphylaxis Provide a latex-reduced environment

Table 15-2

American Heart Association (AHA) and American Association of Orthopedic Surgeons (AAOS) Antibiotic Premedication Guidelines for Professional Oral Health Care

Dental Procedures That Require Premedication in Highest-Risk Clients*	2007 AHA Recommendations for Cardiac Conditions	2012 AAOS Recommendations for Orthopedic Conditions	Other Conditions That May Necessitate Antibiotic Premedication Based on Physician Consultation
All dental procedures that involve manipulation of gingival tissues or the periapical region of teeth, or perforation of the oral mucosa <i>Note:</i> Clients can receive antibiotic coverage within a 2-hour period if unexpected bleeding occurs, [†] if during treatment the client discloses additional health history information that would indicate need for premedication, or both	Highest-risk category: only people at greatest risk of bad outcomes from infective endocarditis (IE) should receive short-term preventive antibiotics before identified dental (and medical) procedures Patients at the greatest danger of adverse outcomes from IE and for whom preventive antibiotics are worth the risks include those with: – Artificial heart valves – History of having had IE – Certain specific, serious congenital heart conditions, including: – Unrepaired or incompletely repaired cyanotic congenital heart disease, including those with palliative shunts and conduits – Completely repaired congenital heart defect with prosthetic material or device, whether placed by surgery or by catheter interventions, during first 6 months after the procedure – Any repaired congenital heart defect with residual defect at the site or adjacent to the site of a prosthetic patch or prosthetic device – Cardiac transplant that develops a problem in a heart valve	Antibiotic premedication not recommended for all persons who have undergone total joint replacement Treatment decisions should be made in light of all circumstances presented by the patient Immunocompromised or immunosuppressed patients Inflammatory arthropathies (e.g., rheumatoid arthritis, systemic lupus erythematosus) Drug-induced immunosuppression Radiation-induced immunosuppression Patients with comorbidities (e.g., diabetes, obesity, human immunodeficiency virus [HIV], smoking) Previous prosthetic joint infections Malnourishment Hemophilia HIV infection Insulin-dependent (type 1) diabetes Malignancy Megaprotheses	Prophylaxis consultation recommended Renal transplants or dialysis Immunosuppressive therapy (e.g., cyclosporine) Uncontrolled diabetes Sickle cell anemia Spina bifida (ventriculoatrial shunt)

Modified from Committee on Rheumatic Fever, Endocarditis, and Kawasaki Disease: Prevention of infective endocarditis: Guidelines from the American Heart Association, April 19, 2007, www.americanheart.org/presenter.jhtml?identifier=3004539; and from American Academy of Orthopedic Surgeons, American Association of Orthopedic Surgeons: Prevention of orthopedic implant infection in patients undergoing dental procedures: evidence-based guidelines and evidence report, http://www.aaos.org/research/guidelines/PUDP/PUDP_guideline.pdf. Accessed July 20, 2015.

* Every attempt should be made to complete procedures and services in as few appointments as possible; follow-up appointments should be scheduled at least 9 days apart if client is premedicated.

† Clinical judgment may indicate antibiotic use in selected circumstances that may cause significant bleeding.

1. When practitioner questions the client regarding his or her disease status, specific information should include:

- Type and onset of disease
- Treatment received in the past
- Severity of disease or extent of damage
- Type of current medical care
- Results of follow-up testing
- Classification of the client's risk for a medical emergency using the American Society of Anesthesiologists (ASA) Physical Status Classification System (Table 15-3)

Table 15-3

American Society of Anesthesiologists (ASA) Physical Status Classification System* and Stress Reduction Protocols

ASA Classification	Client Risk Description	Examples of Medical Conditions	Precautionary Measures for Stress Reduction
Physical status 1	Normal healthy client without systemic disease Little or no anxiety Elective dental hygiene care can be implemented	Healthy, nonsmoking, no or minimal alcohol use	Determine client's level of anxiety Schedule morning appointment Minimize waiting time Consider shorter appointments for anxious clients Optimize adequate pain control during therapy
Physical status 2	Client with mild systemic disease Healthy client with extreme anxiety Elective dental hygiene care can be implemented with minimal risk, but measures for stress reduction should be taken	Mild diseases only without substantive functional limitations; examples include current smoker, social alcohol drinker, pregnancy, obesity (30 < BMI < 40), well-controlled diabetes or hypertension, mild lung disease	Identify the client's medical risk potential Complete a physician consultation before starting dental hygiene care, as indicated Schedule a morning appointment time Take and record vital signs at each appointment
Physical status 3	Client with severe systemic disease that limits activity but is not incapacitating Elective dental hygiene care is not contraindicated, but risk is increased and precautionary measures for stress reduction should be taken	Substantive functional limitations; one or more moderate to severe diseases; examples include poorly controlled diabetes or hypertension, COPD, morbid obesity (BMI > 40), active hepatitis, alcohol dependence or abuse, implanted pacemaker, moderate reduction of ejection fraction, ESRD patient undergoing regularly scheduled dialysis, premature infant PCA 60 weeks, history (> 3 months) of MI, CVA, TIA, or CAD/stents	Optimize adequate pain control during therapy Shorter appointments, not to exceed 90 minutes Arrange appointments during the beginning of the week (Monday to Wednesday)
Physical status 4	Client with incapacitating systemic disease that is a constant threat to life Elective dental hygiene care is contraindicated until the medical condition has improved to at least ASA physical status 3	Examples include recent (within 3 months) MI, CVA, TIA, or CAD/stents; ongoing cardiac ischemia or severe valve dysfunction; severe reduction of ejection fraction; sepsis; DIC; ARD; ESRD patient not undergoing regularly scheduled dialysis	Immediate medical consultation

Modified from American Society of Anesthesiologists: ASA Physical Status Classification System, www.asahq.org/clinical/physicalstatus.htm; accessed August 20, 2015; and Malamed SF: Knowing your patients, *J Am Dent Assoc* 141:3S-7S, 2010.
ARD, Acute renal disease; BMI, body mass index; CAD, coronary artery disease; COPD, chronic obstructive pulmonary disease; CVA, cerebrovascular accident; DIC, disseminated intravascular coagulation; ESRD, end-stage renal disease; MI, myocardial infarction; PCA, post-conceptual age; TIA, transient ischemic attack.

* Note: Physical status 5 and 6 are used primarily in medical practice.

2. Questions regarding cardiovascular disease (CVD) are significant because clients with various forms of CVD are especially vulnerable to physical or emotional challenges that may be encountered during dental hygiene care; for most CVDs, the stress reduction protocol, based on the ASA system, is necessary (see the sections on "Vasoconstrictors" in Chapter 18; "Congenital Heart Disease," "Cardiac Arrhythmias and Dysrhythmias," "Hypertensive Disease," "Ischemic Heart Disease," "Cerebrovascular Accident," and "Congestive Heart Failure" in Chapter 19; and "Vital Signs" in Chapter 21)
 - a. Hypertension can result in myocardial infarction (MI) and stroke (cerebrovascular accident, CVA) and contribute to arteriosclerosis, impaired kidney function, and cardiac enlargement; hypertension guidelines must be followed during professional care to reduce the risk of a medical emergency (Table 15-4)

Table 15-4
Classification of Adult Blood Pressure (BP) and Precautionary Measures

Category	Systolic (mm Hg)	Diastolic (mm Hg)	Dental Management Considerations
Normal	< 120	and < 80	Routine dental management Recheck at continued-care (recare) visit
Prehypertension	120-139	or 80-89	Routine dental management Advise client of status and recommend lifestyle management Recheck at recare visit
Stage I hypertension	140-159	or 90-99	Monitor BP at consecutive appointments If all exceed these guidelines, seek medical consultation Stress reduction protocol Recheck at recare visit
Stage II hypertension	≥ 160-170	or ≥ 100-110	Recheck BP in 5 minutes If BP still elevated within this range, seek and receive medical consultation before dental hygiene therapy Noninvasive care only Definitive emergency care only if BP is less than 180/110 mm Hg Stress reduction protocol Continue to monitor BP at consecutive appointments Recheck at each visit
Hypertensive crisis	> 180	or > 110	Recheck BP in 5 minutes If BP still elevated, immediate medical consultation is indicated No dental or dental hygiene care, elective or emergent, until BP is decreased Noninvasive emergency care with drugs: analgesics or antibiotics are indicated Refer to hospital for immediate invasive dental care

Modified from Little JW, Miller C, Rhodus NL, Falace D: *Dental management of the medically compromised patient*. St Louis, 2008, Mosby; and US Department of Health and Human Services, National Institutes of Health, National Heart, Lung, and Blood Institute, National High Blood Pressure Education Program: JNC 7 Express. Seventh Report of the Joint National Commission on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure, Bethesda, Md, NIH Pub No 03-5233, 2004, <http://www.nhbi.nih.gov/guidelines/hypertension/jnc7full.htm>; accessed August 20, 2015.

- b. When CVD is identified, it is important for the clinician to conduct a thorough interview to assess the severity and level of control of disease and to determine alterations in care (e.g., physician consultation, antibiotic prophylaxis, stress reduction protocol)
- c. Clients undergoing corrective surgery for congenital heart disease and who have prosthetic material or a prosthetic device are susceptible to transient bacteremia for up to 6 months and must receive antibiotic prophylaxis; at 6 months after surgery, antibiotic prophylaxis is not usually recommended (see Table 15-2)
- d. When antibiotic prophylaxis is necessary, 9 to 10 days should be scheduled between appointments to allow oral bacteria to return to the original state; clients currently following an antibiotic regimen must use an alternative regimen of antibiotic therapy; if antibiotic medication is inadvertently missed, administer within 2 hours after the procedure
3. Questions regarding diseases of the immune system and blood disorders assess a client's potential risk for infection in dental hygiene care and his or her ability to handle stress through the appointment; primary concerns include prolonged bleeding, delayed healing, and secondary infections; physician consultation may be required for more chronic or involved conditions
 - a. For clients with diabetes, concerns exist about a hypoglycemic incident, susceptibility to oral infections (abscesses, periodontal diseases), impaired wound healing, and impaired glycemic control because of the presence of periodontal disease; consultation with a physician is indicated in most cases, and referral is based on health history, dialogue, and oral conditions
 - b. Oral assessment should be initiated to determine the presence of infections and the extent of periodontal disease before consultation with a client's physician; glycated hemoglobin values (A_{1c}) and blood glucose levels are requested from the physician; the client should be asked to bring his or her glucometer, or a glucometer should be available in the oral care facility (Box 15-1)

Box 15-1**Glycemic Management for Adults (Nonpregnant) with Diabetes****Blood Glucose Level (mg/dL)**

< 70	Tendency toward hypoglycemia; give 15 g* of carbohydrate, and wait 15 minutes; monitor again to assess whether the treatment should continue; notify client's physician
70-130 (Preprandial)	Acceptable
< 180 (Peak postprandial)†	
180-239	Risk for infection
> 240	Unacceptable for treatment; refer to a physician, and reschedule or postpone treatment until the client reports control and acceptability of treatment
Glycosylated hemoglobin	Level periodically determined to assess plasma glucose control during the preceding 1 to 3 months
Hemoglobin A _{1c} (HbA _{1c})	Normal range < 6.5%

Modified from American Diabetes Association: Standards of medical care in diabetes 2015. *Clin Diabetes* 33(2):97-111, 2015.

* 15 g = 3 glucose tablets, a tube of glucose gel, or 4 ounces of fruit juice.

† Postprandial glucose measurements should be made 1 to 2 hours after the beginning of the meal.

