



**Dental Assisting National Board, Inc.**

*Measuring Dental Assisting Excellence™*

# **Exam Blueprint**

for

Orthodontic Assisting (OA)

A component of the DANB Certified Orthodontic Assistant (COA) Exam

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**I. COLLECTION AND RECORDING OF CLINICAL DATA (15%)**

- A. Medical/Dental History
  - 1. Obtain and record patient's medical and dental history, including radiation exposure, using both interviews and written questionnaires
    - a. Record medical history information regarding drug prescriptions, OTC and herbal supplements and allergies on the patient's record
  - 2. Record the purpose of patient's visit and/or chief complaint
  - 3. Record data obtained from medical laboratory reports onto the patient's medical history, including results of antigen/antibody test for infectious diseases
  - 4. Assess the patient's psychological status
- B. Preliminary Examination
  - 1. Assess patient's general physical condition and note any abnormal characteristics, including evidence of eating disorders, substance abuse or physical abuse, and age-related changes
    - a. Note extraoral conditions that may be associated with orthodontic problems, such as:
      - 1. facial symmetry
      - 2. habit (i.e., thumb sucking, mouth breathing)
      - 3. speech difficulties or abnormalities
  - 2. Identify and locate the morphologic types of teeth in the primary and permanent dentition
  - 3. Identify the surfaces of the tooth
  - 4. Identify, describe, and note any normal and abnormal findings in the head and neck region, including:
    - a. common diseases that have manifestations in the oral cavity
    - b. dental hygiene-related problems
    - c. oral manifestations of inflammation
  - 5. Assess patient attitude regarding orthodontic treatment
- C. Charting
  - 1. Number all of the permanent and primary teeth according to the Universal and Quadrant (Palmer) Numbering Systems
  - 2. Chart conditions in the patient's oral cavity and accurately transcribe the record
    - a. Observe/record symptoms of caries
    - b. Observe/record symptoms of periodontal conditions
    - c. Observe/record symptoms of malocclusion, including:
      - 1. angle's classification
      - 2. overbite
      - 3. overjet
      - 4. arch length
      - 5. crossbite
    - d. Observe/record symptoms of temporomandibular joint disorders
- D. Diagnostic Aids
  - 1. Prepare for and assist with the collection of diagnostic data
    - a. Take intra-and extraoral photographs
    - b. Expose and trace cephalometric/head plate radiographs
      - 1. Recognize landmarks on a cephalometric radiograph
    - c. Recognize a temporomandibular joint radiograph and landmarks
  - 2. Take impressions for diagnostic study models
    - a. Take occlusal registrations for study models

- b. Assist with facebow transfer for mounting models
- E. Treatment Documentation
  - 1. Record treatment/prescriptions (e.g., medication, instructions) on patient's chart
  - 2. Recognize present treatment and/or medication
  - 3. Record recommended treatment and patient's acceptance or refusal of recommendation
  - 4. Record patient's compliance
  - 5. Record the progress of any temporomandibular joint disorder manifestations

## II. ORTHODONTIC PROCEDURES (36%)

- A. Orthodontic Techniques
  - 1. Prepare the treatment room to receive and treat the patient
  - 2. Prepare appropriate treatment trays with armamentarium in sequence of use and delivery position
  - 3. Seat and prepare patient; position and adjust equipment
- B. Selection and Preparation of Armamentarium
  - 1. Select, prepare, and/or modify impression trays for appropriate uses
  - 2. Select and prepare tray set-ups and all necessary armamentaria for orthodontic procedures, including:
    - a. adjustments, routine office visits
    - b. appliance construction
    - c. cementing and/or bonding procedures
    - d. fitting and adapting extraoral headgear
    - e. initial records, photographs, radiographs, impressions and bite registration
    - f. orthodontic emergencies
    - g. placement and removal of bands, brackets, arch wires, and ligatures
    - h. placement and removal of fixed appliances
    - i. placement and removal of separators
- C. Perform, assist and have knowledge of Orthodontic Procedures
  - 1. Maintain the field of operation during banding/bonding and other procedures through the use of retraction, suction, irrigation, drying, etc
  - 2. Assist with and/or polish teeth before and after placement of bands/brackets
  - 3. Assist with and/or place topical medications
  - 4. Prepare orthodontic bands for cementation
  - 5. Remove supragingival cement after banding
  - 6. Recognize various fixed and removable orthodontic appliances and their uses
  - 7. Head and neck anatomy and physiology
  - 8. Understand, perform and/or assist with orthodontic procedures, including:
    - a. adjustments and routine office visits
    - b. arch wire formation
    - c. arch wire placement and removal
    - d. band/bracket removal
    - e. cementing or bonding bands/brackets
    - f. fitting and adapting extraoral headgear
    - g. fitting of bands

