## Second Edition



Géza T. Terézhalmy Michaell A. Huber Lily T. García Ronald L. Occhionero



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Physical Evaluation and Treatment Planning in Dental Practice

# Physical Evaluation and Treatment Planning in Dental Practice

## Géza T. Terézhalmy, DDS, MA

Professor and Dean Emeritus, Case Western Reserve University School of Dental Medicine, Cleveland, Ohio, USA

## Michaell A. Huber, DDS

Adjunct Professor, Department of Comprehensive Dentistry, UT Health San Antonio School of Dentistry, San Antonio, Texas, USA

## Lily T. García, DDS, MS, FACP

Professor and Dean, University of Nevada, Las Vegas, School of Dental Medicine, Las Vegas, Nevada, USA

## Ronald L. Occhionero, DDS

Professor and Associate Dean for Administration, Case Western Reserve School of Dental Medicine, Cleveland, Ohio, USA

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## **Preface to the Second Edition**

It is an incredible honor to be asked to work on a second edition of a textbook. In effect, it is an opportunity to improve upon a concept that once in print, allows authors and contributors the ability to assess and review.

As we introduce the second edition of *Physical Evaluation and Treatment Planning in Dental Practice*, the authors acknowledge the true visionary force bringing this effort to fruition, our mentor and colleague Dr. Géza T. Terézhalmy. Dr. Terézhalmy has influenced many friends, colleagues, academicians, and professionals across dentistry and medicine. With his determination to improve on a solid concept, he invited a group of renowned, well-respected individuals to contribute to improving the content and expand the scope, all in an effort at building professional capabilities of those who directly care for patients. It is in the spirit of improving the quality of

care that support for predictable, quality outcomes, improves the oral health and overall well-being of persons who seek expertise, compassion and care.

Géza's long and illustrious career has been underpinned by endless energy, academic discipline, and a passion to teach. He lives and teaches the motto of one of his favorite heroes, Sir William Ostler, to "never treat a stranger."

Learning physical evaluation of a patient from an overall health perspective, then adding the unique lens from dental specialists and discipline experts, provides fundamental information that focuses on the person seeking care. In a person-centered healthcare environment, this book is devoted to building capacity in oral healthcare.

Lily T. García

## **Preface to the First Edition**

#### Learn to see, learn to hear, learn to feel, learn to smell, and know that by practice alone can you become an expert. Sir William Osler

Diagnosis is the bridge between the study of disease and the treatment of illness. Making a distinction between disease and illness appears redundant because the words frequently are used interchangeably. However, diseases of the oral cavity and related structures may have profound physical and emotional effects on a patient, and a holistic approach to patient care makes this distinction significant. In oral pathology one studies disease; in clinical dentistry one treats illness. For example, necrotizing ulcerative gingivitis may be defined with special emphasis on the microbiological aspects of the disease, or one may speak of an inflammatory reaction featuring "punched-out" erosions of the interdental papillae. However, necrotizing ulcerative gingivitis is more complex. It is the totality of symptoms (subjective feelings) and signs (objective findings) that together characterize a single patient's reaction - not merely a tissue response - to infection by spirochetes. While disease is an abstraction, illness is a process.

Similarly, clinicians must recognize that systemic disease may affect the oral health of patients and to treat dental disease as an entity in itself is to practice a rigid pseudoscience that is more comforting to the clinician than to the patient. The diagnosis and treatment of advanced carious lesions afford little support to the patient if one overlooks obvious physical findings suggesting that the extensive restorative needs were precipitated by qualitative and quantitative changes in the flow of saliva secondary to an undiagnosed or uncontrolled systemic problem, or anti- cholinergic pharmacotherapy. The clinician with a balanced view of dentistry will recognize that caries is only a sign of disease and preventive and therapeutic strategies will have to be based on many patient-specific factors.

It is axiomatic that while dentists are the recognized experts on oral health, they must also learn of systemic diseases. Such an obligation is tempered only by the extent to which systemic diseases relate to the dental profession's anatomic field of responsibility, the extent to which illnesses require modification of dental therapy or alter prognoses, and the extent to which the presence of certain conditions (infectious diseases) may affect caregivers. Consequently, clinicians should not treat oral diseases as isolated entities. They should recall that physical signs and symptoms are produced by physical causes. Since physical problems are the determinants of physical signs and symptoms, these signs and symptoms must be recognized before the physical problems can be diagnosed and treated.

It is through the clinical process that clinical judgment is applied and, with experience, matures. Clinical judgment does not come early or easily to most clinicians. It is forged from long hours of clinical experience and a life-long commitment to the disciplined study of diseases and illnesses. Clinicians

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should study books to understand disease, study patients to learn of human nature and illness, and model mentors to develop clinical judgment. Ultimately, the experienced clinician will merge the science of understanding disease and the art of managing illness. These activities should be fostered by the clinician's sincere desire to minimize patient discomfort, both physical and emotional, and to maximize the opportunities to provide optimal care.

#### List of Contributors

#### David M. Bohnenkamp, DDS, MS, FACP

Prosthodontics The University of Iowa College of Dentistry Iowa City, Iowa, USA

#### *Maria Cervantes Mendez, DDS, MS* Orthodontics UT Health San Antonio, School of Dentistry San Antonio, TX, USA

**Joseph P. Connor, DDS** Restorative Dentistry UT Health San Antonio, School of Dentistry San Antonio, TX, USA

Anibal R. Diogenes, DDS, MS Endodontics UT Health San Antonio, School of Dentistry San Antonio, TX, USA

#### Kevin M. Gureckis, DMD, ABGD, MAGD

Restorative Dentistry UT Health San Antonio, School of Dentistry San Antonio, TX, USA

*Guy Huynh-Ba, DDS, MS* Periodontics Private Practice Bellevue, WA, USA

### **Theodoros Katsaros, DDS, MSD, FRCD(C)** Periodontics Private Practice

#### Douglas E. Kendrick, DDS, FACS

Toronto, ON, Canada

Oral and Maxillofacial Surgery The University of Iowa College of Dentistry Iowa City, IA, USA

#### Fabricio B. Teixeira, DDS, MS, PhD

Endodontics The University of Iowa College of Dentistry Iowa City, IA, USA

#### Karen B. Troendle, DDS, MPH

Restorative Dentistry UT Health San Antonio, School of Dentistry San Antonio, TX, USA

#### Edward F. Wright, DDS, MS

Orofacial Pain UT Health San Antonio, School of Dentistry San Antonio, TX, USA

#### Zheng Xu, DMD, PhD

Pediatric Dentistry University of Washington School of Dentistry Seattle, WA, USA

### About the Companion Website

This book also has a companion website: www.wiley.com/go/terezhalmy/physical



This website includes:

• PowerPoints of figures

### 1

## **Introduction to the Clinical Process**

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Patients consult clinicians to obtain relief from symptoms and to return to full health. When cure is not possible, intervention to improve the quality of life is warranted. Consequently, oral healthcare providers' primary obligation is the timely delivery of quality care within the bounds of the clinical circumstances presented by patients. The provision of quality care will depend on timely execution of the clinical process.

## 1.1 Essential Elements of the Clinical Process

The clinical process represents a continuous interplay between science and art and may be conveniently divided into three phases.

#### Phase I

Phase I of the clinical process is physical evaluation and consists of eliciting a historical

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profile, performing an examination, obtaining appropriate radiographs, ordering laboratory tests, and, when indicated, initiating consultations with or referrals to other healthcare providers. The information obtained is systematically recorded. In order to optimize the yield, clinicians need to possess an inquiring mind, discipline, sensitivity, perseverance, and patience.

#### Phase II

Phase II of the clinical process involves an analysis of all data obtained during Phase I. Interpretation and correlation of these data, in the light of principles gained from basic biomedical and clinical sciences, will create the diagnostic fabric that will lead to a coherent, defendable, relevant, and timely diagnosis. This is an intellectual and, at times, intuitive activity. In making diagnoses, clinicians must recall their knowledge of disease.