- c. In clients with well-controlled diabetes, no alteration of the care plan is indicated unless complications of diabetes such as hypertension, congestive heart failure (CHF), MI, angina, or renal failure are present
 - d. Clients with controlled diabetes should eat before appointments; appointments should be scheduled no later than midmorning, and a sugar source must be available in the oral care facility in case of an episode of hypoglycemia or hyperinsulinism
 4. Metabolic syndrome (MetS) is closely associated with insulin resistance, in which the body cannot use insulin efficiently; patients with MetS are at increased risk of coronary heart disease, stroke, peripheral vascular disease, and type 2 diabetes
 - a. MetS is identified by the presence of three or more components: obesity measured by waist circumference (men > 40 inches and women > 35 inches), fasting blood triglycerides (> 150 mg/dL), blood high-density lipoprotein (HDL) cholesterol (men < 40 mg/dL and women < 50 mg/dL), blood pressure (> 130/85 mm Hg), and fasting glucose (> 100 mg/dL)
 - b. Physician referral, medical consultation, or both may be required for clients who do not have regular medical care, to determine the presence of associated conditions or the level of control of existing conditions
 5. Questions regarding respiratory disease or chronic obstructive pulmonary disease (COPD) assess the level of compromised respiratory function; clinicians should use precautionary measures to avoid further depression of respiration (see the section on "Chronic Obstructive Pulmonary Disease" in Chapter 19)
 6. Musculoskeletal system disorders may be associated with chronic use of salicylates or nonsteroidal anti-inflammatory drugs (NSAIDs), which can alter blood clotting and corticosteroid therapy and increase the risk of acute adrenal insufficiency
 7. Neurologic and psychological disorders must be identified and the degree of control determined; medications used to control seizures can cause drug-influenced gingival enlargement, and psychiatric drugs have the potential to interact adversely with the vasoconstrictors in local anesthetic agents
 8. Other disorders, such as glaucoma, sexually transmitted infections (STIs), herpes, chemical dependency, and tobacco use, have significant implications for treatment; in clients with glaucoma, anticholinergics are contraindicated because these agents increase intraocular pressure; chemical dependency and tobacco use are risk factors for infectious diseases, malignancies, CVD, pulmonary diseases, and periodontal diseases; dental hygiene care for clients with active herpes or STIs should be postponed until the disease is no longer active
 9. The physiologic state of women identifies their status related to pregnancy and endocrine changes
 10. The identification of the risk of latex allergy is essential to reduce the chances of an allergic reaction; types of reactions include irritant contact dermatitis, allergic contact dermatitis (delayed hypersensitivity), and latex allergy
 - a. Irritant contact dermatitis—the most common reaction; causes dry, itchy areas of irritation on the skin
 - b. Allergic contact dermatitis (type IV hypersensitivity reaction)—results from exposure to chemicals added to latex during harvesting of rubber, processing, or manufacturing
 - c. Latex allergy, or immediate allergic urticaria (type I hypersensitivity reaction)—results from certain proteins in latex rubber; symptoms range from skin redness, rash, hives, or itching to runny nose, itchy eyes, asthma, and anaphylaxis
 - d. Clients at risk for latex reaction should be treated in a latex-reduced environment; physician consultation is indicated for clients with risk of an anaphylactic reaction
 11. Listing of current medications—used to determine medications taken by the client and possible interactions with other medications; these medications may be the only clue to the client's existing condition (*Physicians' Desk Reference* or *Mosby's Dental Drug Reference* can help with the identification of adverse reactions, precautions, contraindications, and dental considerations)
 12. Identification of medication allergies informs health care professionals of the client's previous adverse reactions to medications
 13. Vital signs (see the section on "Vital Signs" in Chapter 21)
 - a. Vital signs are values given to measurements of blood pressure (BP), respiration, pulse, and temperature; serve as a baseline in a medical emergency
 - b. Abnormal or elevated BP values should be brought to the client's immediate attention; on the basis of the BP values, monitoring of BP at every appointment or a physician consultation may be required before initiation of dental hygiene care (see Table 15-4)
 - c. BP, respirations, and pulse are measured and recorded before the administration of local anesthetic agents or nitrous oxide-oxygen (N₂O-O₂) analgesia
 14. Conditions being treated with medications—may influence or contraindicate certain procedures; for example, anticoagulant therapy may require a lower dose; antihypertensive drugs may alter the choice of local anesthetic; antipsychotic medications may alter the choice of N₂O-O₂ analgesia (see the sections on "Anticoagulants" in Chapter 11; "Toxicity," "Vasoconstrictors," and "Conscious Sedation with Nitrous Oxide-Oxygen" in Chapter 18; and Chapter 21)
 15. Physician consultations—may be necessary, depending on the information obtained from health history or physical examination; written documentation from the physician is necessary (see Fig. 15-1)
 - a. Written informed consent is obtained from the client before submitting the request for physician consultation
 - b. Medical consultation can be faxed or mailed to the physician's office
- C. Health history information is gathered through interviews, written questionnaires, or a combination of both
1. The interview method allows the dental hygienist to develop client rapport and ensures that the client understands the questions
 2. The self-administered written questionnaire is the most common format used to gather information pertaining to the client's health status
 3. Use of both the interview and the written questionnaire is the best approach to collect accurate and comprehensive health information

Extraoral and intraoral assessment

- A. Purpose—to assess and recognize deviations from normal conditions significant to a client's health
- B. Establishment of an assessment sequence that is followed systematically—skills used in performing extraoral and intraoral examination include direct observation, palpation, auscultation, and olfaction
1. Direct observation—visual inspection techniques used to examine a client's movement, body symmetry, color, texture, contour, consistency, and form of skin and mucous membrane
 2. Palpation—sense of touch used to examine for tenderness, texture, masses, and variations in structure and temperature within the head and neck region
 - a. Digital palpation—use of single (index) finger to move or press against the tissue of the floor of the mouth or hard palate
 - b. Bidigital palpation—use of one or more fingers and thumb to move or compress the tissue of lips, tongue, cheeks, and vestibule
 - c. Bimanual palpation—simultaneous use of the index finger of one hand and the fingers and thumb of the other hand to move or compress the tissue of the floor of the mouth
 - d. Manual palpation—use of all the fingers of one hand to move and compress tissue to assess cervical lymph nodes
 - e. Bilateral palpation—use of both hands simultaneously to move or press the tissue on the contralateral sides of the head to assess the submandibular nodes, TMJ, inferior border of mandible, and temporalis and masseter muscles
 - f. Circular compression—use of fingers that move in a rotating, circular motion while slight pressure is applied
 3. Auscultation—listening to and detecting sounds made by the body, such as clicking (crepitation) of the TMJ; speech disorders; and vocal hoarseness
 4. Olfaction—use of the olfactory sense to detect variations in breath odors, such as alcohol breath, fruity ketosis (diabetic acidosis), and halitosis associated with dental caries, periodontitis, and necrotizing ulcerative gingivitis

Extraoral Examination Procedure

See also [Chapter 4](#).

A. Head, neck, and face—the overall appearance of client should be assessed via visual inspection

B. The symmetry of skin, eyes, nose, and ears should be observed; areas of unusual discoloration should be inspected

1. Skin (see the section on “[Skin Diseases](#)” in [Chapter 8](#))

- Normal texture is continuous, firm, and pigmented in relation to normal variations associated with race and ethnicity
- Abnormal textures or pigmentations should be recorded (e.g., scarring, swelling, moles, freckles, pallor, redness, severe acne, tumors, jaundice)
- Abnormal lesions should be measured and documented in writing, with details about color, size, shape, and surface texture

2. Face

- Face and head should be symmetrical and have normal function
- Asymmetry or lack of function may be associated with injury, Bell’s palsy, tumor, abnormal growth and development, difficulty swallowing, Parkinson’s disease, Tourette syndrome, and abuse
- Facial expression can indicate the client’s general frame of mind (e.g., anxious, happy, sad, angry)

3. Eyes (see the section on “[Visual Impairment](#)” in [Chapter 19](#))

- Clarity of the sclera should be noted; a yellowing color may indicate the presence of jaundice
- Excessively dry or irritated eyes may be a result of medication side effects

4. Nose

- Breathing should be assessed; flared nostrils or ragged breath could indicate difficulty breathing
- An enlarged, bulbous, and red nose may be associated with an overgrowth of sebaceous and sweat glands from alcohol abuse (rhinophyma)

5. Ears (see the section on “[Hearing Impairment](#)” in [Chapter 19](#))

C. The symmetry of bones, muscles, lymph nodes, and salivary glands should be observed

1. The inferior border of the mandible should be assessed for asymmetry by using bimanual palpation from the midline to the posterior angle

2. The TMJ and the muscles of mastication should be inspected

- The TMJ should be assessed for deviation, pain, crepitus, grinding, and reduced range in opening or closing; evaluated through client interview and bilateral palpation with index fingers anterior to outer meatus; client is asked to open and close the mouth slowly several times; any deviation or symptomatology is recorded
- Masseter and temporalis muscles are assessed for overdevelopment, pain, swelling, and unusual hardness by using bilateral circular compression; client is asked to clench the teeth together while the muscles are palpated

3. The mentalis muscle is assessed for overdevelopment and smoothness of contraction during the swallowing movement; evaluated by digital palpation; tissue is moved over the mandible, and client is asked to swallow

4. The larynx is assessed for unrestricted movement by bimanual palpation; the larynx is gently moved from side to side to check movement

5. Lymph node chains are assessed ([Fig. 15-5](#))

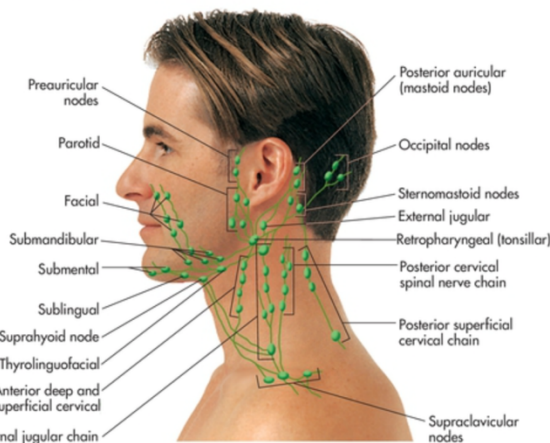
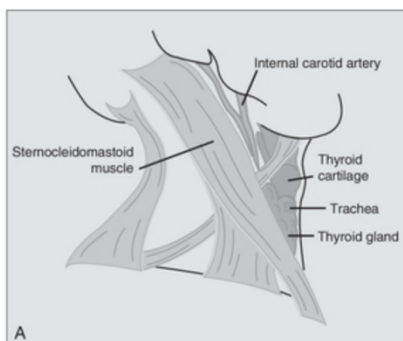


FIG 15-5 A, Location of the thyroid gland and major muscle groups. B, Lymph nodes of the head and neck region. (Modified from Ball JW, et al: *Seidel's guide to physical examination*, ed 8, St Louis, 2015, Elsevier.)

a. Occipital lymph nodes are assessed for pain, swelling, enlargement, unusual hardness, or fixed position by using bilateral palpation

b. Auricular and parotid lymph nodes are examined for pain, swelling, enlargement, unusual hardness, or fixed position by using bilateral palpation

c. Superficial cervical lymph nodes are assessed for pain, enlargement, unusual hardness, and fixed position by placing client’s head to one side with the chin slightly lowered and by palpating with fingers along the sternocleidomastoid muscle

d. Deep cervical lymph nodes are examined for pain, enlargement, unusual hardness, and fixed position by placing client’s head upright and by palpating deep tissues along the sternocleidomastoid muscles with the thumb and fingers

6. Submental and submandibular glands are examined for asymmetry, noncontinuous borders, pain, tenderness, swelling, enlargement, unusual hardness, or difficulty in swallowing by bilateral digital palpation

7. The thyroid gland is assessed for asymmetry and enlargement by a combination of bidigital palpation and circular compression; client is asked to sit upright and to swallow (see [Fig. 4-8](#) in [Chapter 4](#))

8. Parotid glands are examined for pain, swelling, enlargement, and hardness by using bilateral circular compression; salivary flow can be observed at the opening of Stensen’s duct when the gland is compressed

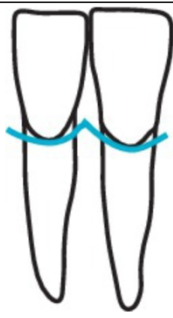
Intraoral Examination Procedure

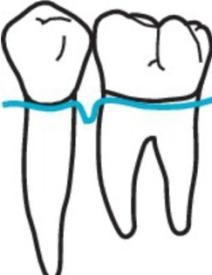

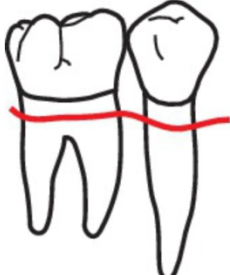
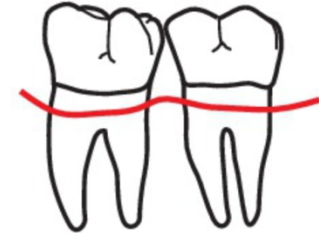

