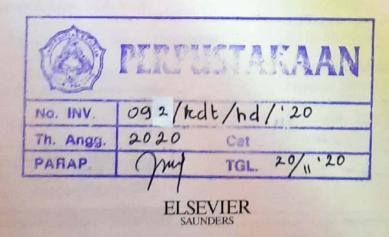
MODERN Dental Assisting

DONI L. BIRD, CDA, RDA, RDH, MA

Allied Dental Education Program Santa Rosa Junior College Santa Rosa, California

DEBBIE S. ROBINSON, CDA, MS

Research Assistant Professor and Research Study Coordinator University of North Carolina Chapel Hill, North Carolina



Contents

The Dental Assisting Profession

- 1 History of Dentistry, 2
 EARLY TIMES, 3
 THE RENAISSANCE, 5
 EARLY AMERICA, 5
 EDUCATIONAL AND PROFESSIONAL DEVELOPMENT IN
 THE UNITED STATES, 6
 HISTORY OF DENTAL ASSISTING, 9
 HISTORY OF DENTAL HYGIENE, 10
 DENTAL ACCREDITATION, 11
 NATIONAL MUSEUM OF DENTISTRY, 11
 LEGAL AND ETHICAL IMPLICATIONS, 12
 EYE TO THE FUTURE, 12
 CRITICAL THINKING, 12
- 2 The Professional Dental Assistant, 13
 CHARACTERISTICS OF A PROFESSIONAL DENTAL
 ASSISTANT, 14
 EDUCATIONAL REQUIREMENTS, 15
 CAREER OPPORTUNITIES, 15
 PROFESSIONAL ORGANIZATIONS, 16
 EYE TO THE FUTURE, 19
 CRITICAL THINKING, 19
- The Dental Healthcare Team, 20
 DENTIST, 21
 DENTAL SPECIALIST, 22
 REGISTERED DENTAL HYGIENIST, 22
 DENTAL ASSISTANT, 23
 STERILIZATION ASSISTANT, 24
 EXPANDED-FUNCTIONS DENTAL ASSISTANT, 24
 BUSINESS ASSISTANT, 25
 DENTAL LABORATORY TECHNICIAN, 25
 SUPPORTING SERVICES, 26
 LEGAL AND ETHICAL IMPLICATIONS, 26
 EYE TO THE FUTURE, 26
 CRITICAL THINKING, 27
- 4 Dental Ethics, 28
 SOURCES FOR ETHICS, 29
 BASIC PRINCIPLES OF ETHICS, 29
 PROFESSIONAL CODE OF ETHICS, 30
 APPLYING ETHICAL PRINCIPLES, 30
 LEGAL AND ETHICAL IMPLICATIONS, 31
 EYE TO THE FUTURE, 32
 CRITICAL THINKING, 32
- 5 Dentistry and the Law, 33 STATUTORY LAW, 34 STATE DENTAL PRACTICE ACT, 35

DENTIST-PATIENT RELATIONSHIP, 37
MALPRACTICE, 38
RISK MANAGEMENT, 39
PATIENT RECORDS, 41
REPORTING ABUSE AND NEGLECT, 42
LEGAL AND ETHICAL IMPLICATIONS, 45
EYE TO THE FUTURE, 45
CRITICAL THINKING, 45

PART TWO Sciences in Dentistry

- 6 General Anatomy, 48
 PLANES AND BODY DIRECTIONS, 49
 STRUCTURAL UNITS, 51
 BODY CAVITIES, 56
 BODY REGIONS, 56
 LEGAL AND ETHICAL IMPLICATIONS, 57
 EYE TO THE FUTURE, 57
 CRITICAL THINKING, 57
- 7 General Physiology, 58 PHYSIOLOGY AND DENTAL ASSISTING, 59 BODY SYSTEMS, 59 SKELETAL SYSTEM, 59 MUSCULAR SYSTEM, 62 CARDIOVASCULAR SYSTEM, 66 NERVOUS SYSTEM, 69 RESPIRATORY SYSTEM, 72 DIGESTIVE SYSTEM, 74 **ENDOCRINE SYSTEM, 76** URINARY SYSTEM, 77 INTEGUMENTARY SYSTEM, 77 REPRODUCTIVE SYSTEM, 79 INTERACTION AMONG THE TEN BODY SYSTEMS, 79 LEGAL AND ETHICAL IMPLICATIONS, 80 EYE TO THE FUTURE, 80 CRITICAL THINKING, 80
- 8 Oral Embryology and Histology, 81
 ORAL EMBRYOLOGY, 82
 ORAL HISTOLOGY, 92
 LEGAL AND ETHICAL IMPLICATIONS, 104
 EYE TO THE FUTURE, 104
 CRITICAL THINKING, 104
- 9 Head and Neck Anatomy, 105
 REGIONS OF THE HEAD, 106
 BONES OF THE SKULL, 106
 TEMPOROMANDIBULAR JOINTS, 114
 MUSCLES OF THE HEAD AND NECK, 118

xvii

SALIVARY GLANDS, 120
BLOOD SUPPLY TO THE HEAD AND NECK, 123
NERVES OF THE HEAD AND NECK, 124
LYMPH NODES OF THE HEAD AND NECK, 125
PARANASAL SINUSES, 129
EYE TO THE FUTURE, 129
CRITICAL THINKING, 129

10 Landmarks of the Face and Oral Cavity, 130 LANDMARKS OF THE FACE, 131 THE ORAL CAVITY, 133 THE ORAL CAVITY PROPER, 135 EYE TO THE FUTURE, 138 CRITICAL THINKING, 138

DENTITION PERIODS, 140 DENTAL ARCHES, 142 TYPES AND FUNCTIONS OF TEETH, 144 TOOTH SURFACES, 145 ANATOMIC FEATURES OF TEETH, 146 ANGLES AND DIVISIONS OF TEETH, 147 OCCLUSION AND MALOCCLUSION, 148 STABILIZATION OF THE ARCHES, 150 TOOTH-NUMBERING SYSTEMS, 151 LEGAL AND ETHICAL IMPLICATIONS, 153 EYE TO THE FUTURE, 153 CRITICAL THINKING, 153