#### Phase III

Phase III of the clinical process is centered around the timely development and implementation of necessary preventive and therapeutic strategies and communicating these strategies to the patient or guardian in order to obtain consent and to encourage compliance with and participation in the execution of the plan. In deciding on management strategies, clinicians must think in terms of illness and the total impact of a disease on a given patient and his or her immediate family.

## 1.2 Quality Management in the Clinical Process

A four-part control cycle (plan-do-check-act) introduced to industry in the 1930s is applicable to total quality management (TQM) in the clinical process and is reflected in the acronym CEAR (pronounced CARE):

**Table 1.1** Activities intended to correct a problem identified by the control cycle.

- Reconsider the criteria (standard)
- Redesign the activities intended to achieve the criteria
- Review the assessment process
- Remediate without changing the criteria or the activities intended to achieve the criteria
- Reject the samples that do not meet the criteria
- Apply residual learning to the next control cycle

criteria-execution-assessment-response. Criteria are intended to maintain established standards. Ideally, standards should be based on knowledge derived from well-conducted trials or extensive, controlled observations. In the absence of such data, they should reflect the best-informed, most authoritative opinion available. Execution is the implementation of activities intended to meet stated standards. Assessment is comparing the impact of execution (outcome) against the stated standards. Response refers to the activities intended to reconcile differences between stated standards and observed outcome (Table 1.1).

TQM provides the fabric for a disciplined approach to work design, work practices, and constant reassessment of the clinical process. In TQM there is no minimum standard of "good enough"; there is only "better and better." Defects are signals that point to parts of a process that must be improved so that quality is the result.

#### **Factors Affecting Quality**

#### **Amenities of Care**

The amenities of care represent the desirable attributes of the setting within which the clinical process is implemented. They include convenience (access, availability of service), comfort, safety, and privacy. In private practice these are the responsibilities of the clinician. In institutional settings, the responsibility lies with the administrators of the institution.

#### Performance of the Clinician

The clinical process is a combination of intellectual and manipulative activities by which disease is identified and illness is treated. As we seek to define its quality, we must consider the performance of clinicians. There are two elements in the performance of clinicians that affect quality, one technical and the other interpersonal.

Technical performance depends on the knowledge and judgment used in arriving at appropriate diagnostic, therapeutic, and preventive strategies and on the skillful execution of those strategies. The quality of technical performance is judged in comparison with the best in practice. The best in practice, in turn, has earned that distinction because it is known or is believed to lead to the best outcome. The second element in the performance of the clinician that affects quality is interpersonal skills (see Section 1.3, Patient–Doctor Communication in the Clinical Process).

#### **Performance of the Patient**

In considering variables that affect the quality of the clinical process, contributions made by the patient, as well as by family members, must also be factored into the equation. In those situations in which the outcome of the clinical process is found to be inferior because of lack of optimal participation by the patient, the practitioner must be judged blameless.

#### **Assessing Quality**

Effective control over quality can best be achieved by designing and executing a clinical process that meets professional standards and also acknowledges patients' expectations. The information from which inferences can be drawn about quality may be classified under three headings: structure, process, and outcome.

#### Structure

In addition to the amenities of care discussed earlier, structure also denotes the attributes of

material resources (e.g. facilities and equipment), human resources (e.g. the number and qualification of personnel), and organizational resources (e.g. convenience [access, availability of service], comfort, safety, privacy, methods of payment). Since structure affects the amenities of the oral healthcare setting, it can be inferred that good structure increases the likelihood of a good process.

#### Process

Process denotes what is actually done in the clinical process. It includes the clinician's activities in developing and recommending diagnostic, therapeutic, and preventive strategies; and the execution of those strategies, both by the clinician and the patient. Process also includes the values and virtues that the interpersonal patient–doctor relationship is expected to have (i.e. confidentiality, informed consent, empathy, congruence, honesty, tact, and sensitivity). In general, it can be assumed that a good process increases the likelihood of good outcome.

#### Outcome

Outcome denotes the effects of the clinical process on the identification and treatment of consequential problems, improvement in health, and changes in behavior. Because many factors influence outcome, it is not possible to determine the extent to which an observed outcome is attributable to an antecedent structure or process. However, outcome assessment does provide a mechanism to monitor performance to determine whether it continues to remain within acceptable bounds.

## **1.3 Patient-Doctor** Communication in the Clinical Process

Poor skills in communicating with patients are associated with lower levels of patient satisfaction, higher rates of complaints, an increased risk of malpractice claims, and poorer health 4 Physical Evaluation and Treatment Planning in Dental Practice

outcomes. Clearly, in the clinical process, the performance of clinicians as it relates to interpersonal skills is the very source of their vulnerability. The process of establishing a patient–doctor relationship, however, is not easy. To illustrate this point, let us consider the clinical process in dealing with a patient in pain, the most common complaint causing a person to seek the services of an oral healthcare provider.

Ideally, the clinician should initiate the clinical process in a quiet, comfortable, private setting and foster a warm, friendly, concerned, and supportive approach with the patient. However, this may be a challenging task since it is well-established that many patients experience anticipatory stress in the oral healthcare setting. Such stress may provoke patients to experience a state of disequilibrium or crisis characterized by anxiety, that is, an intense unpleasant subjective feeling and an inability to function normally. The sequence of events, which leads from equilibrium to a crisis situation (disequilibrium) and back to equilibrium, includes a hazardous event, a vulnerable state, a precipitating factor, an active crisis state, and a reintegration state.

#### **Hazardous Event**

A hazardous event is any stressful life event that challenges the patient's ability to cope. The experience can be either internal (the psychological stress of dental phobia) or external (such as a natural disaster, the death of a loved one, or the loss of employment). Clinicians may be unaware of such hazardous events and patients may not readily volunteer such information.

#### **Vulnerable State**

Depending on subjective interpretation, one person may see the hazardous event as a challenge, while another may see the same event as a threat. If one views the event as a threat, the increased physical and emotional tension may manifest itself as perceptions of helplessness, anxiety, anger, and depression.

#### **Precipitating Factor**

The precipitating factor (in our example, pain) is the actual event that moves the patient from the vulnerable state to the active crisis state. This event, especially when added onto other stressful life events (hazardous events), can cause a person to suffer a crisis. In susceptible patients, not only pain but even minor dental problems requiring a visit to the dentist can precipitate an active crisis state.

#### **Active Crisis State**

During the active crisis state, the patient is emotionally and psychologically aroused because of pain, negative self-critical thoughts about what brought him or her into the clinician's domain, unfamiliarity with the environment, and fear that the clinician will be judgmental or punitive. The model for crisis intervention has six characteristic phases and follows the acronym CRISIS: calm confidence, responsiveness, involvement, supportiveness, "I can" statements, and situation.

#### **Calm Confidence**

People who are in a crisis situation generally are not attuned to the words being spoken to them, but they are responsive to nonverbal communication. Behaviorally, calm confidence is displayed by establishing eye contact with the patient, by guiding the patient into the chair, or by touching the patient's shoulders. All of these measures reflect inner self-confidence and control over the situation. If the clinician is perceived as being calm and confident, the patient is more likely to calm down and give trust and control to the clinician.

#### Responsiveness

Responsiveness is conveyed through verbal communication. It requires a willingness to

be directive and to give firm guidance while responding to both the emotional and oral healthcare needs of the patient. The clinician with empathy for the patient does not convey a negative value judgment and, therefore, builds rapport with the patient.

#### Involvement

A patient in crisis will exhibit behaviors suggesting helplessness or dependency, which might make the clinician feel all the more responsible. Clinicians must relinquish this sense of total responsibility and assist the patient to assume responsibility for his or her own health. The clinician can redirect responsibility by telling patients that their active involvement is needed for a successful long-term outcome. Positive encouragement increases the likelihood that patients will adopt the behaviors necessary to maintain their oral health.