- A. Screen the client to detect lesions that may be pathologic, particularly lesions that may be cancerous
- B. Prevent the development of advanced, irreversible, or untreatable oral disease through early recognition of initial lesions
- C. Oral piercing is a popular form of body art
 1. Inspect the tongue, lips, cheeks, frenum, and uvula for piercings
 2. Barbells and rings are the most common types of jewelry
 3. Complications from piercing include excessive hemorrhage; transmission of communicable diseases; nerve damage; infection; bacteremia; Ludwig’s angina; cracked, fractured, or abraded teeth; recession; dehiscence; and aspiration or ingestion of jewelry¹⁰
 4. Jewelry should be removed during the radiography procedure
- D. The oral mucosa, lips, floor of the mouth, tongue, salivary ducts, hard and soft palates, and oropharynx should be examined and evaluated (see [Table 5-1](#) and [Figs. 5-1 to 5-8 in Chapter 5](#))
 1. The lips are examined by visual inspection and palpation for:
 - a. Changes in size—may be caused by swelling or allergic reaction
 - b. Chapping—may be caused by mouth breathing or nutritional deficiency
 - c. Blistering—may be associated with herpetic lesions
 - d. Cracking—may be associated with angular cheilosis, candidiasis, or vitamin B deficiency (see the section on “[Vitamins](#)” and [Table 12-4 in Chapter 12](#))
 - e. Scar tissue or irritations—may be associated with habitual lip biting or trauma; bruising at commissures may indicate binding or gagging associated with physical abuse
 - f. Abnormal texture, lack of moistness or firmness—may be associated with dehydration and excessive sun exposure
 - g. Limitations of opening; muscle elasticity, and muscle tone—may be associated with stroke or TMJ dysfunction
 2. Labial and alveolar mucosa and the gingiva are examined by using bilateral and bidigital palpation
 - a. Signs of tissue trauma from biting, toothbrush abrasion, burns, or physical abuse; lacerated or torn frenum (tissue tags) may indicate binding, gagging, or forced feeding
 - b. Ulcerated lesions such as herpetic lesions or aphthous ulcers
 - c. Tight or low frenum attachments, which can cause gingival defects such as recession and loss of attached gingiva
 - d. “Spit tobacco” lesion (leukoplakia), hyperkeratinized tissue; white, sometimes corrugated in appearance; client should be taught self-assessment techniques
 - e. Amalgam tattoo, blue-and-black coloration, size variations—can be found on any area of soft tissue (see section on “[Conditions of Oral Soft Tissues](#)” in [Chapter 8](#))
 - f. Fordyce granules—ectopic sebaceous glands
 3. The buccal mucosa is assessed by using bidigital palpation; the mouth mirror is used to reflect light and to inspect the buccal mucosa
 - a. The buccal mucosa is examined for color and texture
 - b. The parotid papilla and duct (Stensen’s duct) are evaluated; the duct is palpated to assess salivary function
 - c. Atypical findings include traumatic lesions related to cheek biting, linea alba adjacent to occlusal plane, ectopic sebaceous glands (Fordyce granules)
 4. Hard and soft palates and alveolar ridges are examined by visual inspection; the mouth mirror is used to reflect light; digital palpation is used on the hard palate and alveolar ridges; palpation is not recommended for soft palate to avoid triggering the gag reflex
 - a. The hard palate, including the incisive papilla, rugae, and palatine fovea, is examined and assessed for:
 - (1) Shape of the palate—low, high, narrow vault; alterations in shape may require alteration in oral radiographic techniques
 - (2) Petechiae, torus palatinus, trauma (food burns, denture irritation), stomatitis (nicotine, ulcerative, necrotizing, and denture), fistulas from draining abscesses, denture-related candidiasis (see [Chapter 8](#))
 - b. The soft palate is assessed for inflammation, petechiae, trauma, stomatitis, and bifid uvula
 - c. Alveolar ridges are assessed for impacted third molars, scarring from third-molar extractions, opercula, and exostosis
 5. Oropharynx is assessed by visual inspection with a mouth mirror
 - a. Client is asked to say “ah” to relax and lower the posterior portion of the tongue
 - b. Anterior and posterior pillars are assessed for inflammation, petechiae, trauma, stomatitis, and enlarged tonsillar tissues
 6. Floor of the mouth is examined by visual inspection and bimanual palpation
 - a. Function of the submandibular gland is tested by wiping each Wharton’s duct with gauze and compressing it with a gloved finger to observe salivary flow
 - b. Entire floor of the mouth is palpated; the finger of one hand and the finger and thumb of the other hand are placed under client’s chin to palpate
 - c. Enlargement or masses, Wharton’s duct, sublingual caruncle, and lingual frenum are assessed
 - d. Varicosities, tight frenum attachment (ankyloglossia), and blocked salivary duct are inspected
 - e. Exostosis along lingual surface of mandible and mandibular tori—significant if interfering with prosthetic appliances
 7. The tongue is examined by visual inspection and digital palpation
 - a. The dorsal surface is inspected; the entire tongue is palpated, and the lateral borders of the tongue are examined by using gauze to gently hold the tongue
 - b. The ventral surface is examined by having client touch the palate with the tongue
 - c. The tongue is assessed for:
 - (1) Coating on the dorsal surface and the condition of papillae; the extent is assessed
 - (2) Size; macroglossia associated with Down syndrome or cretinism (see the section on “[Down Syndrome](#)” in [Chapter 19](#))
 - (3) Lingual frenum; tight frenum restricting movement (ankyloglossia)
 - (4) Fissured tongue; deep grooves and crevices along the lateral borders and the dorsal surface; the lateral borders are common sites of oral cancer
 - (5) Geographic tongue—benign condition in which a sporadic migration of dorsal papilla occurs; tenderness is assessed
 - (6) Nutritional deficiencies; burning or glossy tongue (see the section on “[Abnormalities Affecting the Tongue](#)” in [Chapter 8](#))
 - (7) Black hairy tongue related to proliferation of filiform papillae; caused by irritants such as smoking, alcohol, and rinsing with hydrogen peroxide (see the section on “[Abnormalities Affecting the Tongue](#)” in [Chapter 8](#))
 - (8) Hairy leukoplakia caused by extensions of keratin on the lateral borders of the tongue; associated with HIV infection
 - (9) Atypical lesions, including aphthous ulcerations, trauma-associated fibroma, hemangiomas, and white plaque

Assessment of dentition

- A. Purpose—to assess and document the position and condition of teeth, restorations, and dental caries, noting normal and abnormal findings on a detailed dentition chart
 1. Used for care planning, communication with client, legal documentation, forensic use, and financial audits
 2. Components include study models, occlusion assessment, dentition charting, pulp vitality testing, and strain assessment
- B. Study models—impressions for study models taken to obtain visual reproduction of teeth, gingiva, and adjacent intraoral structures and to assist with dentition and periodontal charting
- C. Occlusion assessment—presence of malocclusion or tooth position determined; signs of parafunctional habits resulting in occlusal traumatism noted (see the sections on “[Intra-arch and Interarch Relationships](#)” in [Chapter 5](#) and “[Clinical Assessment of the Periodontium](#)” in [Chapter 14](#))
- D. Dentition charting—graphic representation of a client’s teeth at assessment (see [Table 15-5](#))

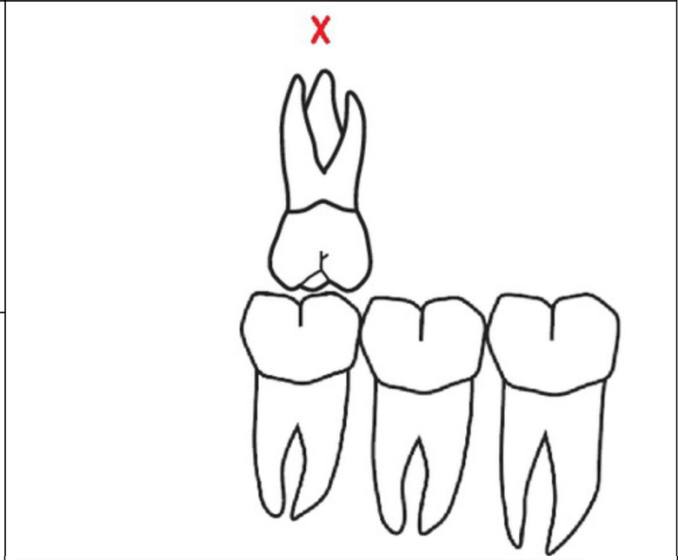
Table 15-5
Periodontal Assessment Symbols

Term	Procedure	Symbol
Gingiva		
Blunted papilla	Indicate by placing a straight horizontal line in the affected interproximal space	

Cratered papilla	Indicate by drawing the shape of the crater in the affected interproximal space from the buccal or lingual space							
Inadequate amount of attached gingiva	Indicate when less than 1 mm of attached gingiva is present; calculate by measuring from the margin of free gingiva to the mucogingival junction, and subtract from the pocket depth measurement	 <p style="text-align: center;">NAG IAG</p> <p>NAG = no attached gingiva IAG = inadequate attached gingiva</p>						
Recession	Measure the amount of recession in millimeters from the margin of the free gingiva to the cemento-enamel junction; draw the gingival margin							
Loss of attachment	Measure the amount of recession in millimeters from the margin of the free gingiva to the cemento-enamel junction; add to the depth of the pocket	 <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td>PD</td> <td>222</td> <td>212</td> </tr> <tr> <td>LOA</td> <td>4</td> <td>3</td> </tr> </table>	PD	222	212	LOA	4	3
PD	222	212						
LOA	4	3						
Frenum pull	Indicate any abnormal muscle pull on the gingiva, attachment of the free gingiva, or tight frenums by placing a symbol in the area where it occurs							

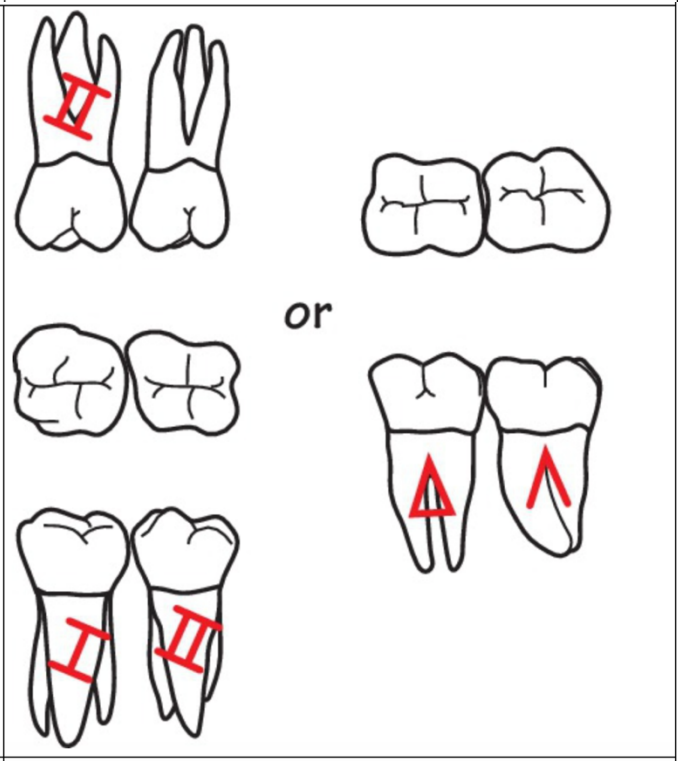
Exudate Indicate by placing an X above the affected tooth

Probing depth Measure from the margin of the free gingiva to the junctional epithelium; record all readings and all areas of hemorrhage



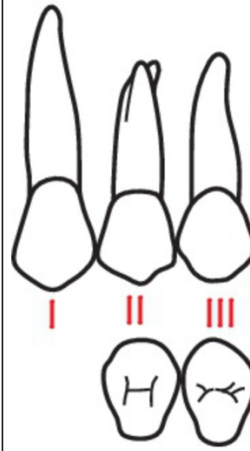
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Furcation involvement (class I, II, III, or IV) Use Roman numerals on the affected area to depict the extent of the furcation from the buccal or lingual bifurcation or trifurcation, or use a triangle in the furcation area showing class I (partial triangle), class II (complete triangle unfilled), or class III (triangle completely filled in)



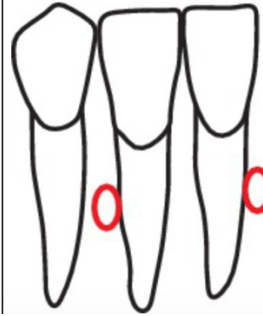
Mobility (class I, 2, or 3 or I, II, or III)

Record on the basis of degree of tooth movement



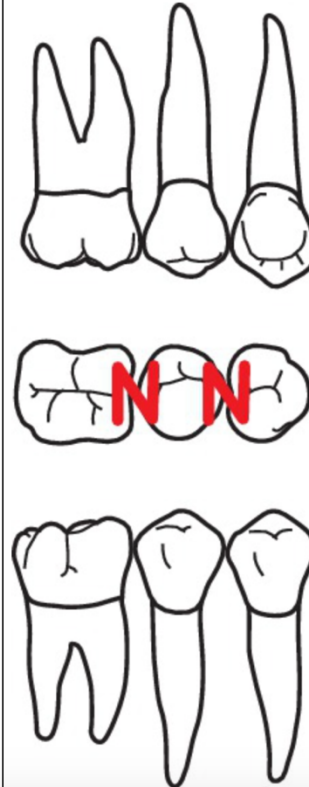
Periodontal pathology

Outline the affected area, approximating the size and location of the radiolucency observed on the radiograph