12 Tooth Morphology, 154 ANTERIOR PERMANENT DENTITION, 155 POSTERIOR PERMANENT DENTITION, 160 PRIMARY DENTITION, 166 EYE TO THE FUTURE, 171 CRITICAL THINKING, 171

PART THREE Oral Health and Prevention of Dental Disease

13 Dental Caries, 174 **BACTERIAL INFECTION, 175** THE CARIES PROCESS, 176 EARLY CHILDHOOD CARIES, 179 THE IMPORTANCE OF SALIVA, 179 CARIES DIAGNOSIS, 180 CAMBRA, 182 METHODS OF CARIES INTERVENTION, 183 CARIES RISK ASSESSMENT TESTS, 183 LEGAL AND ETHICAL IMPLICATIONS, 184 EYE TO THE FUTURE, 184 CRITICAL THINKING, 184 PROCEDURE 13-1: Performing Caries Detection Using the KaVo DIAGNOdent Caries Detection Device (Expanded Function), 185 PROCEDURE 13-2: Performing Caries Risk Assessment (Expanded Function), 186

14 Periodontal Disease, 189 DEFINITION AND PREVALENCE OF PERIODONTAL DISEASE, 190 PERIODONTAL DISEASE AND SYSTEMIC HEALTH, TYPES OF PERIODONTAL DISEASE, 191 TYPES OF PERIODONTAL DISEASE, 192 DESCRIPTION OF PERIODONTAL DISEASE, 195 LEGAL AND ETHICAL IMPLICATIONS, 198 EYE TO THE FUTURE, 198 CRITICAL THINKING, 198

15 Preventive Dentistry, 199

- PARTNERS IN PREVENTION, 200 EARLY DENTAL CARE, 200 DENTAL SEALANTS, 201 ORAL HEALTH AND AGING, 201 FLUORIDE, 202 NUTRITION AND DENTAL CARIES, 208 PLAQUE CONTROL PROGRAM, 209 PATIENT EDUCATION, 218 LEGAL AND ETHICAL IMPLICATIONS, 218 CRITICAL THINKING, 219 PROCEDURE 15-1: Applying Topical Fluoride Gel or Foom (Expanded Function), 219 PROCEDURE 15-2: Applying Fluoride Varnish (Expande) Function), 221 PROCEDURE 15-3: Assisting the Patient with Dental Flox (Expanded Function), 223
- 16 Nutrition, 224 NUTRITION AND THE DENTAL ASSISTANT, 225 HEALTHY PEOPLE 2020 REPORT, 225 NUTRIENT RECOMMENDATIONS, 225 MYPLATE, 226 CANADA'S FOOD GUIDE, 227 CARBOHYDRATES, 227 PROTEINS, 230 FATS (LIPIDS), 231 VITAMINS, 232 MINERALS, 232 **WATER**, 234 DIET MODIFICATION, 235 DIETARY ANALYSIS, 235 READING FOOD LABELS, 235 EATING DISORDERS, 238 HEALTHY HABITS, 240 PATIENT EDUCATION, 240 LEGAL AND ETHICAL IMPLICATIONS, 240
- 17 Oral Pathology, 241

 MAKING A DIAGNOSIS, 242

 ACUTE/CHRONIC INFLAMMATION, 245

 ORAL LESIONS, 245

 DISEASES OF THE ORAL SOFT TISSUES, 246

 CONDITIONS OF THE TONGUE, 249

 ORAL CANCER, 250

 HUMAN IMMUNODEFICIENCY VIRUS AND ACQUIRED IMMUNODEFICIENCY SYNDROME, 252

 DEVELOPMENTAL DISORDERS, 255

 MISCELLANEOUS DISORDERS, 260

EYE TO THE FUTURE, 240

CRITICAL THINKING, 240

PATIENT EDUCATION, 262 LEGAL AND ETHICAL IMPLICATIONS, 262 EYE TO THE FUTURE, 263 CRITICAL THINKING, 263

Infection Prevention in Dentistry

PIONEERS IN MICROBIOLOGY, 267
KOCH'S POSTULATES, 268
MAJOR GROUPS OF MICROORGANISMS, 268
VIRAL DISEASES, 273
BACTERIAL DISEASES, 277
PANDEMIC DISEASES, 278
LEGAL AND ETHICAL IMPLICATIONS, 279
EYE TO THE FUTURE, 279
CRITICAL THINKING, 279

19 Disease Transmission and Infection Prevention. 280

THE CHAIN OF INFECTION, 281 TYPES OF INFECTIONS, 282 MODES OF DISEASE TRANSMISSION, 283 THE IMMUNE SYSTEM, 284 DISEASE TRANSMISSION IN THE DENTAL OFFICE, 285 ROLES AND RESPONSIBILITIES OF THE CDC AND OSHA IN INFECTION CONTROL, 287 GUIDELINES FOR INFECTION CONTROL IN DENTAL HEALTHCARE SETTINGS (CDC), 287 OSHA BLOOD-BORNE PATHOGENS STANDARD, 287 INFECTION CONTROL PRACTICES, 291 HIGH-TECH EQUIPMENT, 300 LATEX ALLERGIES, 300 WASTE MANAGEMENT IN THE DENTAL OFFICE, 302 ADDITIONAL INFECTION CONTROL PRACTICES, 304 LEGAL AND ETHICAL IMPLICATIONS, 306 EYE TO THE FUTURE, 307 CRITICAL THINKING, 307 PROCEDURE 19-1: Applying First Aid After an Exposure Incident, 307 PROCEDURE 19-2: Handwashing Before Gloving, 308

PROCEDURE 19-4: Putting on Personal Protective
Equipment, 311
PROCEDURE 19-5: Removing Personal Protective
Equipment, 312
PROCEDURE 19-6: Disinfecting an Alginate Impression, 313

PROCEDURE 19-3: Applying Alcohol-Based Hand Rubs, 309

20 Principles and Techniques of Disinfection, 314

ENVIRONMENTAL INFECTION CONTROL, 315
GREENER INFECTION CONTROL, 326
LEGAL AND ETHICAL IMPLICATIONS, 327
EYE TO THE FUTURE, 327
CRITICAL THINKING, 327