#### Supportiveness

Listening to the patient relating his or her feelings, concerns, and experiences is a large part of being supportive. Expressing acceptance in a nonjudgmental style, such as sitting near the patient at eye level and nodding in an understanding manner, further conveys support. This does not imply that the clinician must agree with the ideas of the patient, but it does reflect a sense of support and concern for the patient.

#### "I Can" Statements

Individuals often aggravate a crisis situation by expressing negative thoughts such as "I can't handle this," "This is too much for me," or "I know this is going to be terrible." Here, the clinician's response may go a long way in determining a patient's success in developing coping skills. By saying nothing, the clinician tacitly agrees with and reinforces an unhealthy line of thinking. On the other hand, by teaching the patient to use positive self-statements, the clinician helps foster healthy coping skills. Table 1.2Primary goals of crisis intervention inthe oral healthcare setting.

- Identify the problem
- Establish a working diagnosis
- Restore function (at least temporarily)
- Develop a plan for definitive treatment
- Help the patient to connect the current crisis with past ineffective behaviors
- Teach the patient new preventive healthcare skills

Examples of positive coping thoughts include "One step at a time," "I can handle this situation," or "I can handle this challenge." By positively confronting a crisis situation, the patient experiences less distress and is more responsive to intervention.

#### Situation

The situation is the crisis of the moment, and it reflects the physical and emotional state of the patient at that moment in time. It must be kept in mind that patients do not consult clinicians to obtain diagnoses, but to obtain relief from symptoms and to return to full health. When a cure is not possible, intervention to improve the quality of life is warranted. Successful resolution of the problem is often directly dependent on timely intervention. The situational component of the crisis mandates that the intervention produce both short-term and long-term results (Table 1.2).

#### **Reintegration State**

Reintegration refers to the transition back to equilibrium. Ideally, the patient feels that the clinician was responsive. The problem has been resolved in a timely fashion, function has been restored (at least temporarily), a plan for definitive treatment has been agreed upon, the current crisis has been successfully connected with past ineffective behaviors, and new preventive healthcare skills have been instituted.

## **1.4 Characteristics of the** Patient-Doctor Relationship

Reflecting on the case of the patient in pain discussed above, it becomes clear that the characteristics that distinguish, promote, and maintain a healthy patient–doctor relationship are empathy, congruence, positive regard, and, as we shall see later, "due process."

#### **Empathy**

Empathy refers to the clinician's perception and awareness of the patient's feelings without participating in them. When the patient is sad, the clinician senses and acknowledges the sadness, but does not become sad. In contra-distinction, sympathy implies assumption of, or participation in, another person's feelings.

#### Congruence

Congruence relates to the matter of words and deeds conveying the same message. Patients will sense whether the clinician's words and deeds are congruent or convey divergent meanings. Similarly, if the patient says, "I am happy," but appears sad and dejected, the clinician should be alert to the discordant messages conveyed by what is heard and what is observed.

#### **Positive Regard**

Positive regard is the act of recognition and active demonstration to the patient that the



clinician recognizes him or her as a worthy person. This means that the clinician makes a concentrated effort to get to know what the patient cares about; what makes the patient happy, sad, or angry; what makes the patient likable or unlikable; and identifies qualities that make the patient unique. In this process, the clinician transmits attitudes to the patient by the same unconscious word inflections, tones of voice, and body language by which the patient conveys underlying feelings to the clinician. The human qualities that the clinician and patient bring to the process of the patient-doctor interaction are crucial in either opening or closing the lines of communication (Figure 1.1).

## **1.5 Documentation of the Clinical Process**

Attorneys, courts, and juries operate by the dictum "if it isn't written down, it didn't happen." Documentation of the clinical process should conform to state laws governing the practice of dentistry and the standards of care established by the American Dental Association and other relevant professional organizations.

#### **Problem-Oriented Dental Record**

Problem-oriented record keeping enjoys a significant degree of universality in both medical and dental settings. While there are many acceptable alternatives, the problem-oriented dental record facilitates the standardized

**Figure 1.1** The patient-clinician interaction should be recognized and acknowledged in order to enhance the lines of communication.

Table 1.3 Essential elements of a progress note.

• Database

- Subjective information
  - The reason for the visit, a statement of the problem (chief complaint), and a qualitative and quantitative description of the symptoms as described by the patient
- Objective findings

   "Measurements" (a record of actual clinical, radiographic and laboratory findings) taken by the clinician undistorted by bias
- Problem list
  - Assessment

     Derived from the database, which leads to a provisional or definitive diagnosis, i.e. "needs" (existing conditions or pathoses
- Disposition
- Plan
  - Proposed treatment plan and actual services (preventive, therapeutic) rendered to alleviate or resolve problems: include plans for consultation or referral to other healthcare providers, prescriptions written; and pre-and post-operative instructions

sequencing of activities associated with the elicitation and documentation of demographic, diagnostic, preventive, and treatment planning, and treatment-related information.

#### **Progress Notes**

Logically structured progress notes provide the fabric to effectively document and promote continuing problem-oriented patient care. They facilitate the chronological recording of all patient encounters and are divided into three main components: the database (subjective and objective data), the problem list, and the disposition of the problem (Table 1.3).

The database is the product of those activities (e.g. history and physical examination) that are performed during Phase I of the clinical process (Table 1.4). These activities are effective to screen for significant disease, and the results are likely to be good reference points in the evaluation of future problems. Consequently,

#### Table 1.4 The database.

D	• 1 .• C	
Patient	identifics	ition
1 attent	identified	uon

Demographic data
A statement of the problem
Chief complaint
Qualitative and quantitative description
of the symptoms provided by the
patient
Other reasons for the visit
New patient
Established patient
Recall
Emergency
Follow-up
Historical profile
Dental history
Medical history
Family history
Social history
Review of organ systems
Vital signa height and weight
Vital signs, neight, and weight
Frequencies of the oral equity
Examination of the oral cavity
Laboratory studies
Consultations
Dental
Medical
Risk stratification

screening measures should be validated and focused on identifying those problems that one cannot afford to miss.

A sample initial database that may be used to document the findings for the patient is shown in Tables 1.5 and 1.6. If using paper forms, the documentation must be legible, complete, and in ink. If corrections become necessary, they should be accomplished in a manner that does not obliterate the original entry, such as a single line drawn through the entry. In this regard, most electronic formats preserve or archive prior entries according to their unique time stamp. The use of symbols such as check marks and underlined or circled answers are best avoided. Responses to queries are to be recorded as "positive" (with appropriate elaboration), "negative," or "not applicable." The database is to be reviewed at all subsequent

## 8 Physical Evaluation and Treatment Planning in Dental Practice

#### Table 1.5 Documentation of initial historical profile.

NAME	ID NUMBER	
Date of birth	Sex	
Ethnic origin	Occupation	
Address	City	
State/Zip	Phone	
Emergency contact Name	Phone	
Name	Phone	
Insurance information		
CHIEF COMPLAINT		
DENTAL HISTORY		
Frequency of visits to dentist?		
Date of most recent radiographic examination?		
Types of care received?		
History of oro-facial injury (date, cause, type of injury)?		
Difficulties with past treatment?		
Adverse reactions (local anesthetics, latex products, and dental materi	ials)?	
MEDICAL HISTORY		
Drug allergies or other adverse drug effects?		
Medications (prescribed, OTC, vitamins, dietary supplements, special d	liets)?	
Past and present illnesses?		

#### Table 1.5 (Continued)

#### NAME

ID NUMBER

Last time examined by a physician (why)?

Females only (contraceptives, pregnancy, changes in menstrual pattern)?

Family history (DM, HTN, heart disease, seizures, cancer, bleeding problems, other)?

Social history (type, amount, frequency of tobacco, alcohol, and recreational drug use)?