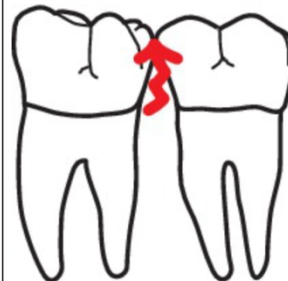
Marginal ridge discrepancy

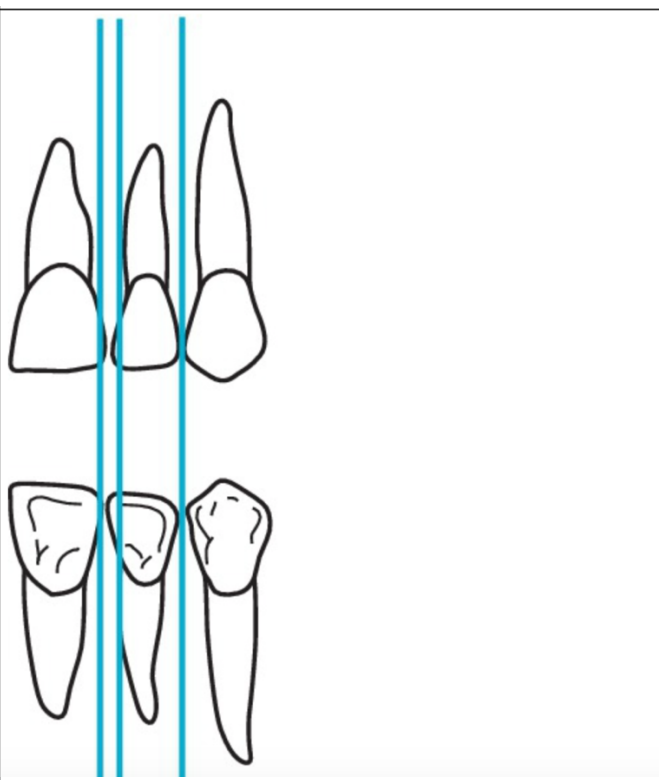
Place an N in the area of the occlusal contact when adjacent marginal ridges are not equal in height



Food impaction

Indicate by placing a zigzag arrow in the interproximal space



Deficient contacts	<p>Indicate a loose contact by drawing a single vertical line in the interproximal space</p> <p>Indicate an open contact by drawing two vertical lines in the interproximal space</p>	
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1. Includes developmental anomalies and defects, condition of teeth, dental caries activity, restorative history, and other problems; a combination of radiographs and direct visual inspection is used to assist with accurate recording of tooth assessment (Box 15-2)

Box 15-2

Systematic Approach for Dentition Charting Sequence

Complete a general appraisal of teeth, and note developmental anomalies and defects affecting tooth shape, number of teeth, tooth size, and presence of partial or complete dentures (e.g., generalized moderate fluorosis, amelogenesis imperfecta, peg laterals, number of teeth present, mandibular partial denture)

Chart all missing or erupted supernumerary teeth before recording specific tooth-by-tooth information

Using radiographs, chart all unerupted or impacted teeth

Chart teeth indicated for extraction

Chart existing restorations (amalgam, tooth-colored, and temporary restorations; inlays, onlays, and gold foils; crowns, veneers, and bridges)

Chart signs of tooth damage (dental caries, risk areas, attrition)

Chart areas of plaque-retentive factors and defective restorations needing replacement (overhangs, deficient margins, unpolished amalgam restorations, fractured restorations, improper anatomical contour, occlusal surfaces indicated for pit-and-fissure sealants)

When treatment has been completed on teeth indicated for restorative or supportive care, update the chart using a different color to quickly identify teeth that were restored after original baseline charting

Update the dentition charting at each recare visit, and record any areas of change

2. Office guides and professional organizations' dentition charting symbols may be adopted for use; the ADA's National Board Dental Examination (NBDE) provides a dental charting symbol key in each client case used
3. Universal Numbering System—most widely used notation system; permanent teeth numbered from 1 to 32 and primary teeth lettered from A to T; 1 to 16 or A to J are located on the maxillary arch, moving right to left; 17 to 32 or K to T are located on the mandibular arch, moving left to right (from client's perspective)
4. Developmental anomalies that affect enamel and dentin, developmental defects that affect tooth shape, number of teeth, and tooth size are noted (see the section on "Abnormalities of Teeth" in Chapter 8)
5. Tooth positions, eruption patterns, and missing teeth are recorded (see the sections on "Eruption" and "Intra-arch and Interarch Relationships" in Chapter 5)
6. Tooth damage that results in loss of integrity of tooth surface is recorded; common forms of damage include attrition, abrasion, erosion, fracture, and dental caries (see the section on "Abnormalities of Teeth" in Chapter 8)
 - a. Classification for carious lesions includes rate, direction, and type of disease progression; used to determine level of priority for restorative therapy
 - (1) Rampant caries—a rapidly progressive decay process that affects the smooth surfaces of numerous teeth and requires urgent intervention; frequently found with early-childhood caries (formerly called *nursing bottle syndrome*)
 - (2) Chronic caries—slow progressive decay process
 - (3) Arrested caries—carious lesion that has been reversed because of the remineralization process
 - (4) Backward caries—lateral spread of decay at the dentino-enamel junction through an undermining process; the surface lesion appears small, but destruction is extensive underneath¹²
 - (5) Recurrent or secondary caries—new decay located around existing restorations
 - b. Carious lesions described by specific location on tooth surface (see the section on "Dental Caries" in Chapter 9)
 - (1) Pit-and-fissure caries—develop in the pits and grooves of the occlusal surfaces of premolars and molars, lingual pits of maxillary incisors, buccal grooves of mandibular molars, and lingual grooves of maxillary molars; pit-and-fissure sealants are an effective preventive strategy to protect tooth surfaces (see the sections on "Pit-and-Fissure Sealants" in Chapter 13 and "Dental Sealants" in Chapter 16)
 - (2) Smooth surface caries—found on the facial, lingual, mesial, and distal surfaces of teeth
 - (3) Root caries—found on exposed root surfaces
- c. G.V. Black's classification of dental caries and restorations provides a precise description of the types and location of caries and restorations
 - (1) Class I—pits and fissures on the occlusal, buccal, and lingual surfaces of posterior teeth and the lingual surfaces of anterior teeth
 - (2) Class II—proximal surface of posterior teeth, usually involving the occlusal surfaces
 - (3) Class III—proximal surfaces of incisors and canines, not including the incisal edge
 - (4) Class IV—proximal surfaces of incisors and canines, including the incisal edge
 - (5) Class V—gingival third of facial or lingual surfaces of any tooth
 - (6) Class VI—cusp tips of posterior teeth and the incisal edge of anterior teeth

8. Charting of existing restorations, treatment procedures (endodontics, apicoectomy), and tooth replacement methods (implants, crown, bridge) completed by using accepted dental symbols
 - a. Restorations should be charted with G.V. Black's classification system and should reflect the actual restoration
 - b. The restoration morphology, margin quality and location, and biocompatibility of restorative material with soft tissue are evaluated¹³
 - (1) The restoration and the surrounding tooth structure are assessed for new or recurrent dental caries
 - (2) The marginal and structural integrity assessed for open margins or signs of restorative material fatigue or fractures; the appropriate margin is smooth to tactile evaluation and does not show any overhang
 - (3) The interproximal and occlusal contours and the proximal contact are assessed; the appropriateness of faciolingual and occlusocervical dimensions are determined; indication for amalgam polishing or recontouring to improve restoration is assessed
 - (4) Surface finish is assessed to determine whether it meets the functional and esthetic requirements of the client; indication for amalgam polishing or finishing is assessed
 - c. Faulty restorations are usually in need of replacement because of the presence of recurrent dental caries, fractures, or factors that encourage microbial plaque biofilm retention and may contribute to the development of secondary caries, periodontal disease, and dentinal hypersensitivity
 - d. Overhangs on class II restorations should be assessed for removal (margination procedures) to correct defective margins and to provide a smooth surface that will not harbor bacterial plaque biofilm.^{13,14}
 - (1) Type I overhang—less than one third of the interproximal space; treated with margination procedure and repolishing of restoration; may be detected radiographically
 - (2) Type II overhang—one third to one half of the interproximal embrasure space; treated with margination procedure if the predicted final result is good (prognosis for the tooth, complexity, and cost of replacement are considered); usually radiographically and clinically detectable
 - (3) Type III overhang—more than half of the interproximal embrasure space; treated with replacement of restoration; clinically and radiographically detectable
9. Implant identification (see the sections on “Dental Implants” in Chapters 13 and 14)—to assess for peri-implantitis and the stability of the implant
10. Prosthetic appliances—assessed for stability and functionality
- E. Pulpal vitality testing—when applicable (see the section on “Pulpal Vitality and Testing Devices” in Chapter 16)
- F. Stain assessment (see the section on “Selective Stain Removal” in Chapter 17)—to determine the extent and type of stain present
 1. Stains are primarily factors related to esthetics; result from deposits of chromogenic bacteria, foods, and chemicals
 2. Heavy tobacco stains encourage bacterial plaque biofilm retention

Periodontal assessment

See the section on “Clinical Assessment of the Periodontium” in Chapter 14.

- A. Recognition of oral health, gingivitis, or periodontitis must occur through systematic and comprehensive periodontal examination to determine whether oral prophylaxis, nonsurgical periodontal therapy (NSPT), periodontal maintenance (PM), or other periodontal therapy is indicated and to what extent¹⁵ (Table 15-5)
- B. During general periodontal examination, anatomical features such as position, size, and shape of gingiva and interdental papillae and position of frena must be recorded
 1. The presence, location, and severity of gingival inflammation are assessed—soft tissue description (color, texture, consistency, marginal and papillary shape)
 2. Mucogingival relationships are evaluated to identify the deficiencies of keratinized tissue, abnormal frenum insertions, and other tissue abnormalities, such as clinically significant gingival recession (e.g., recession, loss of attachment/clinical attachment level, attached gingiva)
- C. Periodontal probing is done to assess the probing depth and to provide information on the health of subgingival areas, including the presence of bleeding on probing (see the section on “Clinical Assessment Using Periodontal Probes” in Chapter 17)
 1. Probing depths are measured on six tooth sites (distofacial, facial, mesiofacial, distolingual, lingual, mesiolingual) and recorded on the periodontal chart
 2. Clinical pocket depth measurements and loss of attachment readings are used to determine the presence of pseudopockets (false or gingival pockets) or periodontal pockets
- D. Periodontal soft tissues, including peri-implant tissues, should be examined
- E. The presence of purulent exudates and gingival crevicular fluid (GCF) should be determined; increased GCF and purulent exudate indicate inflammatory changes within the pocket wall; these are considered risk factors for disease progression and require further assessment to determine cause and to plan interventions
- F. The presence and amount of bleeding on probing is noted to assist in the determination of disease severity
- G. The presence and distribution of bacterial plaque biofilm and calculus—location, extent, and tenacity of deposits are identified to assist with appropriate care planning and instrument selection (see the section on “Clinical Assessment with Dental Explorers” in Chapter 17)
- H. Degree of mobility of teeth and dental implants
 1. Mobility—risk factor for periodontal disease progression; should be measured when moderate to advanced disease is present
 2. Measured by bidigital evaluation when teeth are not occluded and by direct observation (fremitus) when teeth are occluded; classified by degree of movement
 - a. Class I or I—slight mobility, greater than normal
 - b. Class 2 or II—moderate mobility, greater than 1 mm
 - c. Class 3 or III—severe mobility, tooth can move in all directions and can be depressed into the socket
 3. Contributing factors—trauma from occlusion, inflammation in periodontal ligament, periodontal surgery, physiochemical changes (pregnancy or hormonal changes) in periodontal tissues, and pathologic conditions (tumors)¹⁶
- I. The presence, location, and degree of clinical furcation involvement are determined
 1. Occurs when loss of attachment extends into bifurcation or trifurcation of multi-rooted teeth; classified by degree of involvement
 - a. Class I—exposure of furcation; but bone remains between roots
 - b. Class II—loss of some bone between roots; but not complete communication from one surface to another
 - c. Class III—through-and-through involvement with complete loss of bone between roots; opening covered by gingiva
 - d. Class IV—through-and-through involvement with complete loss of bone between roots; entrance clearly visible
 2. Furcation involvement—risk factor in predicting periodontal breakdown; compromises the prognosis of a tooth; detection and thorough periodontal debridement essential at the earliest point
- J. Bacterial culturing, genetic testing, deoxyribonucleic acid (DNA) or ribonucleic acid (RNA) probes, antibody and enzyme markers should be used, when indicated (see the section on “Clinical Assessment of the Periodontium” in Chapter 14)
 1. Microbial assessments are not recommended routinely because tests fail to identify specific diseases or predict disease progression; however, microbiologic monitoring may be used in clients who continue to experience disease progression despite regular NSPT, surgical intervention, and effective oral self-care; those at high risk for disease progression or medically compromised clients with aggressive periodontitis may benefit from microbiologic monitoring
 2. Commercially available genetic tests assess susceptibility to chronic periodontitis and assist in risk assessment
 3. Salivary diagnostic advances allow for identification of periodontal bacteria and genetic testing; although use in clinical practice is limited, this diagnostic assessment tool is expanding¹⁷

Radiographic evaluation

See the sections on “Radiology Techniques: Intraoral and Extraoral” and “Radiographic Interpretation” in Chapter 6.