PROCEDURE 20-1: Placing and Removing Surface

PROCEDURE 20-2: Performing Treatment Room Cleaning and Disinfection, 329

21 Principles and Techniques of Instrument Processing and Sterilization, 330 CLASSIFICATION OF PATIENT CARE ITEMS, 331 TRANSPORTING AND PROCESSING CONTAMINATED PATIENT CARE ITEMS, 333 INSTRUMENT-PROCESSING AREA, 333 PRECLEANING AND PACKAGING INSTRUMENTS, 334 METHODS OF STERILIZATION, 339 STERILIZATION MONITORING, 344 HANDPIECE STERILIZATION, 347 LEGAL AND ETHICAL IMPLICATIONS, 348 EYE TO THE FUTURE, 348 CRITICAL THINKING, 348 PROCEDURE 21-1: Operating the Ultrasonic Cleaner, 349 PROCEDURE 21-2: Autoclaving Instruments, 350 PROCEDURE 21-3: Sterilizing Instruments with Unsaturated Chemical Vapor, 351 PROCEDURE 21-4: Sterilizing Instruments with Dry Heat, 352 PROCEDURE 21-5: Sterilizing Instruments with Liquid Chemical Sterilants, 352 PROCEDURE 21-6: Performing Biologic Monitoring, 353 PROCEDURE 21-7: Sterilizing the Dental Handpiece, 354

Occupational Health and Safety

22 Regulatory and Advisory Agencies, 356
ASSOCIATIONS AND ORGANIZATIONS, 357
GOVERNMENT AGENCIES, 359
LEGAL AND ETHICAL IMPLICATIONS, 362
EYE TO THE FUTURE, 363
CRITICAL THINKING, 363

23 Chemical and Waste Management, 364
HAZARDOUS CHEMICALS, 365
HAZARD COMMUNICATION PROGRAM, 369
PROCEDURE 23-1: Creating an Appropriate Label for a
Secondary Container, 378
DENTAL OFFICE WASTE MANAGEMENT, 375
LEGAL AND ETHICAL IMPLICATIONS, 377
EYE TO THE FUTURE, 377
CRITICAL THINKING, 377

24 Dental Unit Waterlines, 379

MICROORGANISMS IN DENTAL UNIT WATER, 380

METHODS FOR REDUCING BACTERIAL

CONTAMINATION, 382

INFECTION CONTROL AND DENTAL UNIT WATER, 383

LEGAL AND ETHICAL IMPLICATIONS, 385

EYE TO THE FUTURE, 385 CRITICAL THINKING, 386

PROCEDURE 24-1: Testing Dental Unit Waterlines, 386

25 Ergonomics, 387

ERGONOMICS IN THE DENTAL OFFICE, 388 POSTURE, 389 REPETITION AND FORCE, 390 MUSCLE-STRENGTHENING EXERCISES, 392 LEGAL AND ETHICAL IMPLICATIONS, 392 EYE TO THE FUTURE, 392 CRITICAL THINKING, 394

PART SIX **Patient Information** and Assessment

26 The Patient Record, 396

PATIENT COMPLIANCE, 397 PATIENT RECORD FORMS, 400 LEGAL AND ETHICAL IMPLICATIONS, 408 EYE TO THE FUTURE, 408 CRITICAL THINKING, 412

PROCEDURE 26-1: Registering a New Patient, 413 PROCEDURE 26-2: Obtaining a Medical-Dental Health History, 413

PROCEDURE 26-3: Entering Treatment in a Patient Record, 414

PROCEDURE 26-4: Correcting a Chart Entry, 414

27 Vital Signs, 415

FACTORS THAT AFFECT VITAL SIGNS, 416 TEMPERATURE, 416 **PULSE**, 418 RESPIRATION, 419

BLOOD PRESSURE, 419 ADVANCED MONITORING PROCEDURES, 421

PATIENT EDUCATION, 423

LEGAL AND ETHICAL IMPLICATIONS, 423

EYE TO THE FUTURE, 423 CRITICAL THINKING, 423

PROCEDURE 27-1: Taking an Oral Temperature Reading with a Digital Thermometer, 424

PROCEDURE 27-2: Taking a Patient's Pulse, 424 PROCEDURE 27-3: Taking a Patient's Respiration, 425

PROCEDURE 27-4: Taking a Patient's Blood Pressure, 425

PROCEDURE 27-5: Taking a Patient's Pulse Oximetry

(Expanded Function), 427 PROCEDURE 27-6: Taking a Patient's ECG (Expanded

28 Oral Diagnosis and Treatment Planning, 428

EXAMINATION AND DIAGNOSTIC TECHNIQUES, 429 INSTRUMENTATION, 429

RECORDING THE DENTAL EXAMINATION, 431

CLINICAL EXAMINATION OF THE PATIENT, 436

THE TREATMENT PLAN, 442 PATIENT EDUCATION, 443

LEGAL AND ETHICAL IMPLICATIONS, 443

EYE TO THE FUTURE, 443 CRITICAL THINKING, 443

PROCEDURE 28-1: Extraoral and Intraoral Photography (Expanded Function), 447

PROCEDURE 28-2: The Soft Tissue Examination (Expanded Function), 449

PROCEDURE 28-3: Charting of Teeth, 452

PROCEDURE 28-4: Periodontal Screening: Examination of the Gingival Tissues, 453

29 The Special Needs and Medically Compromised Patient, 454 ROLE OF THE DENTAL ASSISTANT, 455

THE AGING POPULATION, 455 THE SPECIAL NEEDS PATIENT, 456 SPECIFIC DISORDERS OF THE MEDICALLY COMPROMISED PATIENT, 458

PROCEDURE 29-1: Transferring a Patient from a

Wheelchair, 467 LEGAL AND ETHICAL IMPLICATIONS, 467 EYE TO THE FUTURE, 467 CRITICAL THINKING, 467

30 Principles of Pharmacology, 469

OVERVIEW OF DRUGS, 470 DISPENSING OF DRUGS, 470 DRUG REFERENCE MATERIALS, 472 DRUG DOSAGE, 472 DRUGS COMMONLY PRESCRIBED IN DENTISTRY, 473 DRUGS COMMONLY PRESCRIBED IN MEDICINE, 475 ADVERSE DRUG EFFECTS, 477 PATIENT EDUCATION, 478 LEGAL AND ETHICAL IMPLICATIONS, 478 EYE TO THE FUTURE, 478 CRITICAL THINKING, 478