- h. bracket placement
  - i. orthodontic emergencies, such as broken wires or appliances
  - j. placement and removal of separators
  - k. recording occlusal registrations
  - l. securing arch wires to brackets with ligatures
  - m. wire bending
- D. Patient Management
1. Demonstrate ability to calm and reassure apprehensive patients and/or parent/guardian
  2. Manage all types of patients including patients with special needs and problems
  3. Incorporate motivational techniques during orthodontic treatment
- III. CHAIRSIDE DENTAL MATERIALS (5%)**
- A. Impression
1. Prepare, mix, deliver and store irreversible hydrocolloid (alginate) impression material
  2. Prepare, mix, deliver and store other impression materials
- B. Other Dental Materials
1. Prepare, mix, deliver, and store the following dental materials:
    - a. cements
    - b. bonding agents and adhesives
    - c. bite registration material
- IV. LABORATORY MATERIALS AND PROCEDURES (5%)**
- A. Selection and Manipulation of Materials
1. Select and manipulate the various gypsum products
  2. Select and manipulate the various dental waxes
  3. Select and manipulate the various acrylic products or acrylic substitutes
  4. Properly store gypsum and acrylic products and dental waxes
- B. Laboratory Procedures
1. Fabricate and evaluate diagnostic casts, including trimming, finishing, and articulating
  2. Debride, polish, and repair fixed or removable appliances and prostheses
  3. Weld or solder orthodontic bands
  4. Construct fixed or removable appliances, including splints
- V. PATIENT EDUCATION AND ORAL HEALTH MANAGEMENT (10%)**
- A. Oral Health Information
1. Provide patient and/or parent/guardian with dental health education presentations on topics, such as:
    - a. functions of the primary and permanent teeth and the relationship of the supporting structures
    - b. etiology of dental disease (e.g., caries, periodontal disease)
    - c. stages of eruption and exfoliation of the teeth
    - d. importance of occlusion, and the development, classifications, and possible results of malocclusion
    - e. function of the temporomandibular joint (TMJ), including range of motion
    - f. dental health care during orthodontic treatment

- g. understanding infectious diseases and their relationship to infection control
  - 2. Explain and clarify the procedures and services being delivered to the patient and/or family
    - a. Explain the relation of orthodontic treatment to other dental procedures (e.g., extractions, restorations, orthognathic surgery)
  - 3. Explain to the patient the effects of all types of fluoride, the advantages of the various modalities of administration, and the dangers and results of overdosage
  - 4. Assess patient attitudes regarding preventive education and orthodontic treatment
- B. Pre/Post Treatment Instructions
  - 1. Provide patient with oral and/or written pre- and post-treatment instructions
  - 2. Provide patients with instructions for the proper care and wearing of fixed and removable orthodontic appliances
- C. Plaque Control Techniques
  - 1. Evaluate the patient's oral health care status and habits.
  - 2. Provide preventive oral health care information to the patient based on individual needs
    - a. Demonstrate to the patient the care of the oral cavity during orthodontic treatment
  - 3. Instruct the patient in the various techniques of toothbrushing used during orthodontic treatment
  - 4. Select and use plaque disclosing aids in patient education
  - 5. Select and use oral hygiene devices such as brushes, interdental aids, oral rinses, and irrigating aids
  - 6. Evaluate the patient's progress in and response to homecare therapy
- D. Nutrition
  - 1. Provide instruction and evaluate the basic nutritional needs of individual patients as they relate to dental health
    - a. Counsel the patient/parent/guardian on an individual basis concerning nutrition and oral health during orthodontic treatment
    - b. Explain to the patient/parent/guardian which foods may and may not be eaten during orthodontic treatment and why
  - 2. Explain to the patient/parent/guardian the relationship of carbohydrates to the development of dental caries, plaque formation, and periodontal disease