**REVIEW OF ORGAN SYSTEMS** 

Skin Gastrointestinal Itching Eating disturbance Rash GERD, abdominal pain, PUD Ulcers Liver disease Jaundice, hepatitis Pigmentation Lack/loss of body hair Genitourinary Extremities Difficulty urinating Varicose veins Excessive urination Swollen, painful joints Blood in urine Kidney problem Muscle weakness, pain Bone deformity, fractures STDs Prosthetic joint Endocrine Eyes Thyroid problem Conjunctivitis Weight change Blurred vision DM Double vision Excessive thirst Drooping eyelids Hematopoietic Bruising/bleeding Glaucoma Ear, nose, throat Anemia Earache White blood cell problems HIV infection Hearing loss Nosebleeds Spleen problem Sinusitis Neurological Sore throat Headaches Dizziness, fainting Hoarseness

**10** *Physical Evaluation and Treatment Planning in Dental Practice* 

Table 1.5 (Continued)

NAME	ID NUMBER
Respiratory	Seizures
Shortness of breath	Paresthesia/neuralgia
Coughing, blood in sputum	Paralysis
Bronchitis, emphysema	Psychiatric
Wheezing, asthma	Anxiety, phobia
TB, or exposure to	Depression
Cardiovascular	Other
Hypertension	Growth or tumor
Pain in chest, Ml	Surgery
Congenital heart disease	Radiotherapy
Prosthetic valve/pacemaker	Chemotherapy

appointments and changes recorded in the progress notes of that day (Table 1.7).

A problem is anything that requires diagnosis or treatment or that interferes with the quality of life as perceived by the patient. It may be a firm diagnosis, a physical sign or symptom, or a psychological concern. Problems by their nature may fall into one of several categories (Table 1.8).

A complete database is so essential to the success of the clinical process that clinicians must consider an "incomplete database" as the number one problem until all required data have been obtained. An incomplete database may provide the basis for initial consultation with, and referral to, dental and medical specialists. Subsequently, the resolution of diagnostic problems may lead to further consultations with, or referrals to, colleagues, other healthcare professionals, and allied healthcare workers (see Chapter 16).

The clinical process culminates in the development of timely preventive and therapeutic strategies, along with the explanation of these strategies to the patient or guardian, in order to obtain consent and to encourage compliance with, and participation in implementing the treatment plan (see Chapter 16).

## **1.6 Designations and Abbreviations**

The dental record is an important medico-legal document. Not only does it facilitates diagnosis, treatment planning, and practice management, it is also a valuable means of communication between the primary clinician and other providers, and it may be used in defense of allegations of malpractice and aid in the identification of a dead or missing person.

The record of the initial database shows missing teeth, existing restorations, and diseases and other abnormalities, while the chronological record of progress notes reflect treatment provided and diseases and other abnormalities that have occurred after the initial examination. The dental record is also a source of important information for the ongoing monitoring and evaluation of oral healthcare. Consequently, the charted record of the clinical process must be in conformity throughout the dental record. Table 1.6 Documentation of initial physical examination.

NAME	ID NUMBER
VITAL SIGNS, HEIGHT, AND WEIGHT	
Blood pressure	Pulse
Respiration	Temperature
Weight	Height
HEAD AND NECK EXAMINATION	
Head	
Face	
Facial bones	
Ears	
Nose	
Eyes	
Hair	
Neck	
Lymph nodes	
TMJ	
Salivary glands	
Neurological findings	
INTRAORAL EXAMINATION	
Lips/commissures	
Mucosa	
Hard palate	
Soft palate/tonsillar area	
Tongue	
Floor of the mouth	
Gingivae	
Breath	

Table 1.6 (Continued)



Remarks

Example of an odontogram used to record missing teeth, existing restorations, and periodontal recordings (PSR).

#### Table 1.7 Progress notes.

PROGRESS NOTES	
Name:	ID number:
Date:	
S	(subjective information): Reason for the visit; changes to the medical history
0	(objective findings): "Measurements" taken by the clinician (clinical, radiographic, and laboratory data; vital signs)
A	(assessment): diagnoses derived from subjective and objective data (reason for therapeutic intervention)
Ρ	(plan): Treatment plan or actual treatment provided; prescriptions Written; post-operative instructions; disposition

Signature

<ul> <li>Anatomic</li> </ul>	• Psychiatric (anxiety,
(developmental,	depression)
acquired)	<ul> <li>Abnormal</li> </ul>
<ul> <li>Physiological (pallor,</li> </ul>	diagnostic tests
jaundice)	<ul> <li>Risk factors (heart</li> </ul>
• Symptomatic (pain,	disease)
dyspnea)	<ul> <li>Socio-economic</li> </ul>
<ul> <li>Physical (paralysis)</li> </ul>	(uninsured)

#### Table 1.8 Problem categories with examples.

Table 1.9Alphabetical designation of primaryteeth.

Tooth	Designation
Right maxillary primary second molar	A
Right maxillary primary first molar	В
Right maxillary primary canine	С
Right maxillary primary lateral incisor	D
Right maxillary primary central incisor	Е
Left maxillary primary central incisor	F
Left maxillary primary lateral incisor	G
Left maxillary primary canine	Н
Left maxillary primary first molar	Ι
Left maxillary primary second molar	J
Left mandibular primary second molar	К
Left mandibular primary first molar	L
Left mandibular primary canine	М
Left mandibular primary lateral incisor	Ν
Left mandibular primary central incisor	0
Right mandibular primary central incisor	Р
Right mandibular primary lateral incisor	Q
Right mandibular primary canine	R
Right mandibular primary first molar	S
Right mandibular primary second molar	Т

**Table 1.10** Numerical designation of permanentteeth.

Tooth	Designation
Right maxillary third molar	1
Right maxillary second molar	2
Right maxillary first molar	3
Right maxillary second premolar	4
Right maxillary first premolar	5
Right maxillary canine	6
Right maxillary lateral incisor	7
Right maxillary central incisor Left maxillary central incisor	8 9
Left maxillary lateral incisor	10
Left maxillary canine	11
Left maxillary first premolar	12
Left maxillary second premolar	13
Left maxillary first molar	14
Left maxillary second molar	15
Left maxillary third molar	16
Left mandibular third molar	17
Left mandibular second molar	18
Left mandibular first molar	19
Left mandibular second premolar	20
Left mandibular first premolar	21
Left mandibular canine	22
Left mandibular lateral incisor	23
Left mandibular central incisor	24
Right mandibular central incisor	25
Right mandibular lateral incisor	26
Right mandibular canine	27
Right mandibular first premolar	28
Right mandibular second premolar	29
Right mandibular first molar	30
Right mandibular second molar	31
Right mandibular third molar	32

Missing teeth	Draw a large "X" on the root or roots of missing teeth.
Edentulous	Inscribe crossing lines, one extending from the maxillary right third molar area to the mandibular left third molar area and the other from the maxillary left third molar area to the mandibular right third molar area.
Edentulous arch	Inscribe crossing lines, each running from the uppermost aspect of the third molar area to the lowermost aspect of the third molar area on the opposite side.
Amalgam restoration	In the diagram of the tooth, draw an outline of the restoration showing size, location, and shape and block in solidly.
Nonmetallic permanent restoration	In the diagram of the tooth, draw an outline of the restoration showing size, location and shape.
Gold or other alloy restoration	In the diagram of the tooth, draw an outline of the restoration showing size, location, and shape and inscribe horizontal lines within the outline. If made of an alloy other than gold, indicate in the REMARKS section that the restoration is made of a metal other than gold (where possible, indicate type of alloy used).
Combination restoration	In the outline of the tooth, draw an outline of the restoration showing size, location, and shape; and partition at junction of materials used and indicate each as described in the amalgam restoration and nonmetallic permanent restoration above.
Porcelain or acrylic facings and pontic	In the diagram of the tooth, draw an outline of the restoration. Indicate in the REMARKS section that the facing or pontic is made of porcelain or acrylic.
Porcelain or acrylic post crown	In the diagram of the tooth, draw an outline of the restoration; outline approximate size and position of the post or posts. Indicate in the REMARKS section that the crown is made of porcelain or acrylic.
Porcelain or acrylic crown	In the diagram of the tooth, draw an outline of the restoration. Indicate in the REMARKS section that the crown is made of porcelain or acrylic.
Fixed partial denture	In the diagram of each tooth, draw an outline of the restoration; partition at junction of materials used. If made of gold, inscribe diagonal lines for both abutments and pontics. If made of an alloy other than gold, indicate in the REMARKS section that the restoration is made of a metal other than gold (where possible, indicate type of alloy used). Facing material should be indicated in the REMARKS section.
Removable prosthesis	Place a line over numbers of replaced teeth and describe briefly in REMARKS.
Root canal fillings	Outline each canal filled on the diagram of the root or roots of the tooth involved and block in solidly.
Apicoectomy	Draw a small triangle on the root of the tooth involved, apex away from the crown, the base line to show the approximate level of the root amputation.
Temporary restoration	In the diagram of the tooth, draw an outline of the restoration showing size, location and shape. If possible, describe the material in REMARKS.