31 Assisting in a Medical Emergency, 479

PREVENTING A MEDICAL EMERGENCY, 480 EMERGENCY PREPAREDNESS, 480 RECOGNIZING A MEDICAL EMERGENCY, 482 EMERGENCY CARE STANDARDS, 482 EMERGENCY EQUIPMENT AND SUPPLIES, 483 **EMERGENCY RESPONSES, 384**

COMMON MEDICAL EMERGENCIES EXPERIENCED IN THE DENTAL OFFICE, 485

DOCUMENTATION OF AN EMERGENCY, 487

PATIENT EDUCATION, 487

LEGAL AND ETHICAL IMPLICATIONS, 487

EYE TO THE FUTURE, 487 CRITICAL THINKING, 487

EMERGENCY PROCEDURE 31-1: Performing Cardiopulmonary Resuscitation (One Person), 488

EMERGENCY PROCEDURE 31-2: Responding to the Pates with an Obstructed Airway, 489

EMERGENCY PROCEDURE 31-3: Operating the Automatic External Defibrillator, 490

EMERGENCY PROCEDURE 31-4: Preparing the Oxyget System, 492

EMERGENCY PROCEDURE 31-5: Responding to the Unconscious Patient, 494

EMERGENCY PROCEDURE 31-6: Responding to the Part with Chest Pain, 495

Who is Every PROCEDURE 31-7: Responding to the Part Who Is Experiencing a Cerebrovascular Accident

EMERGENCY PROCEDURE 31-8: Responding to the Personal Procedure 31-8: with a Breathing Problem, 496

EMERGENCY PROCEDURE 31-9: Responding to the Patient Who Is Experiencing an Allergic Reaction, 497 EMERGENCY PROCEDURE 31-10: Responding to the Patient Who Is Experiencing a Convulsive Seizure, 497 **EMERGENCY PROCEDURE 31-11:** Responding to the Patient Who Is Experiencing a Diabetic Emergency, 498

PART SEVEN **Foundation of Clinical Dentistry**

32 The Dental Office, 500 DESIGN OF THE DENTAL OFFICE, 501 OFFICE ENVIRONMENT, 504 CLINICAL EQUIPMENT, 505 CARE OF DENTAL EQUIPMENT, 510 MORNING AND EVENING ROUTINES FOR DENTAL ASSISTANTS, 511 PATIENT EDUCATION, 511 EYE TO THE FUTURE, 511 CRITICAL THINKING, 511 PROCEDURE 32-1: Performing the Morning Routine (Opening the Office), 512 PROCEDURE 32-2: Performing the Evening Routine

33 Delivering Dental Care, 513

(Closing the Office), 512

KNOWING YOUR PATIENTS, 514 REVIEWING THE PATIENT RECORD, 514 PREPARING THE TREATMENT AREA, 514 GREETING AND SEATING THE PATIENT, 514 **TEAM DENTISTRY, 514** MOTION ECONOMY, 516 **OPERATING ZONES, 516 INSTRUMENT TRANSFER, 517 EXPANDED FUNCTIONS**, 519 PATIENT EDUCATION, 522 LEGAL AND ETHICAL IMPLICATIONS, 522 EYE TO THE FUTURE, 522 CRITICAL THINKING, 522 PROCEDURE 33-1: Admitting and Seating of the Patient, 523

PROCEDURE 33-2: Transferring Instruments with the Single-Handed Technique, 524

PROCEDURE 33-3: Transferring Instruments with the Two-Handed Technique, 525

PROCEDURE 33-4: Using the Dental Mirror Intraorally, 526

PROCEDURE 33-5: Using an Instrument Intraorally (Expanded Function), 527

34 Dental Hand Instruments, 528

IDENTIFYING HAND INSTRUMENTS, 529 INSTRUMENT CLASSIFICATION, 530 LEGAL AND ETHICAL IMPLICATIONS, 539 EYE TO THE FUTURE, 540 CRITICAL THINKING, 540 PROCEDURE 34-1: Identifying Examination Instruments, 540

PROCEDURE 34-2: Identifying Hand (Manual) Cutting Instruments, 540 PROCEDURE 34-3: Identifying Restorative Instruments, 541 PROCEDURE 34-4: Identifying Accessory Instruments and

35 Dental Handpieces and Accessories, 542

EVOLUTION OF ROTARY EQUIPMENT, 543 DENTAL HANDPIECES, 543 ROTARY CUTTING INSTRUMENTS, 548 DENTAL BURS, 548 ABRASIVE ROTARY INSTRUMENTS, 551 LABORATORY ROTARY INSTRUMENTS, 553 LEGAL AND ETHICAL IMPLICATIONS, 553 EYE TO THE FUTURE, 553 CRITICAL THINKING, 554 PROCEDURE 35-1: Identifying and Attaching Dental Handpieces, 554 PROCEDURE 35-2: Identifying and Attaching Burs for

36 Moisture Control, 556

Rotary Cutting Instruments, 555

ORAL EVACUATION SYSTEMS, 557 RINSING THE ORAL CAVITY, 559 ISOLATION OF TEETH, 559 THE DENTAL DAM, 561 PATIENT EDUCATION, 567 LEGAL AND ETHICAL IMPLICATIONS, 568 EYE TO THE FUTURE, 568 CRITICAL THINKING, 568 PROCEDURE 36-1: Positioning the High-Volume Evacuator During a Procedure, 568 PROCEDURE 36-2: Performing a Mouth Rinse, 569 PROCEDURE 36-3: Placing and Removing Cotton Rolls, 570 PROCEDURE 36-4: Preparing, Placing, and Removing the

37 Anesthesia and Pain Control, 575

Dental Dam (Expanded Function), 571

TOPICAL ANESTHESIA, 576 LOCAL ANESTHESIA, 576 **ELECTRONIC ANESTHESIA**, 583 **INHALATION SEDATION, 583** ANTIANXIETY AGENTS, 586 INTRAVENOUS SEDATION, 586 GENERAL ANESTHESIA, 587 DOCUMENTATION OF ANESTHESIA AND PAIN CONTROL, 587 PATIENT EDUCATION, 588 LEGAL AND ETHICAL IMPLICATIONS, 588 EYE TO THE FUTURE, 588 CRITICAL THINKING, 588 PROCEDURE 37-1: Applying a Topical Anesthetic, 589 PROCEDURE 37-2: Assembling the Local Anesthetic