- A. A satisfactory number of diagnostic-quality periapical and bitewing radiographs are exposed and interpreted during the assessment phase of therapy
- B. Depending on the diagnostic needs of the client, current radiographs are used for the proper evaluation and interpretation of the status of the dentition, periodontium, and dental implants
- C. Any radiographic abnormalities are noted in the client's chart, and appropriate follow-up or referral is done
- D. Digital subtraction radiology is used to detect and measure small changes in living bone (progressive bone loss or bone fill) that would otherwise go unnoticed with traditional technology

Oral hygiene assessment

- A. Oral hygiene assessment—review of current home care practices, adherence levels, oral health and hygiene knowledge, skill levels, and psychosocial factors that might influence behaviors and oral habits; assists in the development of effective self-care educational sessions during the implementation phase of care (see Chapter 16)
- B. Indices—tools to measure and score periodontal assessment factors such as plaque biofilm, calculus, and bleeding for the benefit of both the clinician and the client (see the section on “Clinical Assessment of the Periodontium” in Chapter 14 and Table 20-11 in Chapter 20)
- C. Oral self-care methods—used by a client to remove or reduce bacterial biofilm both supragingivally and subgingivally (1 to 3 mm); oral hygiene measures, oral home care, plaque biofilm control, and mechanical plaque biofilm removal are synonymous with oral self-care methods (see the sections on “Dental Plaque Biofilm Detection,” “Mechanical Plaque Biofilm Control on Facial, Lingual, and Occlusal Tooth Surfaces,” “Interdental Plaque Biofilm Control,” and “Care of Fixed and Removable Prosthesis” in Chapter 16)
 1. Determination of the use, frequency, and methods of plaque biofilm removal devices, dentifrices, mouthrinses, and fluorides
 2. Determination of the frequency of tobacco use, oral habits, and sugar intake
 3. Assessment of a client's skill level for oral self-care
 - a. Skill deficiency—present if the client does not have the knowledge and the psychomotor ability to perform mechanical plaque biofilm removal
 - b. Management deficiency—present if the client possesses the ability but does not perform plaque biofilm removal effectively on a daily basis
 4. Assessment of a client's motivation and readiness for behavior change
- D. Evaluation of dietary risk factors for dental caries; recommendations offered to reduce total sugar clearance time per day (see the section on “Nutritional Assessment and Counseling” in Chapter 12)

Risk factor assessments

- A. Risk factors—factors that significantly increase the risk for the onset or progression of a specific disease; include systemic disease, oropharyngeal cancer, caries, and periodontal disease risk factors
- B. Systemic disease—risk factor for periodontal disease, and in some cases, periodontal disease is considered a contributing factor for systemic conditions; CVD, diabetes mellitus, respiratory disease, osteoporosis, and preterm low birth weight (see Chapter 14); when these conditions are present, consider the following American Academy of Periodontology recommendations^{18,19}
 1. Diagnose the periodontal condition, and inform the client of his or her risk for systemic disease
 2. Consultation with client’s physician may be indicated to advise the physician about the client’s periodontal status and the proposed care plan
 3. Determine the level of control or the status of disease, such as gestational period, medications used, and glycemic control
 4. Provide self-care education regarding the relationship of periodontal infection to systemic health and of systemic health to periodontal disease
 5. Provide adequate NSPT, and encourage the client to commit to periodontal maintenance care
- C. Oral and pharyngeal cancer risk—determined by evaluating risk factors such as socioeconomic status, tobacco use, race, alcohol use, sun exposure, gender, and age to formulate appropriate care plan and intervention to reduce risk: use the ADHA’s tobacco cessation initiative Ask, Advise, Refer based on U.S Department of Health and Human Services Clinical Practice Guidelines²⁰
- D. Caries risk—determined by assessing protective and causative factors (e.g., frequency of sugar intake, high cariogenic bacteria count, biofilm removal ability, salivary dysfunction, biofilm-retentive factors, recare and fluoride history) to formulate appropriate care plan to reduce the client’s risk (Table 15-6)

Table 15-6
Classification of Caries Risk

Risk Level	Children (0 to 5 years)	Children (6 years and older) and Adults
Low	<p><i>No evidence of:</i></p> <ul style="list-style-type: none"> - Carious or incipient lesions, restorations, or tooth loss caused by caries in past 2 years - Caries activity in the mother or other siblings in the past 2 years - Dental or orthodontic appliances - Plaque biofilm present - Inadequate salivary flow - Special care health needs - Not eligible for government programs <p><i>Evidence of:</i></p> <ul style="list-style-type: none"> - Optimal fluoride exposure - Regular recare intervals - Eating sugary or starchy foods or drinks with meals or infrequent exposure 	<p><i>No evidence of:</i></p> <ul style="list-style-type: none"> - Carious or incipient lesions, restorations, or tooth loss caused by caries in past 3 years - Caries activity in the mother or other siblings in the past 2 years - Interproximal restorations or restorations with plaque-retentive factors or open contacts - Dental or orthodontic appliances - Exposed root surfaces - Plaque biofilm present - Special care health needs - Chemotherapy or radiation therapy - Smokeless tobacco use - Eating disorders - Drug/alcohol abuse <p><i>Evidence of:</i></p> <ul style="list-style-type: none"> - Adequate salivary flow - Optimal fluoride exposure - Regular recare intervals - Eating sugary or starchy foods or drinks with meals or infrequent exposure - Low count of cariogenic bacteria - Well-coalesced pits and fissures
Moderate	<p><i>No evidence of:</i></p> <ul style="list-style-type: none"> - Fluoride exposure - Regular recare or dental home <p><i>Evidence of:</i></p> <ul style="list-style-type: none"> - Caries activity in the mother or other siblings in the past 7 to 23 months - Frequent or prolonged exposure to sugary or starchy foods or drinks between meals - Dental or orthodontic appliances - Visible plaque biofilm 	<p><i>No evidence of:</i></p> <ul style="list-style-type: none"> - Fluoride exposure - Regular recare or dental home <p><i>Evidence of:</i></p> <ul style="list-style-type: none"> - One or two new carious or incipient lesions, restorations, or tooth loss caused by caries in the past 3 years - Caries activity in the mother or other siblings in the past 7 to 23 months - Interproximal restorations or restorations with plaque-retentive factors or open contacts - Dental or orthodontic appliances - Exposed root surfaces - Visible plaque biofilm - Special care health needs - Smokeless tobacco use - Eating disorders - Drug or alcohol abuse - Deep pits and fissures or developmental defects
High	<p><i>No evidence of:</i></p> <ul style="list-style-type: none"> - Fluoride exposure - Regular recare or dental home <p><i>Evidence of:</i></p> <ul style="list-style-type: none"> - Caries activity in the mother or other siblings in the past 6 months - Carious or incipient lesions - Restorations or tooth loss caused by caries in the past 2 years - Bottle or sippy cup at bedtime with juice or sugar (cariogenic agent) - Eligibility for government program - Special care health needs - Inadequate saliva flow related to hyposalivary medications, cancer treatment, or genetic factors 	<p><i>No evidence of:</i></p> <ul style="list-style-type: none"> - Fluoride exposure - Regular recare or dental home <p><i>Evidence of:</i></p> <ul style="list-style-type: none"> - Three or more carious or incipient lesions, restorations, or tooth loss caused by caries in the past 3 years - Caries activity in the mother or other siblings in the past 6 months - High levels of cariogenic bacteria <i>Streptococcus mutans</i> (105 CFU/mL) and lactobacilli (103 CFU/mL) - Frequent or prolonged exposure to sugary or starchy foods or drinks between meals - Special care health needs - Chemotherapy or radiation therapy - Inadequate saliva flow related to hyposalivary medications, cancer treatment, or genetic factors

Modified from American Academy of Pediatric Dentistry: Guideline on caries-risk management for infants, children, and adolescents, *Pediatr Dent* 35(5):E157-E164, 2013; and American Dental Association, Councils on Dental Practice and Scientific Affairs: Caries risk assessment form. http://gsa.ada.org/search?as_sitesearch=www.ada.org/sections/professional/resources/docs&q=caries+risk&searchButton.x=0&searchButton.y=0&site=ADAorg_Collection&client=ADAFrontEnd&proxystylesheet=ADAFrontEnd&output=xml:no_dtd&ie=UTF-8&ip=24.117.153.112&access=pp&sort=date%3AD%3A%3Ad1&entqr=3&oe=UTF-8&ud=1. Accessed August 20, 2015.

CFU/mL, Colony-forming units per milliliter.

1. Sugar intake assessment includes determining the form and frequency of exposure and offering appropriate recommendations to reduce exposure
 2. Plaque-retentive factors (restoration overhangs, defective and poorly fitting crown margins, dental caries, exposed root surfaces, excess cement, xerostomia) should be identified and eliminated or minimized
 3. Use of topical fluoride or chemotherapeutic agents (e.g., antimicrobial mouthrinses and dentifrices, products with xylitol) should be assessed and prescribed if not already being used by the client
 4. Recare regularity is evaluated and adjusted on the basis of the level of caries risk
- E. Periodontal risk—assessed by determining dental and host-environmental risk factors and risk indicators (e.g., history of previous aggressive disease, increased pocket probing depth, loss of clinical attachment, infrequent dental visits, stress, poor oral hygiene, specific bacterial pathogens, tobacco use, diabetes mellitus with poor glycemic control, inherited risk) and by determining signs and symptoms of disease to assist with the formulation of accurate diagnosis and plan of care (see the section on “Changes in the Periodontium Associated with Disease” in Chapter 14)

Diagnosis

- A. Definition—clinical diagnosis by licensed dental hygienist that identifies actual or potential unmet human needs (deficits) related to oral health or disease that a dental hygienist is educated and licensed to treat or refer for care;⁷ the second phase in the dental hygiene process of care (see Fig. 15-1)
- B. Dental diagnosis identifies a specific oral disease, whereas dental hygiene diagnosis identifies human needs deficits related to dental hygiene care
- C. Interpretation of collected data during assessment phase of care is necessary to identify significant findings, recognize deviations from normal, describe abnormalities, and analyze significance of the abnormalities
1. Analysis of assessment data used to identify deviations from normal values and to identify patterns or relationships within data
 2. Synthesis combines elements from data to develop explanations for symptoms
 - a. Inductive reasoning finds possible patterns in observations to predict new information
 - b. Deductive reasoning begins with generalizations and proceeds to discover specific facts
- D. Identification of unmet human needs related to oral health or systemic problems provides a unique focus for the provision of dental hygiene care
- E. Validation allows for the recognition of errors and discrepancies, the need for additional information from the client or from other health care professionals, or the reinterpretation of documented evidence
- F. Diagnostic statements are formulated after data analysis and validation; become framework for planning, implementation, and evaluation phases of care; Fig. 15-6 shows three major components of written diagnostic statements:

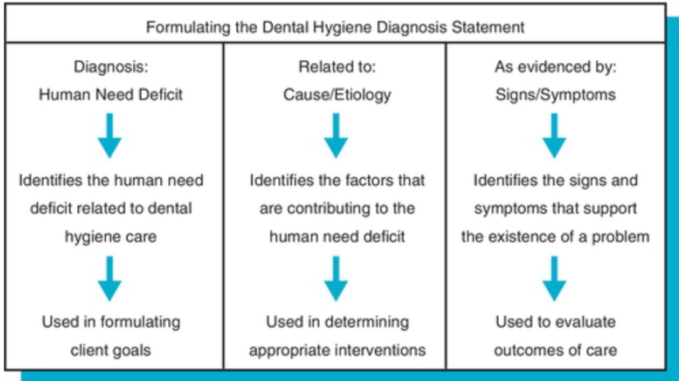


FIG 15-6 Dental hygiene diagnosis. (Modified from Darby ML, Walsh MM: Application of the human needs conceptual model to dental hygiene practice, *J Dent Hyg* 74(3):233, 2000.)