 Table 1.11
 Standardized chart markings for missing teeth, existing restorations, and prostheses.

In the diagram of the tooth, draw an outline Caries of the carious portion, showing size, location, and shape, and block in solidly. Defective restorations In the diagram of the tooth, outline the defective restoration and block in solidly. Fractured tooth Indicate approximate location of fracture with a zigzag line on outline of the tooth. In the diagram of the tooth, draw an arcing Partially erupted tooth line through the long axis. Drifted teeth Draw an arrow at the designating number of the tooth that has moved, with the point of the arrow indicating the direction of movement. Describe briefly in REMARKS. Impacted tooth Outline all aspects of each impacted tooth with a single oval. The long axis of the tooth should be indicated by an arrow pointing in the direction of the crown. Radiolucency Outline approximate size, form, and location. Radiopacity Outline approximate size, form, and location and block solidly. Periodontal status PSR scores (PSR periodontal probe with a 3.5 mm ball tip and a 3.5-5.5 mm color-coded band) 0: Colored band of the probe remains completely visible in the deepest probing depth in the sextant. No calculus or defective margins are detected. Gingival tissues are healthy and no bleeding occurs after gentle probing. 1: Colored band of the probe remains completely visible in the deepest probing depth in the sextant. No calculus or defective margins are detected. There is bleeding after gentle probing. 2: Colored band of probe remains completely visible in the deepest probing depth in the sextant. Supra- or subgingival calculus or defective margins are detected. 3: Colored band of probe is only partly visible in the deepest probing depth in the sextant. 4: Colored band of probe completely disappears, indicating a probing depth of greater than 5.5 mm.

Table 1.12 Standardized chart markings for diseases and abnormalities.

Acute necrotizing ulcerative gingivitis	ANUG	Oral health counseling	онс
All caries not removed	ACNR	Oral surgery	OS
All caries removed	ACR	Panoramic radiograph	Pano.
Amalgam	Am.	Patient	Pt.
Anesthetic(thesia)	Anes.	Patient informed of examination findings and treatment plan	PTINF
Assessment	А	Periapical	PA
Camphorated paramonochlorophenol	СМСР	Pericoronitis	PCOR
Chief complaint	CC	Periodontal screening and recording	PSR
Complete denture	CD	Periodontics	Perio.
Copal varnish	Cop.	Plan	Р
Crown	Cr.	Plaque control instructions	PCI
Curettage	Cur.	Porcelain	Porc.
Drain	Drn.	Post-operative treatment	POT
Electric pulp test	EPT	Preparation	Prep.
Endodontics	Endo.	Preventive dentistry	PD
Equilibrate(ation)	Equil.	Prophylaxis	Pro.
Eugenol	Eug.	Prosthodontics	Pros.
Examination	Exam.	Removable partial dentures	RPD
Extraction(ed)	Ext.	Restoration(s)	Rest.
Fixed partial denture	FPD	Return to clinic	RTC
Fluoride	Fl.	Root canal filling	RCF
Fracture	Fx.	Root canal therapy	RCT
Gutta percha	GP	Rubber dam	RD
Health questionnaire reviewed	HQR	Scaled(ing)	Scl.
History	Hx.	Subjective	S
Mandibular	Mand.	Surgical(ery)	Surg.
Maxillary	Max.	Suture(s)(d)	Su.
No significant findings	NSF	Temporary	Temp.
Objective	0	Topical	Top.
Operative	Oper.	Treatment(ed)	Tx.
Oral cancer screening exam	OCSE	Zinc oxide and eugenol	ZOE
Oral diagnosis	OD		

Table 1.13 Standard abbreviations and acronyms.

While there are acceptable alternatives, for purposes of brevity and exactness, the alphabetical designation of primary teeth (Table 1.9) and the numerical designation of permanent teeth are advocated (Table 1.10).

To record pathologic conditions and subsequent restorations of teeth, the following designations of tooth surfaces are used universally: facial (F), lingual (L), occlusal (O), mesial (M), distal (D), and incisal (I). Clinical circumstances may require the use of combinations of designations to identify and locate caries and to record treatment plans, operations, or restorations in the teeth involved. For example, 8-MID would refer to the mesial, incisal, and distal aspects of a right maxillary central incisor; 22-DF, the distal and facial aspects of a left mandibular cuspid; and 30-MODF, the mesial, occlusal, distal, and facial aspects of a right mandibular first molar.

When charting missing teeth, existing restorations, and prostheses as part of initial documentation of the database (Table 1.11); when charting diseases and abnormalities (Table 1.12); or when charting treatment completed (Table 1.11), standardized chart markings will further facilitate efficient continuity of care and may establish forensic identification.

Finally, when writing progress notes, the use of standard abbreviations and acronyms may be desirable for expediency (Table 1.13). In addition, the use of well-known medical and scientific signs and symbols, such as Rx, WNL, BP,  $H_2O$ , and others, is recommended.

## 1.7 Summary

It is axiomatic that in the clinical process the primary customer is the patient. However, the customer may also be a member of one's own organization (associates, staff) or individuals/organizations outside the institution (consultants, insurance companies, lawyers) who are "downstream" in the clinical process and must work with the product that is handed down to them. The licensed dental practitioner is solely responsible for all patient care-related activities including those legally provided by auxiliary personnel. This includes obtaining and documenting the patient's history, performing the physical examination, establishing diagnoses, developing and implementing preventive and therapeutic strategies, and properly documenting all services rendered and pertinent communications with patients.

## **Suggested Reading**

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## **The Historical Profile**

#### **CHAPTER MENU**

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"Never treat a stranger." Sir William Osler's statement is especially applicable to the practice of dentistry, in which the physical and emotional ability of the patient to undergo and respond to dental care is determined primarily by reviewing the medical/dental history. An initial historical profile (see Table 1.5) should identify the patient; determine the chief complaint; reflect the dental history; document drug allergies or other adverse drug effects; identify medications, vitamins, dietary supplements, or special diets; and provide a record of past and present illness, major hospitalizations, and a review of major organ systems. The historical profile shall be reviewed with the patient at each subsequent appointment and any new information obtained should be documented in the progress notes (see Table 1.7).

The current trend among dental practitioners is to use a combined printed and oral approach to establish the historical profile of a patient. A written questionnaire will elicit information that may be omitted by oral inquiry. Oral communication will provide important insight into a patient's feelings about past, present, and future illnesses and courses of treatment. This process is critical to the patient-doctor relationship and establishment of the rapport that precedes successful treatment.

Clinicians must be aware of the patient's overt and hidden concerns and develop a sense of the patient's reliability as an interpreter and reporter of events. Patients may suppress some information purposely or unknowingly. They may under-report other experiences or present them in a context that is less disconcerting than might be appropriate. Circumstances that may be of concern to clinicians might not be seen as unusual to patients.