Syringe, 589

PROCEDURE 37-3: Assisting in the Administration of Local Anesthesia, 591 PROCEDURE 37-4: Assisting in the Administration and

Monitoring of Nitrous Oxide/Oxygen Sedation (Expanded Function), 592

Radiographic Imaging

Equipment, and Radiation Safety, 596
DISCOVERY OF X-RADIATION, 598
RADIATION PHYSICS, 599
THE DENTAL X-RAY MACHINE, 602
X-RAY PRODUCTION, 605
TYPES OF RADIATION, 606
CHARACTERISTICS OF X-RAY BEAM, 607
RADIATION EFFECTS, 609
RADIATION MEASUREMENT, 611
RADIATION SAFETY, 611
PATIENT EDUCATION, 615
LEGAL AND ETHICAL IMPLICATIONS, 616
EYE TO THE FUTURE, 616

39 Digital Imaging, Dental Film, and Processing Radiographs, 617

CRITICAL THINKING, 616

DIGITAL RADIOGRAPHY, 618
TYPES OF DIGITAL IMAGING SYSTEMS, 619
X-RAY FILM AND FILM PROCESSING, 621
POSITIONING INSTRUMENTS, 621
DENTAL FILM, 624
TYPES OF FILM, 626
FILM PROCESSING, 630
LEGAL AND ETHICAL IMPLICATIONS, 637
EYE TO THE FUTURE, 637
CRITICAL THINKING, 637

PROCEDURE 39-1: Duplicating Dental Radiographs, 637
PROCEDURE 39-2: Processing Dental Films Manually, 638
PROCEDURE 39-3: Processing Dental Films in an Automatic Film Processor, 639

40 Legal Issues, Quality Assurance, and Infection Prevention, 640

LEGAL CONSIDERATIONS, 641
QUALITY ASSURANCE IN THE DENTAL OFFICE, 643
INFECTION CONTROL, 647
LEGAL AND ETHICAL IMPLICATIONS, 652
EYE TO THE FUTURE, 652
CRITICAL THINKING, 653

PROCEDURE 40-1: Practicing Infection Control During Film Exposure, 653

PROCEDURE 40-2: Practicing Infection Control in the Darkroom, 654

PROCEDURE 40-3: Practicing Infection Control with Use of Daylight Loader, 655

PROCEDURE 40-4: Practicing Infection Control with Digital Sensors, 657

PROCEDURE 40-5: Practicing Infection Control with Phosphor Storage Plates (PSPs), 658

41 Intraoral Imaging, 661

FULL-MOUTH SURVEY, 662
INTRAORAL IMAGING TECHNIQUES, 663
PARALLELING TECHNIQUE, 663
BISECTING TECHNIQUE, 668

BITEWING TECHNIQUE, 671 OCCLUSAL TECHNIQUE, 672 PATIENTS WITH SPECIAL MEDICAL NEEDS, 672 PATIENTS WITH SPECIAL DENTAL NEEDS, 673 DENTAL IMAGING TECHNIQUE ERRORS, 676 MOUNTING DENTAL RADIOGRAPHS, 676 LEGAL AND ETHICAL IMPLICATIONS, 679 EYE TO THE FUTURE, 679 CRITICAL THINKING, 679 PROCEDURE 41-1: Preparing the Patient for Dental Imaging, 680 PROCEDURE 41-2: Assembling the XCP (Extension-Cone Paralleling) Instruments, 681 PROCEDURE 41-3: Producing Full-Mouth Radiographic Survey Using Paralleling Technique, 683 PROCEDURE 41-4: Producing Full-Mouth Radiographic Survey Using Bisecting Technique, 692 PROCEDURE 41-5: Producing Four-View Radiographic Survey Using Bitewing Technique, 701 PROCEDURE 41-6: Producing Maxillary and Mandibular Radiographs Using Occlusal Technique, 703

42 Extraoral Imaging, 706

PANORAMIC IMAGING, 707
THREE-DIMENSIONAL DIGITAL IMAGING, 715
SPECIALIZED EXTRAORAL IMAGING, 718
LEGAL AND ETHICAL IMPLICATIONS, 722
EYE TO THE FUTURE, 722
CRITICAL THINKING, 722

PROCEDURE 42-1: Preparing Equipment for Panoramic Imaging, 723

PROCEDURE 41-7: Mounting Dental Radiographs, 705

PROCEDURE 42-2: Preparing the Patient for Panoramic Imaging, 724

PROCEDURE 42-3: Positioning the Patient for Panoramic Imaging, 724

PART NINE Dental Materials

43 Restorative and Esthetic Dental Materials, 728

STANDARDIZATION OF DENTAL MATERIALS, 729
PROPERTIES OF DENTAL MATERIALS, 730
DIRECT RESTORATIVE AND ESTHETIC MATERIALS, 732
TEMPORARY RESTORATIVE MATERIALS, 742
TOOTH-WHITENING MATERIALS, 743
INDIRECT RESTORATIVE MATERIALS, 743
PATIENT EDUCATION, 745
LEGAL AND ETHICAL IMPLICATIONS, 745
EYE TO THE FUTURE, 745
CRITICAL THINKING, 745
PROCEDURE 43-1: Mixing and Transferring Dental

PROCEDURE 43-1: Mixing and Transferring Dental Amalgam, 746

PROCEDURE 43-2: Preparing Composite Resin Materials, 747

PROCEDURE 43-3: Mixing Intermediate Restorative Materials (IRM), 748

PROCEDURE 43-4: Preparing Acrylic Resin for the Fabrication of Provisional Coverage, 749

44 Dental Liners, Bases, and Bonding Systems, 750

PREPARED TOOTH STRUCTURES, 751

PULPAL RESPONSES, 751

DENTAL LINERS, 752

VARNISH, 752

DESENSITIZER, 753

DENTAL BASES, 754

DENTAL ETCHANT, 755

DENTAL BONDING, 755

PATIENT EDUCATION, 757

LEGAL AND ETHICAL IMPLICATIONS, 757

EYE TO THE FUTURE, 757

CRITICAL THINKING, 757

PROCEDURE 44-1: Applying Calcium Hydroxide (Expanded

PROCEDURE 44-2: Applying Dental Varnish (Expanded Function), 759

PROCEDURE 44-3: Applying a Desensitizer (Expanded Function), 760

PROCEDURE 44-4: Mixing and Placing Zinc Oxide-Eugenol Cement as a Base (Expanded Function), 761