1. Condition or problem, or potential problem, as identified by unmet human needs (diagnosis) related to dental hygiene care; used to formulate client goals
2. Identification of contributing or causative factors related to unmet human needs; used to determine appropriate dental hygiene interventions
3. Signs and symptoms (evidence) of unmet human needs that support existence of problem; used to evaluate outcomes of dental hygiene care

Prognosis

- A. Definition—prediction of duration, course, and termination of disease and response to treatment; usually determined after diagnosis and before care is planned
- B. Overall prognosis considers both oral and systemic health and the significance of factors present (e.g., type of periodontal disease, age, socioeconomic status, systemic conditions, malocclusion, periodontal status, complicated prosthesis, tobacco use, cooperation of client)
- C. Prognosis for individual teeth made after overall prognosis is determined and relates to mobility, periodontal pockets, adequacy of attached gingiva, mucogingival involvement, furcation involvement, tooth morphology, status of teeth serving as abutments, bone level surrounding tooth, and extensive caries
- D. Level of prognosis established through collaboration of the dental hygienist and the dentist after comprehensive assessment²¹
 - 1. Excellent prognosis—no bone loss, excellent gingival conditions, and adequate client commitment to care
 - 2. Good prognosis—adequate remaining bone support, adequate possibilities to control causative and risk factors, and adequate client commitment to care
 - 3. Fair prognosis—less-than-adequate remaining bone support, some tooth mobility, grade I furcation involvement, adequate maintenance possible, and acceptable client commitment to care
 - 4. Poor prognosis—moderate to advanced bone loss, tooth mobility, grade I and II furcation involvement, difficult areas to maintain, and doubtful client commitment to care
 - 5. Questionable prognosis—advanced bone loss, grade II and III furcation involvement, tooth mobility, and inaccessible areas
 - 6. Hopeless prognosis—advanced bone loss, areas not maintainable, and extraction or extractions indicated

Evidence-based decision making^{22,23}

- A. Health care professionals must be able to assess the value of the information available in scientific literature and to use current best evidence when providing dental hygiene care
- B. Evidence-based decision making integrates clinical expertise, client values, and best evidence into the decision-making process to achieve successful therapeutic outcomes
- C. Evidence-based decision making begins during the process of care when a client presents with a specific clinical question or when a question arises during dental hygiene care; the four elements of an evidence-based question (PICO) are:
 - 1. Patient, or problem
 - 2. Intervention, cause, or prognosis
 - 3. Comparison, or control
 - 4. Outcome, or outcomes
- D. The hygienist develops a well-defined clinical question (PICO) related to the diagnosis, therapy, prognosis, cause, or harm to answer the client-related question (Table 15-7)

Table 15-7

Asking the Clinical Question: PICO Mnemonic

Element (PICO)	Descriptive Question(s) to Ask	Example
Patient, or problem	How would I describe a group of clients similar to mine? What are the most important characteristics for this client?	A client with generalized marginal biofilm and inflammation
Intervention, cause, or prognosis	Which main intervention or prognostic factor am I considering for this client?	A powered toothbrush
Comparison, or control	What is the main alternative to compare with the intervention?	Compared with a manual toothbrush
Outcome, or outcomes	What can I hope to accomplish, measure, or improve?	Decrease marginal biofilm and inflammation

Modified from Forest JL, Miller SA. Translating evidence-based decision making into practice: EBDM concepts and finding the evidence, *J Evid Based Dent Pract* 9(2):59-72, 2009.

- E. A computerized literature search is conducted to answer the PICO question—randomized controlled clinical trials (RCTs), systematic reviews, or meta-analysis studies provide the best evidence for answering the question
- F. Evidence obtained from literature search is critically evaluated to determine validity and clinical applicability—studies are reviewed to identify the results and determine whether they are valid and whether they apply to the client
- G. Evidence gathered from literature appraisal is applied to clinical practice by discussing the findings with client and offering recommendations for treatment
- H. The process and the clinician’s performance are evaluated

Planning

- A. Definition—identification and prioritization of current and potential dental and dental hygiene care needs, establishment of client goals, and determination of interventions and outcomes to meet these needs
- B. Clients are more likely to express their wants, needs, and desires and to commit to a care plan if they are actively involved in the development of goals, priorities, interventions, and appointment planning
- C. Assessment data and diagnosis should be used to develop a logical plan of therapy to eliminate disease, slow disease progression, and maintain and promote health¹⁵
- D. Four components to consider when completing written care plan:
 - 1. Establish priorities for care that require a collaborative approach among the client, the dental hygienist, and the dentist; address the following:
 - a. Needs of the client based on conditions that pose the greatest threat to comfort, life, health, and safety
 - b. Main concerns or preferences of the client (chief complaint)
 - c. Motivational level of the client
 - 2. Set client-oriented goals and evaluation measures that reflect the expected and desired outcomes of dental hygiene care
 - a. For each dental hygiene diagnosis, at least one goal and intervention should be established; some diagnoses may require multiple interventions
 - b. Goals should focus on the cognitive, affective, or psychomotor domain and contain a subject, verb, measurement criteria, and specific time element:
 - (1) Cognitive goals focus on increasing knowledge level
 - (2) Affective goals focus on changes in beliefs, attitudes, and values
 - (3) Psychomotor goals focus on skill development when skill deficiencies are present
 - c. Expected outcomes and evaluation measures are used to determine whether goals are being met during care or after completion of therapy; when indicated, modify the diagnosis or care plan if goals are not being met; two forms of evaluation should be considered when planning care:
 - (1) Evaluation that occurs throughout the implementation phase of care
 - (2) Evaluation or reevaluation that occurs after the completion of initial therapy
 - 3. Identify interventions as part of care planning that specifically address the dental hygiene diagnosis (Table 15-8)

Table 15-8

Components of Dental Hygiene Care

Component	Elements
General assessment	Medical and dental history Chief concern Clinical examination Radiographic analysis Microbiologic, genetic, and biochemical diagnostic tests Extraoral and intraoral examinations
Periodontal and restorative assessment	Risk assessment Plaque or biofilm, calculus Dental restorations Caries assessment Dental implants Probing depth (bleeding and suppuration) Clinical attachment level and gingival recession Furcation status Prosthetic appliances Occlusion (mobility, occlusal discrepancy, fremitus) Proximal contact relationships Periodontal-systemic interrelationships
Self-care education	Risk factors Disease theory education Skill enhancement Behavior interventions (nutrition counseling, tobacco cessation, medical referral)
Instrumentation and supportive therapy	Pain and anxiety control methods Plaque biofilm and calculus removal Restoration overhang removal Desensitization for dentinal hypersensitivity Fluoride therapy Sealant application Local or systemic chemotherapeutic agents Implant maintenance Mouthguard fabrication

Selection of polishing procedures	Selective stain removal (polishing) Restoration enhancement (finishing, polishing)
Referrals	Medical consultation Restorative therapy Periodontal surgery Orthodontics Endodontics Oral surgery Oral pathology diagnosis

Modified from American Academy of Periodontology: Statement on comprehensive periodontal therapy, 2010, <http://www.perio.org/resources-products/posppr3-4.html>, accessed August 20, 2015.

- a. Traditional phases of dental care planning include²⁴:
 - (1) Preliminary phase—focuses on treating periodontal or dental emergency needs
 - (2) Phase I therapy—focuses on controlling the risk factors responsible for disease; includes self-care education, diet control, removal or correction of biofilm-retentive factors, antimicrobial therapy, and dental caries management
 - (3) Phase II therapy—focuses on surgical care; includes periodontal surgery, placement of implants, and endodontic therapy
 - (4) Phase III therapy—focuses on prosthetic treatment and final management of dental caries, along with periodontal examination to reevaluate response to restorative procedures
 - (5) Phase IV therapy—focuses on long-term periodontal maintenance therapy; includes assessment, self-care education, deposit removal, and evaluation of continued-care (recare) interval
- b. Common system of periodontal disease classification; includes overall disease extent (localized and generalized), severity (case type), and activity (chronic, aggressive, or necrotizing) (see the section on “Diseases of the Periodontium” in Chapter 14)
- c. Interventions for common forms of periodontal disease include:
 - (1) Therapy for gingivitis (case type I)—includes oral self-care education, supragingival and subgingival debridement, antimicrobial agents, and correction of plaque biofilm-retentive factors completed during a 1-hour appointment; may include reevaluation at another appointment if extensive bleeding occurs on probing or pseudopockets are present
 - (2) Therapy for mild periodontitis (case type II)—includes elimination, modification, or control of systemic diseases and other risk factors; oral self-care education; and supragingival and subgingival debridement, including scaling and root planing with a quadrant approach, during four 60- to 90-minute appointments, and reevaluation
 - (3) Therapy for moderate periodontitis (case type III)—includes elimination, alteration, or control of systemic diseases and other risk factors; oral self-care education; and supragingival and subgingival debridement, including scaling and root planing with a sextant or quadrant approach, during four to six 60- to 90-minute appointments, and reevaluation for surgery
 - (4) Therapy for advanced periodontitis (case type IV)—includes elimination, modification, or control of systemic diseases and risk factors; oral self-care education; debridement, including scaling and root planing; subgingival microbial sampling; and extraction of teeth that have a poor prognosis with a sextant approach during six 60- to 90-minute appointments, and reevaluation for surgery
 - (5) Therapy for refractory periodontitis—includes self-care education, debridement, scaling and root planing, control of risk factors, systemic antibiotics, locally delivered antibiotics, microbial diagnostic testing, and antimicrobial therapy, with a sextant or quadrant approach, based on number of sites involved; reevaluation for surgery; and periodontal maintenance therapy
4. Written care plan provides permanent documentation and becomes a contract between the dental hygienist and a client; elements of care plan include:
 - a. Procedure—course of action or procedures to be rendered; associated risks and benefits
 - b. Alternative treatment options
 - c. Appointment sequence—order in which therapy will be given
 - d. Approximate time for each procedure and total time for each appointment
 - e. Expected outcomes and limitations of care

Case presentation

- A. Definition—presentation of assessment data to include dental and dental hygiene diagnosis and proposed care plan
- B. Purpose—to satisfy legal and ethical responsibilities for care, reach agreement for therapy, and obtain informed consent
- C. A collaborative approach between client and clinician should be encouraged
- D. Case presentation should be accurate, direct, and concise; should describe:
 1. Existing oral conditions and related causative and contributing factors presented in terms that are understandable to the client
 2. Treatment procedures and how therapy may differ from previous appointments (e.g., number of appointments, length, purpose of each appointment, services to be incorporated, description of services)
 3. Desired outcomes of treatment and provisional prognosis
 4. Risks and benefits of all treatment options involved
 5. Consequences of rejecting treatment or not proceeding with all components of care
 6. Alternative approaches to care, if any exist (e.g., mechanized vs. hand-activated instrumentation; NSPT vs. surgery when advanced disease is present)
 7. Client’s responsibility as a co-therapist (e.g., commitment to self-care and continued-care recommendations)
 8. Client’s right to decline care by providing an opportunity to initially consent for care and to withdraw from treatment at any time
 9. Time and cost involved in professional care

Informed consent

- A. Definition—process by which a client agrees to a proposed treatment after a complete case presentation (see Chapter 22)
- B. Includes use of a written informed consent form, signed by the client or guardian, the clinician, and a witness, stating that all treatment descriptions, risk, benefits, outcomes of treatment, alternative treatments, and an opportunity for questions and answers were provided; should be completed before implementation of care plan
- C. An *informed refusal form* is completed when a client declines some or all of the care plan; includes:
 1. Proposed dental and dental hygiene care planned
 2. Risks involved without treatment
 3. List of procedures being refused
 4. Date the informed refusal form was signed
 5. Signature of the client, the dental hygienist or the dentist, and a witness

Implementation

See the section on “Preventive Therapy or Treatment of Biofilm-Induced Gingivitis” in Chapter 14.

- A. Definition—delivery of preventive and therapeutic procedures identified in an individualized care plan to meet a client’s human needs (see Table 15-8)
 1. Activities—reduction or elimination of risk factors for disease, health promotion, self-care education, mechanical and mechanized instrumentation, pharmacotherapeutic interventions, pain control strategies, selective polishing; supporting interventions include overhang removal, desensitization, dietary assessment and counseling, dental caries management, and occlusal therapy
 2. Modifications to the initial care plan are made as new assessment criteria become available during the implementation of care (i.e., improved self-care, increase in healing response time)
- B. Self-care education—teaching disease control, health maintenance, and health promotion strategies to target the client’s diagnosed problems; should occur at each appointment before instrumentation procedures; strategies are those implemented by the client at home (see Chapter 16)
- C. Pain and anxiety control should be used when indicated to prevent or manage apprehension and pain and promote the client’s cooperation and compliance; includes local anesthetic agents, N₂O-O₂ analgesia, topical anesthetic agents, and psychosomatic methods (see Chapter 18)
- D. Instrument selection—based on intraoral conditions discovered in the assessment phase of care: periodontal pocket depth, furcation involvement, root concavities, deposit size, configuration, mode of attachment, and location (see Chapter 17)
 1. Hand-activated instrumentation—use of sharp curets and files, with fundamental instrumentation principles during scaling and debridement
 2. Mechanized instrumentation—ultrasonic and sonic scaling equipment and techniques for scaling and debridement
- E. Polishing procedures—use of abrasive agents, prophylaxis angle, low-speed handpiece, toothbrush, or air abrasion unit to remove bacterial plaque biofilm and stain and to produce a smooth, lustrous tooth surface
 1. Selective polishing—esthetic procedure accomplished with a rubber cup and paste or air-polishing unit (air abrasion) to remove extrinsic stain remaining after periodontal instrumentation (see the section on “Selective Stain Removal” in Chapter 17)
 2. Therapeutic polishing—prophylaxis pastes may include supplemental ingredients for added benefits, including fluoride, xylitol, and calcium phosphate compounds²⁵
 3. Polishing and finishing restorations prevent recurrent caries and deterioration of restorations, maintain periodontal health, and prevent occlusal problems
- F. Maintenance therapy (formerly known as *supportive therapy*)—a term used for interventions directed at sustaining oral health and controlling disease progression (e.g., debridement for control of periodontal diseases and maintenance of periodontal health, fluoride therapy, sealant application, occlusal appliance fabrication, oral irrigation, desensitization, local or systemic antibiotics, implant maintenance) (see the section on “Periodontal Maintenance” in Chapter 14 and “Oral Irrigation,” “Fluorides,” “Mouthrinses or Chemotherapeutics,” “Dental Sealants,” “Care of Fixed and Removable Prostheses,” “Dental Implant Maintenance,” “Tobacco Use Interventions,” and “Assessment of Dental Hypersensitivity” in Chapter 16)
- G. *Ergonomics* focuses on the prevention of exposure to injury within the work environment; involves clinician and client positioning, tasks and procedures performed, equipment design and use, and impact of these actions on musculoskeletal health
 1. Cumulative trauma disorders (also known as *repetitive strain disorders*)—musculoskeletal and nerve impairments caused by repetitive work activities, especially when performed aggressively, in awkward positions, or both
 2. Prevention of ergonomic hazards—involves daily application of ergonomic principles while providing dental hygiene care (e.g., posture, grasp, properly fitted gloves, instrument and equipment design, exercise for hand and body, positioning of equipment and materials in the environment)