Practitioners must be compulsive in compiling data, directing careful attention to the obvious and maintaining sensitivity to the less obvious "soft" clues that may be revealed in the history. An appreciation of the patient's perspective and an attitude of friendliness and respect will go a long way in assuring the patient's cooperation in gathering information.

Failure to obtain an initial historical profile, or to update it regularly, is not an excuse for being unaware of a patient's physical and emotional problems. Responses should be explored to determine whether the patient understands the question, is certain of the answer, and appreciates the importance of the question and the answer in the context of the care to be provided.

If the patient is confused, the dentist has an obligation to educate the patient to respond to questions, or the dentist may need to seek the necessary information from an additional informant. In all cases, the dentist should reduce those responses to writing. Failure to document and correctly interpret the historical profile of a patient may have devastating effects for the patient and the clinician.

## 2.1 Patient Identification

The basic biographical data should include the patient's name, age, sex, ethnic extraction, marital status, occupation, and place of residence. The date of the evaluation also must be recorded. Not only are these items essential for patient identification but also they may provide invaluable background information for the differential diagnosis of certain conditions, or identify patients in a high-risk category for a variety of diseases. For example, healthcare workers, military personnel, immigrants from developing countries, and people who work or live in institutions should be considered at higher risk for harboring certain infectious or communicable diseases.

## 2.2 Chief Complaint (Problem)

The clinician must record the patient's description of signs and symptoms associated with the current oral condition in a logical sequence. He/she should begin with the chief complaint, stated in the patient's own words. An attempt should be made to determine why the patient is consulting the dentist today and not yesterday or tomorrow. The answer may reveal an important clue to the severity of pain, underlying emotional problems, or other matters that are important in the overall understanding of the patient's illness.

Did acute symptoms prompt the visit, or was it the desire for a check-up because a neighbor, friend, or another family member was told they have oral cancer or have been diagnosed with HIV infection? The dentist should remember that a patient's expressed reason for seeking advice might mask underlying concerns. After an understandable statement of the chief complaint has been elicited, the chronology of the illness should be delineated.

#### **Character of the Problem**

The most common complaint causing a person to seek the services of a healthcare provider is pain. Determine its character. Is it sharp or dull? Is it pain or is it merely discomfort? Does it appear suddenly and disappear quickly, or does it gradually increase in intensity and subside slowly? A lesion should be inspected. Is it white, red, pigmented, ulcerative, vesicular, bullous, exophytic, or a combination of these various characteristics? Admittedly, this observation is part of the examination, not the history, but there are at least two good reasons for doing it at this point in time. First, it establishes the dentist's concern for the patient's problems, and second, it may suggest additional questions to be asked during the history-taking process.

#### **Duration and Progression of the Problem**

A number of questions should be considered. How long has the condition associated with the patient's chief complaint been present? Has the problem developed slowly or rapidly? Some conditions are characterized by a sudden onset, but others begin slowly and insidiously. Have the symptoms become worse or better? Are they better at times and worse at other times?

#### **Domain of the Problem**

One must determine whether the pain or discomfort remains localized or radiates to other anatomic locations. When dealing with a lesion, the clinician should determine if one specific area is affected or is it more wide-spread? This information is often helpful as certain diseases exhibit characteristic patterns of distribution.

#### Relationship Between Physiologic Function and the Problem

One should evaluate the effects of normal activities on the symptoms. What is the effect of the problem on mastication? Are the symptoms worse when the patient is chewing? In some instances, mastication relieves symptoms; in others, it aggravates them. Similar insights into the effects of swallowing, drinking, and speaking on the symptoms should be obtained.

### 2.3 Dental History

Important elements of a past dental history include frequency of visits to the dentist, history of radiographic examinations, type of care received in the past, history of oro-facial injuries, and difficulties with past treatment. A history of adverse reactions to local anesthetic agents, latex products (e.g. gloves, rubber dam), or other dental materials should also be investigated.

Note the attitude of the patient toward previous dentists and therapeutic interventions. Is this a patient who will never be satisfied no matter the skill of the clinician, or does the patient have significant undiagnosed problems that form the basis of the chief complaint? What is the patient's dental IQ and what priority is the patient likely to place on home care following periodontal surgery or extensive restorative care?

### 2.4 Medical History

The oral healthcare provider should document a history of allergic drug reactions and other adverse drug effects and investigate whether drugs or medications are being taken. Many patients habitually take drugs for minor complaints, a practice that should be documented carefully. Patients often do not recognize nonprescription medications as drugs and, therefore, do not mention the habitual use of aspirin, decongestants, antihistamines, vitamins, and many other over-the-counter medications. The clinician should inquire about dietary supplements or special diets the patient may be on. Immunosuppressant therapy may place a patient in the high-risk category for many viral, fungal, and bacterial infections and de novo malignancies.

The dentist should inquire about the patient's self-perceived general health and summarize past and present medical conditions. Significant hereditary or developmental abnormalities must be documented. Previous operations, injuries, accidents, and hospitalizations should be recorded, as well as comments about anesthesia, drug reactions, blood transfusions, or transmissible diseases. A history of repeated hospitalizations for the same condition, failure of an infection to resolve following therapy, recurrent infections with the same pathogen, and infection with unusual organisms, especially in the absence of "hard" signs of infection, may be suggestive of immunodeficiency (hereditary, acquired, or therapeutic).

## 2.5 Family History

Most diseases develop as a consequence of a multitude of internal or external contributing or causative factors. It is well established that some individuals exhibit a genetic predisposition or susceptibility to a given disease. Common examples which may run in families include cancer, diabetes mellitus (DM), cardiovascular diseases, mental health and asthma. Other diseases occur as a consequence of single genetic mutation, which predictably cause disease that may be passed down from generation to generation.

Commonly occurring examples of hereditary conditions include thalassemia, sickle cell anemia, hemophilia, cystic fibrosis, Fragile X syndrome and Huntington's disease. Finally, acquired infectious diseases may be transmitted from one family member to another, some requiring only casual contact, while others are transmitted only through repeated, intimate encounters (sometimes associated with child abuse).

Because of the frequency of facial and intraoral injuries and/or the presence of suspected sexually transmitted diseases associated with family violence (child abuse, elder abuse, spouse abuse), the oral healthcare provider is often the first professional to encounter the victim. While obtaining the history, careful attention must be paid to the explanation provided by the patient or other family members providing input. Look for any inconsistencies or behaviors suggestive of reluctance to provide information. Note nonverbal behaviors, which may not match verbal statements. Any suspicion of abuse should be reported to the appropriate local or state agency in accordance with local regulations.

## 2.6 Social History

The personal habits of patients may reveal important clues to diagnosis. Excessive use of tobacco and alcohol may produce symptoms whose significance is lost without knowledge of a patient's smoking and drinking habits. The daily use of tobacco products should be recorded in numbers of cigars, cigarettes (packs), or pipefuls smoked. Alcohol abuse is unequivocally associated with problems such as child abuse, fatal traffic accidents, homicides, rapes, and suicides.

Alcohol consumption should be recorded in terms of quantity and type over a specific period of time. Since patients with alcoholism are especially prone to certain diseases, it is important not to overlook this particular finding. The simple question "when was the last time you had more than X drinks in 1 day?" where X equals five for men and four for women should be asked as part of the interview. A response of "within the past 3 months" usually indicates the patient has a drinking problem and should undergo further assessment.

The patient's social history may also alert the clinician to the presence of environmental and cultural factors that may significantly influence the patient's general health and provide insight into the patient's personality and emotional state. A history of recreational drug use, frequent moves, sexual promiscuity (whether homosexual, bisexual, or heterosexual), frequent travels to developing countries, or recent immigration into the United States may signify a high risk for exposure to infectious diseases.