PROCEDURE 44-5: Mixing and Placing Zinc Phosphate Cement as a Base (Expanded Function), 762

PROCEDURE 44-6: Mixing and Placing Polycarboxylate Cement as a Base (Expanded Function), 763

PROCEDURE 44-7: Applying an Etchant Material (Expanded Function), 764

PROCEDURE 44-8: Applying a Bonding System (Expanded Function), 765

45 Dental Cements, 766

CLASSIFICATION OF DENTAL CEMENTS, 767 VARIABLES AFFECTING FINAL CEMENTATION, 767

TYPES OF CEMENT, 768

CEMENT REMOVAL, 772

PATIENT EDUCATION, 772

LEGAL AND ETHICAL IMPLICATIONS, 772

EYE TO THE FUTURE, 772

CRITICAL THINKING, 772

PROCEDURE 45-1: Mixing Glass Ionomer for Permanent

PROCEDURE 45-2: Mixing Composite Resin for Permanent Cementation, 774

PROCEDURE 45-3: Mixing Zinc Oxide-Eugenol for Temporary Cementation, 775

PROCEDURE 45-4: Mixing Zinc Oxide-Eugenol for Permanent Cementation, 775

PROCEDURE 45-5: Mixing Polycarboxylate for Permanent Cementation, 776

PROCEDURE 45-6: Mixing Zinc Phosphate for Permanent Cementation, 777

PROCEDURE 45-7: Removing Cement from Permanent or Temporary Cementation (Expanded Function), 778

46 Impression Materials, 779

CLASSIFICATION OF IMPRESSIONS, 780 IMPRESSION TRAYS, 780 HYDROCOLLOID MATERIALS, 782 **ELASTOMERIC MATERIALS**, 786 OCCLUSAL (BITE) REGISTRATION, 790

PATIENT EDUCATION, 791

LEGAL AND ETHICAL IMPLICATIONS, 791

EYE TO THE FUTURE, 791

CRITICAL THINKING, 791

PROCEDURE 46-1: Mixing Alginate Impression Material, 791

PROCEDURE 46-2: Taking a Mandibular Preliminary

Impression (Expanded Function), 792

PROCEDURE 46-3: Taking a Maxillary Preliminary

Impression (Expanded Function), 794

PROCEDURE 46-4: Mixing a Two-Paste Final Impression Material, 795

PROCEDURE 46-5: Preparing an Automix Final Impression

Material, 796

PROCEDURE 46-6: Taking a Wax Bite Registration

(Expanded Function), 797

PROCEDURE 46-7: Mixing Polysiloxane Material for a Bite

Registration, 798

PROCEDURE 46-8: Mixing Zinc Oxide-Eugenol Bite

Registration Material, 799

47 Laboratory Materials and Procedures, 800

SAFETY IN THE DENTAL LABORATORY, 801

DENTAL LABORATORY EQUIPMENT, 802

DENTAL MODELS, 804

CUSTOM IMPRESSION TRAYS, 806

DENTAL WAXES, 808

PATIENT EDUCATION, 810

LEGAL AND ETHICAL IMPLICATIONS, 810

EYE TO THE FUTURE, 810

CRITICAL THINKING, 810

PROCEDURE 47-1: Taking a Face-Bow Registration

(Expanded Function), 811

PROCEDURE 47-2: Mixing Dental Plaster, 812

PROCEDURE 47-3: Pouring Dental Models Using the

Inverted-Pour Method, 813

PROCEDURE 47-4: Trimming and Finishing Dental

Models, 815

PROCEDURE 47-5: Constructing an Acrylic Resin Custom

PROCEDURE 47-6: Creating a Light-Cured Custom Tray, 818

PROCEDURE 47-7: Constructing a Vacuum-Formed Custom

Tray, 819

PART TEN

Assisting in Comprehensive **Dental Care**

48 General Dentistry, 822

CAVITY PREPARATION, 823

PERMANENT RESTORATIONS, 825

COMPLEX RESTORATIONS, 828

INTERMEDIATE RESTORATIONS, 829

VENEERS, 829

TOOTH WHITENING, 830

PATIENT EDUCATION, 832

LEGAL AND ETHICAL IMPLICATIONS, 832

EYE TO THE FUTURE, 832

CRITICAL THINKING, 832

PROCEDURE 48-1: Assisting in a Class I Restoration, 833

Assisting in a Class II Amaigam Restoration, 835 Assisting in a Class III or IV Restoration, 837 PROCESSION Assisting in a Class V Restoration, 839

Placing and Carving an Intermediate Restoration (Expanded Function), 840 PROCESSURE ABOVE Assisting in the Placement of a

Vencer, 841

49 Matrix Systems for Restorative Dentistry, 843

POSTERIOR MATRIX SYSTEMS, 844 ANTERIOR MATRIX SYSTEMS, 846 ALTERNATIVE MATRIX SYSTEMS, 848 PATIENT EDUCATION, 849 LEGAL AND ETHICAL IMPLICATIONS, 849 EYE TO THE FUTURE, 849 CRITICAL THINKING, 849

PROCEDURE 49-1: Assembling a Matrix Band and Universal Retainer, 850

PROCEDURE 49-2: Placing and Removing a Matrix Band and Wedge for a Class II Restoration (Expanded

PROCEDURE 49-3: Placing a Plastic Matrix for a Class III or Class IV Restoration (Expanded Function), 852

50 Fixed Prosthodontics, 854

PLAN OF CARE, 855 **INDIRECT RESTORATIONS**, 855 ROLE OF THE DENTAL LABORATORY TECHNICIAN, 859 OVERVIEW OF A CROWN PROCEDURE, 861 OVERVIEW OF A BRIDGE PROCEDURE, 865 COMPUTER-ASSISTED RESTORATIONS, 865 PATIENT EDUCATION, 866 LEGAL AND ETHICAL IMPLICATIONS, 866 EYE TO THE FUTURE, 867 CRITICAL THINKING, 867