Client management with effective communication

- A. Communication—giving or exchanging information, signals, or messages through facial expression, behavior, talking, gestures, and writing; effective communication is essential in creating an environment conducive to modifying a client’s psychomotor skills, level of knowledge, values, attitudes, and lifestyle
- B. Intrapersonal communication—processing a message within oneself; often affected by one’s personal life experiences, culture, beliefs, and values
- C. Interpersonal communication—messages between two or more people; focuses on the interaction and interpretation of a conversation with nonverbal behaviors and spoken words; effective interpersonal communication may reduce the incidence of miscommunication and client management problems and increase the client’s commitment to care
 - 1. Nonverbal behaviors—nonspoken messages, including body orientation, posture, facial expressions, gestures, touch, distance, voice tone, and hesitation in speech
 - 2. Verbal behaviors—spoken messages, including language, active listening, paraphrasing, and reflective responding
 - a. The language used in communication should be carefully selected based on the client’s characteristics and presented in a straightforward and nonthreatening manner
 - b. Active listening requires maintaining eye contact and concentration and focusing on what the client is communicating
 - c. Paraphrasing is restatement or summary of what the client said; provides the opportunity to correct any misunderstandings
 - d. Reflective responding addresses the actual feelings of the client; response is presented in manner that restates, rewords, or reflects what the client said
- D. Enhancement of client–dental hygienist relationship through confidence and trust requires:
 - 1. Acceptance—accepting the client without judgment
 - 2. Comfort—ability to deal with embarrassing or emotionally painful topics related to an individual’s health
 - 3. Concreteness—communicating in a clear and precise manner with terms understandable to a client
 - 4. Empathy—listening and understanding the emotions and feelings of an individual
 - 5. Genuineness—communicating in an open and honest manner
 - 6. Respect—ability to convey honor and esteem for an individual
 - 7. Responsiveness—ability to reply to messages at the very moment they are sent
 - 8. Self-disclosure—sharing personal experiences with a client
 - 9. Warmth—displaying personal feelings and empathy

Evaluation

- See the sections on “Treatment” and “Periodontal Maintenance” in Chapter 14.
- A. Definition—measurement of extent to which client has achieved specified goals in care plan and determination of success of interventions; ensures that high-quality care has been provided
- B. The quality of dental hygiene care is assessed by certain criteria and standards
 - 1. Criteria—qualities or characteristics by which the knowledge, skill, or oral health status of a client is measured through descriptions of acceptable levels of performance of client or dental hygienist (e.g., probing attachment levels are reduced by 1 to 2 mm and no sites with bleeding on probing)
 - 2. Standards—acceptable and expected levels of performance by the dental hygienist or other health care professionals, established through national consensus²
- C. Measurement of outcomes of dental hygiene interventions involves collecting evaluation data to determine whether the client’s goals established during the planning phase of care have been met, partially met, or not met
- D. *Supervised neglect* occurs when the client needs further professional care to achieve higher levels of oral wellness or to prevent or control oral disease process, but has been discharged from care under the false assumption that a healthy state was achieved
- E. Two forms of evaluation:
 - 1. Evaluation—occurs continually throughout implementation phase of care; provides the mechanism for modifying the care plan as new assessment criteria become available during treatment (e.g., improved client self-care, increase in healing response time)
 - 2. Reevaluation—occurs 4 to 6 weeks after therapy is completed to evaluate response to initial care and to recommend additional therapy as needed (e.g., decrease in probing depths, elimination of bleeding points)
- F. Elements of reevaluation appointment include components of the dental hygiene process of care: assessment, diagnosis, planning, and implementation
 - 1. Assessment
 - a. Reassessment of initial assessment data and periodontal status to evaluate improvement, such as effective self-care methods, reduction of 1 to 2 mm in probing measurements, no bleeding on probing, and healthy-appearing gingival tissue
 - b. Determination of the presence of residual deposits, newly accumulated deposits, or unresponsive areas indicated by bleeding on probing or gingival inflammation
 - c. Reevaluation of the client’s self-care practices
 - 2. Diagnosis—reevaluation of dental or dental hygiene diagnosis, if indicated, based on assessment data
 - 3. Planning—care plan developed on the basis of assessment findings; includes, when indicated, modification to self-care practices, localized debridement, chemotherapy, appropriate referrals, and establishment of continued-care schedule or periodontal maintenance therapy
 - 4. Implementation—provision of self-care education; removal of residual deposits and plaque biofilm—retentive factors; debridement of nonresponsive areas; provision of indicated therapy, and reassessment of continued-care schedule
- G. The continued-care (recare) schedule is determined on the basis of individual client needs, degree of risk for oral disease, and disease progression; client is informed of the rationale for and the importance of continued care²⁴
 - 1. Continued-care schedules with intervals of 1 to 3 months are recommended to clients who display poor results after therapy, have significant risk factors, have advanced or aggressive disease, have poor self-care, have furcation involvement, or have complicated prostheses
 - 2. Intervals of 3 months are recommended to clients who complete routine NSPT with uneventful healing and demonstrate moderate to high risk for oral diseases and disease progression
 - 3. Intervals of 3 to 4 months are recommended to clients who have maintained generally good results for 1 year or longer after therapy but display significant risk factors (e.g., inconsistent or poor oral hygiene, heavy calculus formation, systemic disease or condition, tobacco use, localized pockets, occlusal problems, complicated prostheses, ongoing orthodontic therapy, dental caries activity, localized teeth with less than 50% of alveolar bone support)
 - 4. Intervals of 6 months to 1 year are recommended to clients who maintain excellent results for 1 year or longer and have been able to eliminate or control risk factors for oral disease (e.g., good oral hygiene, minimal calculus, no occlusal problems, no complicated prosthesis, no remaining pockets, no teeth with less than 50% of alveolar bone remaining, low risk for dental caries)
- H. Documenting the outcomes of dental hygiene care aids in preventing possible legal charges related to inadequate documentation and client feeling inadequately informed about his or her oral health status; should include:
 - 1. Status and prognosis for the case, sites at risk for disease progression, and sites with disease progression
 - 2. Sites with plaque biofilm and calculus, bleeding, and areas of inflammation
 - 3. Need for restorative and periodontal treatment and for referral to a specialist
 - 4. Discussion that took place with the client regarding his or her health or disease status
 - 5. Past commitment of the client and recommendations suggested by the clinician
 - 6. Time interval required for the next appointment (continued-care interval)
 - 7. Acceptance or rejection of any further needed therapy

Documentation

- A. Definition—the process of accurately recording all aspects of the process of care, including assessment data, diagnosis, care plan, treatment rendered, client education, and evaluation findings, for the purpose of establishing the client’s health record
- B. Accurate documentation of all assessment findings is the legal responsibility of all clinicians (see Table 15-8)
- C. Assessment findings should be clearly recorded and dated using ink on appropriate data collection forms: health history forms, extraoral and intraoral examination forms, dentition and periodontal charting forms, and radiographic interpretation forms
 - 1. Documentation and monitoring of abnormal lesions must be followed; if after 1 week to 10 days the lesion or abnormality remains, procedures should be implemented to diagnose the condition (e.g., excisional or incisional biopsy, brush biopsy) (see the section on “Diagnostic Tools for Oral Cancer Detection” in Chapter 16)
 - 2. Active disease or any deviations from normal should be documented and monitored
- D. Additional information that was assessed (e.g., risk factors) and discussed with the client, but not charted, should be recorded on a record-of-services form
- E. Diagnostic report documentation includes clearly written statements that connect assessment findings with possible causes that can be prevented, reduced, or resolved by dental hygiene interventions
- F. Care-planning documentation, as previously mentioned, should outline all interventions needed to address client needs, including the estimated number of appointments
- G. Implementation documentation is the recording of all treatments and educational interventions administered to the client, with the appropriate date of service; must include the signature of the provider of care
- H. Documentation of evaluation includes the resulting outcomes of the interventions provided as well as any updated information found during the reassessment process; next steps are communicated to the client and detailed in the client’s permanent record

Ethical, legal, and safety issues

Provision of comprehensive, quality care by licensed dental hygienists includes legal, ethical, and safety issues that require consideration.

A. Ethical issues that place hygienist at risk are:

1. Failure to refer to a medical professional or other dental specialist when indicated
2. Failure to maintain client confidentiality
3. Failure to perform a thorough case presentation so that a client can make an informed decision about the dental hygiene care
4. Failure to perform comprehensive assessment to detect oral diseases and abnormalities and degree of client risk for disease or disease progression

B. Legal issues that place hygienist at risk are:

1. Failure to comply with the Health Insurance Portability and Accountability Act (HIPAA); the clinician must verify that clients have read the HIPAA policy and obtain a written Acknowledgment of Receipt of the Notice from the client
2. Failure to assess, diagnose, treat, or refer for disease; even when under the supervision of a dentist, a licensed dental hygienist is accountable and responsible for client care
3. Failure to obtain written informed consent before initiating care
4. Failure to provide necessary care on the basis of assessment findings; constitutes “supervised neglect”
5. Failure to provide evidence-based care
6. Failure to document assessment, care plan, informed consent, services rendered, and client response to care

C. Safety issues that place the dental hygienist and the client at risk are:

1. Failure to protect a client from harm during care
2. Failure to assess accurately the client’s health and pharmacologic history and to make necessary physician referrals
3. Failure to allow time during appointment for the provision of adequate care
4. Failure to evaluate therapy after completion of care or to recommend an appropriate continued-care interval
5. Failure to follow established protocol that protects the clinician and the client during therapy (e.g., standard precautions; see Chapter 10)
6. Failure to use instrumentation in effective and responsible manner (e.g., not using sharp instruments, not selecting appropriate instruments based on conditions present, and causing tissue trauma)
7. Failure to follow the manufacturer’s instructions in the use of equipment, devices, and dental materials

Website Information and Resources

Source	Website Address	Description
Medline and PubMed	www.ncbi.nlm.nih.gov/pubmed/	Used for evidence-based decision making
Medline Plus	www.nlm.nih.gov/medlineplus/	Patient information on health topics and medication; medical encyclopedia
National Center for Dental Hygiene Research	www.usc.edu/hsc/dental/dhnet/	Focus for many dental hygiene research-related topics and links
Healthfinder	www.healthfinder.gov	Patient information on health topics, special population topics, health care, directory
Dimensions of Dental Hygiene	www.dimensionsofdentalhygiene.com/	Online journal with dental and dental hygiene-related topics
National Institutes of Health	www.nih.gov	Health topics, funding, news, events
American Academy of Periodontology	www.perio.org	Association website; parameters of practice and position papers related to the treatment of periodontal diseases
National Institute of Dental and Craniofacial Research	www.nidcr.nih.gov	Oral health information, educational resources and research
National Guideline Clearinghouse	www.guideline.gov	Evidence-based clinical practice guidelines
Centers for Disease Control and Prevention	www.cdc.gov	Health and safety topics, publications, data and statistics
Occupational Safety and Health Administration	www.osha.gov	Information on the health and safety of employees
RxList	www.rxlist.com/script/main/hp.asp	Information related to prescription medications
Merck Manual	www.merck.com	Information related to medical conditions
MyMedicineList	www.safemedication.com	Database containing important medication information
Aetna IntelliHealth (Harvard Medical School-Intelihealth Partnership)	www.intelihealth.com	Consumer information related to health and medicine
U.S. Department of Health and Human Services	www.hhs.gov/ocr/privacy/	Health information privacy

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Chapter 15 review questions

Answers and rationales to chapter review questions are available on this text's accompanying Evolve site. See inside front cover for details.