Information about educational, social, religious, and economic background and feelings of achievement or frustration can provide important insight into understanding the patient as a person. From this information, one can assess which factors might have a bearing on the current problem and whether they might be supportive or stressful influences.

## 2.7 Review of Organ Systems

The chief complaint and the medical, family, and social histories of the patient should guide the clinician to investigate areas of special concern. All signs and symptoms related to specific organ systems should be recorded. The status of organ systems may suggest the presence of concomitant systemic conditions, contribute to the diagnostic process, and influence projected treatment protocols and prognosis.

#### Skin

#### Itching, Rash, and Ulcers

An important cause of pruritus, especially associated with a bitter metallic taste and burning tongue, may be psychogenic (e.g. a reaction to stress and strain). Pruritus without a visible rash may be a reaction to drugs, such as aspirin, opiates and their derivatives, heroin, or amphetamines. Generalized pruritus is frequently the first sign of biliary cirrhosis and may occur many months before the onset of jaundice. It may also be associated with carcinoma or a hematological disorder such as polycythemia, Hodgkin's lymphoma, or T-cell lymphoma (Sezary syndrome). Patients with pruritus in association with obvious skin lesions, such as papules, vesicles, bullae, or ulcerations, should be referred to a dermatologist. Many of these disorders require specialized dermatological approaches to establish the diagnosis.

#### Pigmentations

Vitiligo is an acquired disorder characterized by localized or generalized hypomelanosis of the skin and hair. Its etiopathogenesis is poorly understood but likely involves multiple overlapping pathogenic mechanisms. When localized, hypomelanosis of the skin and hair may be restricted to one region, such as the scalp. When generalized, the pattern of hypomelanosis is quite typical, with lesions evident on the face and neck coupled with loss of pigment in the hair.

Neurofibromatosis (von Recklinghausen disease) is inherited as an autosomal dominant trait. It is characterized by the appearance of numerous cutaneous café-au-lait spots. These lesions most commonly occur on the trunk and vary in diameter from less than 1 cm to more than 15 cm. The presence of six or more café-au-lait spots, each with a diameter greater than 1.5 cm (> 0.5 cm in children), is highly suggestive of neurofibromatosis even without a familial history of the disease.

Peutz–Jeghers syndrome is an autosomal dominant trait associated with intestinal polyposis and mucocutaneous pigmentation. The polyposis is most frequent in the ileum and jejunum and the mucocutaneous hypermelanosis is most noticeable in periorificial sites and the oral mucosa. It is now recognized that patients with Peutz–Jeghers syndrome are at increased risk for developing both gastrointestinal and nongastrointestinal malignancies.

Diffuse brown hypermelanosis is a striking feature of primary adrenocortical insufficiency

(Addison's disease). Most cases are caused by an autoimmune process or infiltration of the gland by an infectious agent (HIV, Mycobacterium tuberculosis). There is significant accentuation of pigmentation in certain mucocutaneous areas, namely along pressure points and oral mucous membranes. These patients are hypotensive and respond poorly to stress associated with infection, surgery, or trauma. An identical type of diffuse hyperpigmentation also has been reported as a sequela of adrenalectomy in patients with Cushing's disease (Nelson syndrome). A third example of an Addisonian type of hypermelanosis has been reported in patients with pancreatic and lung tumors. This phenomenon is known as a paraneoplastic syndrome.

In certain chronic nutritional deficiencies, splotches of dirty-brown hyperpigmentation may appear, especially on the trunk. Patients with protein deficiency may demonstrate a change in hair color, first to reddish brown and eventually to gray. In other selective deficiencies, such as sprue (faulty absorption of fats and carbohydrates), the hypermelanosis may be distributed over any area of the body, whereas in pellagra (niacin deficiency), it is limited to skin that is exposed to light or irritation. In vitamin  $B_{12}$  deficiency, the hair loses its original color and becomes gray and there is a diffuse cutaneous distribution of hypermelanosis.

#### Lack or Loss of Body Hair

Male-pattern baldness is inevitable in the presence of androgenic stimuli in patients with a genetic predisposition to baldness. The hypopituitary dwarf may completely lack hair, while patients with acquired hypopituitary states rapidly lose hair from the axillae, pubis, and, at times, the scalp. In congenital cretinism, lanugo hair may be retained, but the scalp hair is sparse and dry. In adults, hypothyroidism causes a decrease in secondary sexual or hormonal hair, in addition to the characteristic loss of the lateral third of the eyebrows. The loss of scalp hair in a male pattern along with an increase in body and facial hair may be due to increased production of adrenal androgens (Cushing's syndrome) or exogenous adrenocorticotropic hormone administration.

In women, a temporary postpartum increase in hair loss is normal. The prolonged growth phase resulting from hormonal stimulation during pregnancy ends after delivery and a synchronized onset of the resting phase occurs in the scalp hair follicles. Prolonged febrile illnesses, systemic lupus erythematosus, dermatomyositis, severe cachexia, and lymphomas also may be associated with hair loss. Permanent hair loss on the extensor surfaces of the fingers is an early sign of systemic scleroderma.

Superficial ringworm infections of the scalp, deep pyogenic infections, and severe herpes zoster are associated with permanent hair loss in the affected area. Permanent alopecia may occur in lesions of discoid lupus erythematosus, localized scleroderma, and sarcoidosis, usually involving the scalp and eyebrows. Ionizing radiation in large doses causes permanent hair loss. Transient hair loss may be caused by certain medications such as antimetabolites, heparin, coumarin, and excessive doses of vitamin A.

#### **Extremities**

#### Swollen or Painful Joints

The causes of joint disorders are numerous and include traumatic, infectious, metabolic, immunologic, and neoplastic processes. Joint disorders may produce pain, stiffness, swelling, redness, increased warmth, or limitation of motion. Edema associated with heart failure tends to be most extensive in the ankles and accentuated in the evening, a feature determined largely by posture. Other evidence of heart disease usually indicates the pathogenesis of edema.

#### **Muscle Weakness and Pain**

Reduced strength of contraction, diminished power with single contractions, and repeated contractions are indubitable signs of muscle disease. In most of these diseases, some of the muscles are affected and others are spared. Each disease exhibits its own pattern. Ocular palsies are seen more or less exclusively as diplopia (double vision), ptosis (drooping eyelids), or strabismus (deviation of the eye that cannot be overcome by the patient).

Facial palsy is seen as an inability to close the eyes or smile and expose the teeth. Bulbar palsy is seen as dysphonia, dysarthria, and dysphasia, with or without a hanging jaw or facial weakness. Cervical palsy is often seen as the hanging-head syndrome, which is defined as an inability to lift the head from a pillow.

#### **Bone Deformities or Fractures**

Bone is a dynamic tissue that is remodeling itself throughout life. The response of bone to injuries, such as fracture, infection, interruption of blood supply, and the presence of expanding lesions, is relatively limited. Dead bone must be resorbed and new bone formed. Even in an architecturally disruptive disorder, remodeling appears to be dictated by mechanical forces. Disorders involving osseous tissues are associated with calcium, phosphorus, calcitonin, vitamin D, and parathyroid hormone interactions.

#### **Prosthetic Joints**

Of the many potential complications after total joint replacement, infection is by far one of the most catastrophic. The circumstantial association reported between certain invasive dental procedures and subsequent infectious seeding of artificial prostheses remains an area of professional debate and oral healthcare providers must be aware of current guidance.

#### Eyes

#### Conjunctivitis

Conjunctivitis associated with burning, itching, and runny eyes might be apparent in patients with allergies (e.g. pollens, dust mites, dander), viral infection (e.g. adenovirus, HSV, EBV, VZV, influenza), and bacterial infection (*Staphylococcus aureus*, *Neisseria* gonorrhea, *Chlamydia trachomatis*). Other potential causes include Sjögren's syndrome and chemical burn.