PROCEDURE 50-1: Placing and Removing Gingival Retraction Cord (Expanded Function), 867

PROCEDURE 50-2: Assisting in a Crown and Bridge Preparation, 870

PROCEDURE 50-3: Assisting in the Delivery and Cementation of a Cast Restoration, 871

PROCEDURE 50-4: Assisting in a CAD/CAM Procedure (Expanded Function), 872

51 Provisional Coverage, 874

TYPES OF PROVISIONAL COVERAGE, 875 CRITERIA FOR PROVISIONAL FABRICATION, 876 HOME CARE INSTRUCTIONS, 878 REMOVAL OF THE PROVISIONAL CROWN OR BRIDGE, 878

PATIENT EDUCATION, 878 LEGAL AND ETHICAL IMPLICATIONS, 879

EYE TO THE FUTURE, 879 CRITICAL THINKING, 879

PROCEDURE 51-1: Fabricating and Cementing a Custom Acrylic Provisional Crown (Expanded Function), 879

PROCEDURE 51-2: Fabricating and Cementing a Custom Acrylic Provisional Bridge (Expanded Function), 881

PROCEDURE 51-3: Fabricating and Cementing a Preformed Provisional Crown (Expanded Function), 882

52 Removable Prosthodontics, 884

FACTORS INFLUENCING THE CHOICE OF A REMOVABLE PROSTHESIS, 885 REMOVABLE PARTIAL DENTURE, 887 FULL (COMPLETE) DENTURE, 891 IMMEDIATE DENTURES, 895 OVERDENTURES, 895 DENTURE ADJUSTMENT AND RELINING, 895 DENTURE REPAIRS, 896 DENTURE DUPLICATION, 896 PATIENT EDUCATION, 897 LEGAL AND ETHICAL IMPLICATIONS, 897 EYE TO THE FUTURE, 897 CRITICAL THINKING, 897 PROCEDURE 52-1: Assisting in the Delivery of a Partial PROCEDURE 52-2: Assisting in a Wax Denture Try-In, 898 PROCEDURE 52-3: Assisting in the Delivery of a Full Denture, 898

53 Dental Implants, 900

(Expanded Function), 899

INDICATIONS FOR IMPLANTS, 901 CONTRAINDICATIONS TO IMPLANTS, 902 THE DENTAL IMPLANT PATIENT, 903 PREPARATION FOR IMPLANTS, 903 TYPES OF DENTAL IMPLANTS, 903 MAINTENANCE OF DENTAL IMPLANTS, 905 PATIENT EDUCATION, 906 LEGAL AND ETHICAL IMPLICATIONS, 906 EYE TO THE FUTURE, 906 CRITICAL THINKING, 907 PROCEDURE 53-1: Assisting in an Endosteal Implant Surgery, 907

PROCEDURE 52-4: Repairing a Fractured Denture

54 Endodontics, 910

PULPAL DAMAGE, 911 **ENDODONTIC DIAGNOSIS, 912** DIAGNOSTIC CONCLUSIONS, 914 **ENDODONTIC PROCEDURES**, 914 INSTRUMENTS AND ACCESSORIES, 915 MEDICAMENTS AND DENTAL MATERIALS IN **ENDODONTICS**, 918 OVERVIEW OF ROOT CANAL THERAPY, 920 SURGICAL ENDODONTICS, 921 PATIENT EDUCATION, 922 LEGAL AND ETHICAL IMPLICATIONS, 922 EYE TO THE FUTURE, 922 CRITICAL THINKING, 922 PROCEDURE 54-1: Assisting in Electric Pulp Vitality

55 Periodontics, 927

THE PERIODONTAL EXAMINATION, 928 PERIODONTAL INSTRUMENTS, 932 HAND SCALING AND ULTRASONIC SCALING, 935

PROCEDURE 54-2: Assisting in Root Canal Therapy, 924

NONSURGICAL PERIODONTAL TREATMENT, 938
SURGICAL PERIODONTAL TREATMENT, 939
LASERS IN PERIODONTICS, 945
PATIENT EDUCATION, 948
LEGAL AND ETHICAL IMPLICATIONS, 948
EYE TO THE FUTURE, 948
CRITICAL THINKING, 948
PROCEDURE 55-1: Assisting with a Dental
Prophylaxis, 949

PROCEDURE 55-2: Assisting with Gingivectomy and Gingivoplasty, 950

PROCEDURE 55-3: Preparing and Placing a Noneugenol Periodontal Dressing, 951

PROCEDURE 55-4: Removing a Periodontal Dressing, 952

56 Oral and Maxillofacial Surgery, 953

MEMBERS OF THE ORAL AND MAXILLOFACIAL SURGICAL TEAM, 954

THE SURGICAL SETTING, 954

SPECIALIZED INSTRUMENTS AND ACCESSORIES, 956

SURGICAL ASEPSIS, 961

SURGICAL PROCEDURES, 962

SUTURES, 963

POSTOPERATIVE CARE, 964

POSTSURGICAL COMPLICATIONS, 964

PATIENT EDUCATION, 965

LEGAL AND ETHICAL IMPLICATIONS, 965

EYE TO THE FUTURE, 965 CRITICAL THINKING, 965

PROCEDURE 56-1: Preparing a Sterile Field for Instruments and Supplies, 965

PROCEDURE 56-2: Performing a Surgical Scrub, 966

PROCEDURE 56-3: Performing Sterile Gloving, 968
PROCEDURE 56-4: Assisting in Forceps Extraction, 969

PROCEDURE 56-5: Assisting in Multiple Extractions and

Alveoplasty, 970

PROCEDURE 56-6: Assisting in Removal of an Impacted Tooth, 971

PROCEDURE 56-7: Assisting in Suture Placement, 973
PROCEDURE 56-8: Performing Suture Removal (Expanded