Case A

A 44-year-old man presents as a new client for dental hygiene care. His medical history reveals type 2 diabetes, high blood pressure (BP) controlled with medication, and a hip replacement. He reports no blood glucose monitoring and controls diabetes with diet and exercise. He had a physical examination last year but is not sure of the examination results. He assumes "everything is fine." You record his BP reading at 150/102 mm Hg.

Use Case A to answer questions 1 to 4.

1. Which of the following should be considered before implementing dental hygiene care for this client?

- Dental hygiene care can be implemented immediately without any considerations.
- Dental hygiene care can be started immediately as long as the client consents to treatment.
- Consult with client's physician to establish a definitive diagnosis of diabetes and level of control for diabetes and hypertension before initiating dental hygiene care.
- Appointments should be longer than normal to reduce the number of appointments needed and to reduce stress.

2. What is this client's ASA physical status (PS) classification?

- PS1
- PS2
- PS3
- PS4

3. What is the BEST course of action for the dental hygienist related to the BP reading?

- Recheck BP in 5 minutes; if it is still elevated within that range, dismiss the client and seek immediate consultation with physician
- Recheck BP at each appointment; if it is still within range for three consecutive appointments, refer to physician
- Recheck BP in 5 minutes; if it is still elevated within that range, continue with noninvasive care only and consult with physician before dental hygiene therapy
- Recheck BP in 5 minutes, and continue with dental hygiene care

4. Which human need should be considered during the dental hygiene process of care?

- Freedom from head and neck pain
- Protection from health risks
- Skin and mucous membrane integrity of head and neck
- Wholesome facial image

Case B

A 25-year-old female presents for dental hygiene care. Her records indicated that 10 months have lapsed since receiving dental hygiene care, and she scheduled the appointment because her teeth are sensitive when she eats candy and her "gums" hurt when she brushes her teeth. She reports an arrhythmia but is not sure of the type or cause and irregularly takes the prescribed medication for its treatment. Her vital signs are within normal limits. During the dental and periodontal assessment, you record generalized marginal gingival inflammation, generalized moderate interproximal subgingival calculus deposits, generalized bleeding on probing, with 2-mm to 4-mm probing depths. Existing restorations include teeth #14-MO, #4-MOD, #13-MO, #18-MO, and #19-B. Radiographs reveal no evidence of bone loss, proximal carious lesions on #29 D, #30 M, and #19 M and restoration overhangs on #14 M and #4 D. She brushes once a day and does not use an interproximal cleaning aid.

Use Case B to answer questions 5 to 11.

5. Which of the following conditions represents the MOST accurate periodontal disease classification?

- Case type I—gingivitis
- Case type II—mild periodontitis
- Case type III—moderate periodontitis
- Case type IV—advanced periodontitis

6. All the following human need categories relate to the client's current conditions EXCEPT one. Which one is the exception?

- Protection from health risks
- Freedom from anxiety and stress
- Skin and mucous membrane integrity of head and neck
- Biologically sound and functional dentition

7. All the following are related to the overhanging restorations EXCEPT:

- Increase bacterial plaque biofilm retention
- Restorations should be replaced
- Restorations are risk factors for periodontal disease
- Restorations are treated using margination procedures

8. Based on the oral assessment findings, what is the classification of caries risk for this client?

- Low risk
- Moderate risk
- High risk
- Insufficient data to determine

9. The restoration on tooth #14 would be BEST classified as a:

- Class I restoration
- Class II restoration
- Class III restoration
- Class IV restoration

10. Based on the periodontal assessment, what is the BEST reevaluation interval for this client?

- 1 to 2 weeks
- 4 to 6 weeks
- 3 to 4 months
- 6 months to 1 year

11. What is the overall prognosis for this client after phase I therapy?

- Excellent
- Good
- Fair
- Poor

Case C

A heavy tea drinker just purchased over-the-counter whitening strips to see if her discolored teeth could be whitened. She wants to know if using whitening strips is better than using the professional custom tray bleaching system at home. You want to provide an evidence-based answer, based on a search of the research literature.

Use Case C to answer questions 12 and 13.

12. Which of the following would be an example of a well-developed question to help narrow your research literature search?

- a. For clients with discolored teeth, are whitening strips the best method to increase whitening?
- b. Are whitening strips the best method to increase whitening?
- c. Are whitening strips more effective than custom tray bleaching systems?
- d. For clients with tooth discoloration from tea stain, are whitening strips more effective in increasing teeth whitening compared with professional at-home custom tray bleaching?

13. Which type of study will provide the BEST evidence to answer the client's question?

- a. Case-control studies
- b. Randomized controlled clinical trials
- c. In vitro research
- d. Case reports

14. A dental hygienist records a client's blood pressure as 152/85 mm Hg. What blood pressure category is represented?

- a. Prehypertension
- b. Stage I hypertension
- c. Stage II hypertension
- d. Stage III hypertension

15. What phase of dental care focuses on periodontal surgery?

- a. Preliminary phase
- b. Phase I
- c. Phase II
- d. Phase III

16. The written care plan includes all the following components EXCEPT:

- a. Appointment sequence for therapy to be provided
- b. Approximate time for each appointment
- c. Cost of each presented procedure
- d. Expected outcomes and limitations of care

17. When localized bleeding on probing is noted during a 4- to 6-week reevaluation appointment, all following procedures are required EXCEPT:

- a. Determining presence of residual or new deposits
- b. Establishment of continued-care (recare) interval
- c. Evaluation of self-care practices
- d. Referral to physician

18. Which is a CORRECT statement regarding the assessment phase of care?

- a. It includes the comprehensive collection, analysis, and permanent documentation of client data.
- b. It involves the collection of only subjective information.
- c. Assessment data should be updated only during continued-care (recare) appointments.
- d. Data should *not* be discussed with the client or appropriate health care providers.

19. When reviewing a health history, the client has indicated that he has allergies to kiwis, avocados, and bananas. For what condition is this client at risk?

- a. Acute adrenal insufficiency
- b. Asthma
- c. Diabetes
- d. Latex allergy

20. The American Academy of Periodontology (AAP) classification for advanced periodontitis is:

- a. Case type I
- b. Case type II
- c. Case type III
- d. Case type IV

21. All the following factors are considered when providing dental hygiene care for diabetic clients EXCEPT:

- a. Cardiovascular conditions
- b. Continued-care (recare) interval
- c. Susceptibility to oral infection
- d. Rapid healing

22. Individuals with stable angina pectoris, COPD, and/or mild congestive heart failure are in which ASA physical status (PS) classification category?

- a. PS1
- b. PS2
- c. PS3
- d. PS4

23. What phase of the dental hygiene process of care immediately follows diagnosis?

- a. Assessment
- b. Evaluation
- c. Implementation
- d. Planning

24. All the following are components of assessment EXCEPT:

- a. Health history
- b. Intraoral photographs
- c. Periodontal probing
- d. Self-care education

25. After a comprehensive assessment, findings show chronic periodontitis with moderate bone loss, generalized pocket depths of 4 to 6 mm with bleeding, light subgingival biofilm and calculus on the maxillary arch, and moderate to heavy subgingival biofilm and tenacious calculus on the mandibular arch. Based on these findings, what would be a realistic approach to nonsurgical periodontal therapy (NSPT) for this client?

- a. A 60-minute appointment consisting of oral self-care education and supragingival and subgingival debridement
- b. Two 60-minute appointments consisting of oral self-care education, debridement, and scaling and root planing
- c. Five 60- to 90-minute appointments consisting of oral self-care education, debridement, scaling and root planing, and reevaluation
- d. Six 60- to 90-minute appointments consisting of oral self-care education, debridement, scaling and root planing, and reevaluation

26. When client-oriented goals are developed during the planning phase of care, to what do affective goals relate?
- Increasing client's knowledge level about bacterial biofilm
 - Influencing changes in beliefs and attitudes
 - Providing information related to bacterial biofilm
 - Modifying a toothbrushing method
27. When reviewing a health history, the client has indicated that she urinates more than six times a day, she is frequently thirsty, and her mouth is always dry. What condition manifests these characteristics?
- Asthma
 - Diabetes mellitus
 - Hypertension
 - Thyroid disease
28. Which of the following conditions is indicated by yellow sclera of the eye?
- Difficulty breathing
 - Drug abuse
 - Jaundice
 - Medical emergency status
29. What is the G.V. Black classification of dental caries and restoration located on the gingival buccal third of tooth #18?
- Class II
 - Class III
 - Class IV
 - Class V
30. A client presents with a type III overhang on an amalgam restoration. Which of the following statements related to this overhang is CORRECT?
- Covers less than one third of interproximal space
 - Restoration indicated for replacement
 - Indicated for a margination procedure
 - Clinically not detectable
31. All the following represent standard client assessment information that is necessary for planning comprehensive dental hygiene care EXCEPT:
- Extraoral assessment
 - Current self-care practices
 - Dentition evaluation
 - Fluoride varnish application
32. A 53-year-old client presents for a periodontal maintenance appointment. When developing a dental hygiene care plan, which of the following should be addressed first?
- Chlorhexidine stain on teeth
 - Localized light plaque
 - Pain on tooth #28
 - Smoking habit
33. Which of the following is the BEST method for examining the mentalis muscle?
- Circular compression
 - Digital palpation
 - Indirect vision
 - Auscultation
34. Which of the following is LEAST significant when determining the continued-care (recare) interval for periodontal maintenance therapy?
- Presence of light plaque biofilm
 - Elimination of pocket depths
 - Bleeding on probing
 - Cost of care
35. Assessment findings reveal that an 11-year-old client has deep pits and fissures, generalized areas of heavy plaque, marginal gingival inflammation, and incipient carious lesions on teeth #3 and #14, #19, and #30. Given these findings, what would be the degree of caries risk?
- Low
 - Moderate
 - High
 - No risk
36. A client cannot correctly demonstrate the use of the threader with floss. The discrepancy in performance is MOST likely the result of which of the following?
- Management deficiency
 - Motivation
 - Readiness to learn
 - Skills deficiency
37. To engage in effective verbal behaviors, which one of the following skills is necessary?
- Appropriate voice tone
 - Gestures
 - Paraphrasing
 - Posture
38. All the following are included in the case presentation EXCEPT:
- Desired outcomes of treatment
 - Alternative approaches to care
 - Risks of all proposed therapeutic options
 - Treatment outcome guarantee
39. Which of the following BEST identifies the procedure that is immediately followed after a client declines a component of the dental hygiene care plan?
- Alternative approaches to care are suggested.
 - Outcomes of therapy are explained.
 - Informed refusal form is completed.
 - Client's right to decline care is clarified.
40. What would be a reasonable prognosis for a client with chronic periodontitis and moderate bone loss with localized areas of grade II furcation involvement, improvable oral self-care methods, and irregular continued-care (recare) intervals?
- Excellent
 - Good
 - Fair
 - Poor
41. Failure to refer a client to a medical professional when indicated constitutes which one of the following?
- Ethical issue
 - Legal issue
 - Safety issue
 - Breach of contract

42. When implementing a tobacco cessation program into practice, the second step is:
- Ask
 - Advise
 - Assist
 - Arrange
43. When providing dental hygiene care, all the following relate to safe practice issues EXCEPT:
- Failure to obtain written informed consent
 - Failure to provide comprehensive care
 - Failure to follow infection control protocol
 - Failure to use proper instrumentation during the provision of dental hygiene care
44. What is a grade III furcation involvement?
- Exposure of furcation with bone remaining between roots
 - Complete loss of bone between roots
 - Loss of some bone between roots
 - Severe bone loss and furcation clearly visible
45. To determine a care plan that is BEST for a client, which of the following actions should be addressed FIRST?
- Periodontal debridement for the entire mouth
 - Consultation and treatment for areas of pain
 - Tobacco cessation counseling
 - Consultation for periodontal surgery
46. When reviewing the health history, the client indicates that he has a persistent cough that is nonproductive, difficulty breathing, and night sweats. What condition is manifested by these characteristics?
- Acute adrenal insufficiency
 - Asthma
 - Tuberculosis
 - Common cold
47. Which of the following conditions is often related to a nutritional deficiency?
- Black hairy tongue
 - Burning tongue
 - Geographic tongue
 - Macroglossia
48. The term *prognosis* refers specifically to which of the following?
- Diagnosis
 - Care planning
 - Evaluation
 - Prediction
49. What recall interval is recommended for a client who has maintained good results for the first year following routine nonsurgical periodontal therapy, but displays localized pockets?
- 1 to 2 months
 - 3 to 4 months
 - 4 to 6 months
 - 6 months
50. The submental glands are BEST examined using which type of palpation?
- Bilateral digital
 - Circular compression
 - Digital palpation
 - Auscultation
51. Which of the following conditions requires prophylactic antibiotic premedication for dental hygiene care?
- Rheumatic heart disease
 - Functional heart murmur
 - Prosthetic heart valve
 - Mitral valve prolapse with regurgitation