#### **Blurred Vision**

The dentist should record whether the patient wears glasses or contact lenses. The appearance of black spots moving in front of the eyes, followed by nausea, is often the first symptom of pending migraine headache. Blurred vision may also result from cataracts (often aggravated by DM), Stevens–Johnson syndrome, or benign mucous membrane pemphigoid.

#### **Double Vision**

Diplopia occurs when the disparate points (visual receptors) are too far apart. The images formed are separate and do not fuse. Diplopia may occur when the area in the cerebrum responsible for visual acuity is compromised by trauma, stroke, or vascular abnormalities. It is also the predominant symptom of dysfunction of the optic nerve.

#### **Drooping Eyelids**

Paresis of the third cranial nerve (oculomotor) will result in ptosis (drooping of the upper eyelid). Ptosis and/or diplopia are the most frequently observed initial sign of myasthenia gravis, occurring in 85% of patients. Ptosis is an essential finding in Horner's syndrome (paralysis of the cervical sympathetic nerves characterized by ptosis, miosis, anhydrosis, and flushing on the affected side of the face).

#### Glaucoma

Glaucoma is characterized by increased intraocular pressure associated with progressive irreversible damage to the optic nerve, resulting in defects in the visual field. It is the second most common cause of blindness in the United States. The most common type is chronic primary open-angle glaucoma, in which the ocular pressure builds up painlessly and gradually over time. In contrast, the acute primary open-angle type of glaucoma is a medical emergency characterized by a sudden increase in intraocular pressure, ocular immobility, dilated pupils, and severe pain.

#### Ears, Nose, and Throat

#### Seasonal/Environmental Allergies

Patients with a history of seasonal or environmental allergies are often prescribed antihistamines and/or corticosteroid sprays to manage their condition. These medications may contribute to oral dryness and increase the risk of epistaxis. The most common cause of epistaxis is probably nose picking, which results in tearing of the rich network of veins (Kiesselbach plexus) in the anterior naris. Other conditions associated with epistaxis are upper respiratory tract infection, atheromas of the nasal vessels, hypertension, bleeding diatheses (e.g. thrombocytopenia, coagulopathies), polycythemia, rhinoliths, acute sinusitis (especially involving the ethmoid sinus), tumors of the nose or paranasal sinuses, nasal angiomas, hereditary hemorrhagic telangiectasia, and Wegener granulomatosis. The number of bleeding episodes along with the severity of epistaxis is frequently increased in patients taking antithrombotic agents or anticoagulants.

#### **Earache and Tinnitus**

Patients with a history of recurrent ear infections may exhibit pain referred to the dentition or temporomandibular joint, while pain of odontogenic or myofacial origin may mimic otitis media. Tinnitus, or ringing of the ears, is a purely subjective phenomenon affecting about 10% of adults, but often of no clinical significance. Potential causes include noise-induced hearing loss, presbycusis, wax in the external auditory canal, otitis media, or an adverse medication reaction. Commonly implicated medications are NSAIDs, loop diuretics, aminoglycosides, and chemotherapy agents.

#### **Hearing Loss**

The most common causes of middle ear deafness are otitis media, rupture of the eardrum, and osteosclerosis. Nerve deafness has many causes, including damage from rubella or syphilis. The auditory nerve may be affected by tumors of the cerebellopontine angle. Deafness also may result from a demyelinating plaque in the brain stem. Fullness, vertigo, tinnitus, and fluctuating hearing loss may be due to Ménière's disease, a rare nonsuppurative disease of the labyrinth.

#### Sinusitis

The most common predisposing factor for acute purulent sinusitis is a viral infection of the upper respiratory tract. This may lead to obstruction of the paranasal sinuses along with the development of localized pain, tenderness, and low-grade fever. Frontal sinusitis is characterized by pain over the forehead. Pain, swelling, and tenderness in the anterior portions of the maxilla characterize maxillary sinusitis. Ethmoid sinusitis is characterized by pain in the upper lateral areas of the nose, frontal headache, redness of the skin, and tenderness to pressure over the nasal bones adjacent to the inner canthus of the eye.

Sphenoid sinusitis is characterized by tenderness and pain over the vertex of the skull, mastoid bones, and occipital portion of the head. These manifestations usually clear as the viral disease subsides. In a number of instances, however, invasion by pyogenic bacteria supervenes and causes a purulent sinusitis to develop. The cause of chronic sinusitis may be the same as that for the acute form, but more than one pathogen may be present. A neoplastic lesion should be ruled out in patients who experience repeated episodes of acute sinusitis or who have chronic symptoms.

#### Sore Throat

A sore throat, regardless of the cause, is the outstanding symptom of acute pharyngitis. Approximately two-thirds of all acute illnesses are viral infections (e.g. coronavirus, rhinovirus, influenza) of the upper respiratory tract that demonstrate varying degrees of pharyngeal discomfort. Fifteen to 30% of pharyngitis cases are caused by Group A streptococci and less common bacterial causes include *N. gonorrhea, Corynebacterium diphtheria, Treponema pallidum.* Potential serious complications of acute pharyngitis are peritonsillar cellulitis and abscess. The persistence of pain in an enlarged firm tonsil, in the absence of an infectious process, warrants a biopsy. The presence of fever does not rule out a neoplastic lesion because the temperature may be elevated in lymphomas.

#### Hoarseness

Laryngitis is the most common symptom of a disorder involving the larynx and it often interferes with normal phonation. Although hoarseness is usually of short duration and associated with an upper respiratory infection, it may persist as a chronic complication of gastroesophageal reflux disease (GERD), allergies, or smoking. When hoarseness persists for more than two to three weeks, further medical assessment is indicated to rule out laryngeal cancer or a thyroid problem.

#### **Respiratory Tract**

#### **Shortness of Breath**

Dyspnea, difficult or labored breathing, is associated with abnormalities resulting in hypoxia, or even more commonly with disorders associated with excess carbon dioxide retention. It is a cardinal manifestation of diseases involving the respiratory and cardiovascular systems. Dyspnea that is present at rest or when performing a menial task is an early manifestation of left ventricular heart failure. Orthopnea and acute paroxysmal nocturnal dyspnea may also be present. The dyspnea of chronic obstructive pulmonary disease tends (COPD) to develop more gradually than that of heart disease.

#### Coughing

Cough is a defensive mechanism triggered by stimulation of a complex reflex arc consisting

of inflammatory, mechanical, chemical, and thermal cough receptors. It is an explosive expiration that helps clear the tracheobronchial tree of secretions and foreign bodies. Acute cough (<3 weeks in duration) is usually caused by an upper respiratory tract viral infection. Subacute cough (three to eight weeks duration) is usually postinfectious and typically resolves without treatment. Chronic cough (>8 weeks duration) is usually caused by postnasal drip syndrome, asthma, or gastroesophageal reflux (GERD), alone or in combination. An estimated 5-20% of patients using angiotensin-converting enzyme (ACE) inhibitors develop a dry hacking cough. Finally, coughing is so common in cigarette smokers that it is often ignored or minimized. Any change in the nature and character of a chronic cough by a cigarette smoker should prompt an immediate diagnostic evaluation, with particular attention directed to the detection of pulmonary tuberculosis and bronchogenic carcinoma.

#### Hemoptysis

Hemoptysis, or blood in the sputum, may be evidence of a respiratory tract infection or a pulmonary neoplasm. A productive cough in the morning characterized by hemoptysis is highly suggestive of tuberculosis, especially if associated with fever or night sweats, chest pain, and weight loss. Although hemoptysis may occur during the course of a viral or bacterial pneumonia, its occurrence always should raise the question of a more serious underlying process.

#### **Bronchitis and Emphysema**

Chronic bronchitis and emphysema represent the two main clinical manifestations of COPD. Chronic bronchitis is defined by the presence of excessive bronchial secretions that persist for at least three months per year for at least two consecutive years. The patient has been classically described as being overweight, blue or red-blue around the face, and having distended neck veins and ankle edema.