Function), 974

PROCEDURE 56-9: Assisting in the Treatment of Alveolitis, 975

57 Pediatric Dentistry, 976

THE PEDIATRIC DENTAL TEAM AND OFFICE, 977

THE PEDIATRIC PATIENT, 978

PATIENTS WITH SPECIAL NEEDS, 981

DIAGNOSIS AND TREATMENT PLANNING, 982

PREVENTIVE DENTISTRY FOR CHILDREN, 983

PEDIATRIC PROCEDURES, 987

DENTAL TRAUMA, 988

CHILD ABUSE, 990

PATIENT EDUCATION, 991

LEGAL AND ETHICAL IMPLICATIONS, 991

EYE TO THE FUTURE, 991

CRITICAL THINKING, 991

PROCEDURE 57-1: Assisting in Pulpotomy of a Primary Tooth, 991

PROCEDURE 57-2: Assisting in Placement of a Stainless Steel Crown, 992

58 Coronal Polishing, 994

CORONAL POLISHING, 995

DENTAL STAINS, 996

HANDPIECES AND ATTACHMENTS FOR CORONAL

POLISHING, 999

POLISHING AGENTS, 1000

POLISHING ESTHETIC RESTORATIONS, 1001

CORONAL POLISHING STEPS, 1002

PATIENT EDUCATION, 1004

LEGAL AND ETHICAL IMPLICATIONS, 1005

EYE TO THE FUTURE, 1005

CRITICAL THINKING, 1005

PROCEDURE 58-1: Rubber Cup Coronal Polishing (Expanded Function), 1005

59 Dental Sealants, 1008

HOW SEALANTS WORK, 1009

INDICATIONS FOR SEALANTS, 1010

CONTRAINDICATIONS TO SEALANTS, 1010

TYPES OF SEALANT MATERIALS, 1010

PREVENTING PROBLEMS WITH SEALANTS, 1012

PRECAUTIONS FOR DENTAL PERSONNEL AND

PATIENTS, 1013

FACTORS IN SEALANT RETENTION, 1014

LEGAL AND ETHICAL IMPLICATIONS, 1014

EYE TO THE FUTURE, 1014

CRITICAL THINKING, 1014

PROCEDURE 59-1: Application of Dental Sealants (Expanded Function), 1015

60 Orthodontics, 1018

BENEFITS OF ORTHODONTIC TREATMENT, 1019

THE ORTHODONTIC TEAM AND OFFICE, 1019

UNDERSTANDING OCCLUSION, 1020

MALOCCLUSION, 1021

MANAGEMENT OF ORTHODONTIC PROBLEMS, 1023

ORTHODONTIC RECORDS AND TREATMENT

PLANNING, 1024

CASE PRESENTATION, 1029

SPECIALIZED INSTRUMENTS AND ACCESSORIES, 1029

ORTHODONTIC TREATMENT, 1029

NEW TREATMENT OPTIONS, 1035

ADJUSTMENT VISITS, 1036

ORAL HYGIENE AND DIETARY INSTRUCTIONS, 1036

HEADGEAR, 1036

COMPLETED TREATMENT, 1036

PATIENT EDUCATION, 1038

LEGAL AND ETHICAL IMPLICATIONS, 1038

EYE TO THE FUTURE, 1038

CRITICAL THINKING, 1038

PROCEDURE 60-1: Placing and Removing Steel Separating Springs (Expanded Function), 1039

PROCEDURE 60-2: Placing and Removing Elastomeric Ring Separators (Expanded Function), 1040

PROCEDURE 60-3: Assisting in the Fitting and Cementation of Orthodontic Bands (Expanded Function), 1041

PROCEDURE 60-4: Assisting in the Direct Bonding of Orthodontic Brackets, 1042

PROCEDURE 60-5: Placing Arch Wires (Expanded Function), 1044

PROCEDURE 60-6: Placing and Removing Ligature Ties (Expanded Function), 1044

(Expanded Function). 1046

PART ELEVEN Dental Administration and Communication Skills

Communication in the Dental Office, 1048

UNDERSTANDING HUMAN BEHAVIOR, 1049

CULTURAL DIVERSITY, 1049

COMMUNICATION PATHWAYS, 1050

COMMUNICATING WITH COLLEAGUES, 1052

COMMUNICATING WITH PATIENTS, 1053

PHONE SKILLS, 1055

WRITTEN COMMUNICATIONS, 1059

MARKETING YOUR DENTAL PRACTICE, 1064

PATIENT EDUCATION, 1065

EYE TO THE FUTURE, 1066

LEGAL AND ETHICAL IMPLICATIONS, 1066

CRITICAL THINKING, 1066

PROCEDURE 61-1: Answering the Phone, 1066

PROCEDURE 61-2: Composing a Business Letter, 1067

OPERATING PROCEDURE MANUAL, 1069
COMPUTER APPLICATIONS IN THE DENTAL
OFFICE, 1070
RECORD KEEPING, 1071
FILING SYSTEMS, 1071
APPOINTMENT SCHEDULING, 1076
PREVENTIVE RECALL PROGRAMS, 1083
INVENTORY MANAGEMENT, 1084
DENTAL SUPPLY BUDGET, 1090
EQUIPMENT REPAIRS, 1090

LEGAL AND ETHICAL IMPLICATIONS, 1091 EYE TO THE FUTURE, 1091 CRITICAL THINKING, 1091

Office, 1092

ACCOUNT MANAGEMENT, 1093

ACCOUNTING, 1094

ACCOUNTS RECEIVABLE, 1094

COLLECTIONS, 1100

ACCOUNTS PAYABLE MANAGEMENT, 1101

WRITING CHECKS, 1105

PAYROLL, 1107

DENTAL INSURANCE, 1108

PATIENT EDUCATION, 1120

LEGAL AND ETHICAL IMPLICATIONS, 1120

EYE TO THE FUTURE, 1120

CRITICAL THINKING, 1120

OA Marketing Your Skills, 1121

YOUR PROFESSIONAL CAREER, 1122
LOCATING EMPLOYMENT OPPORTUNITIES, 1123
SEEKING EMPLOYMENT, 1124
SALARY NEGOTIATIONS, 1128
EMPLOYMENT AGREEMENT, 1128
AMERICANS WITH DISABILITIES ACT, 1129
JOB TERMINATION, 1131
ACHIEVING CAREER OBJECTIVES, 1131
PATIENT EDUCATION, 1132
LEGAL AND ETHICAL IMPLICATIONS, 1132
EYE TO THE FUTURE, 1132
CRITICAL THINKING, 1132
PROCEDURE 64-1: Preparing a Professional Résumé, 1132

Bibliography, 1133 Glossary, 1134