## **VI. PREVENTION AND MANAGEMENT OF EMERGENCIES (5%)**

- A. Medical
  - 1. Understanding potential risks and implementing techniques for the prevention of medical emergencies in patients with past histories of conditions, such as:
    - a. AIDS
    - b. alcohol/substance abuse
    - c. allergies
    - d. angina pectoris
    - e. arthritis or rheumatism
    - f. asthma
    - g. blood disorder

- h. cancer
  - i. cardiovascular disease
  - j. diabetes mellitus or hypoglycemia
  - k. emphysema
  - l. epilepsy
  - m. hepatitis
  - n. hypertension or hypotension
  - o. kidney or liver problems
  - p. prostheses and heart valve replacements
  - q. respiratory infection
  - r. heart disease/defect
  - s. ulcers
2. Recognize medications related to the patient's present and/or past medical/dental history
  3. Demonstrate preventive measures to be used following drug administration to avoid drug-induced emergencies
  4. Recognize the signs and symptoms related to specific medical conditions/emergencies likely to occur in the dental office, including:
    - a. airway obstruction
    - b. cardiovascular or cerebrovascular incidents
    - c. diabetes- or epilepsy-related incidents
    - d. reactions to drugs, anesthetics
    - e. respiratory irregularities, including hypo- or hyper- ventilation, asthma
    - f. shock
    - g. syncope
  5. Respond to and assist in the management of chairside emergencies, such as:
    - a. allergic reactions
    - b. blood loss
    - c. cardiovascular or cerebrovascular irregularities
    - d. emergencies produced by metabolic or neurologic disease
    - e. respiratory irregularities, obstructions
    - f. shock
    - g. transient unconsciousness
  6. Maintain a current emergency kit and prepare and post a listing of emergency support personnel (ambulance, fire department, emergency squad, hospital, physician in building, etc.)
- B. Dental
1. Recognize the signs and symptoms related to specific dental conditions/emergencies likely to occur in the office
    - a. Recognize the types of soft tissue inflammations of the oral cavity
    - b. Recognize the signs and symptoms associated with traumatic oral/facial injuries
    - c. Recognize the signs and symptoms of broken, loose or displaced orthodontic appliances
  2. Implement and/or assist with appropriate procedures for the management of dental emergencies

**VII. OFFICE OPERATIONS (5%)**

- A. Supply and Inventory Control
  - 1. Maintain and control supplies
    - a. Record and inventory items used
    - b. Order supplies, instruments and equipment to maintain specified levels
    - c. Rotate expendable supplies according to the expiration date
    - d. Rotate non-expendable supplies according to the inventory control system
    - e. Manage backorders according to the inventory control system
  - 2. Maintain security and necessary records of controlled substances
- B. Maintenance of Equipment/Instruments
  - 1. Perform preventive maintenance on the equipment and instruments in the dental operatory, as per manufacturer's instructions
  - 2. Provide appropriate care and storage of supplies such as sterile disposable products, oxygen, etc
- C. Patient Reception, Communication, and Accounting
  - 1. Communicate effectively and establish good working relationships with patients and with other members of the dental care team
  - 2. Greet and dismiss patients and visitors
  - 3. Maintain appointment control by scheduling patients according to individual needs
  - 4. Explain fees charged to a patient and financial arrangements, as directed by the dentist
  - 5. Collect fees and issue receipts
  - 6. Understand basic concepts of third-party payment
  - 7. Initiate referral procedures for the patient as directed
- D. Legal Aspects of Dentistry
  - 1. Records
    - a. Identify the legal significance of medical and dental histories
    - b. Identify items included as part of a legally documented patient record
    - c. Implement precautions necessary in lending records to another dental office
    - d. Differentiate among the various types of patient data in the dental office
    - e. File items, including radiographs, histories, correspondence, etc., into individual patient records
    - f. Record patient telephone communication and professional dental and medical consultations
  - 2. Legal Responsibilities and Regulations
    - a. Identify the factors and precautions necessary to prevent lawsuits against dental personnel
    - b. Identify the responsibilities and/or obligations of the dentist and patients in the dentist-patient relationship
    - c. Obtain consent for routine and emergency office dental care
    - d. Maintain the patient's right to privacy
    - e. Identify the action that a dental assistant should take after a threat to sue for malpractice
    - f. Recognize the legal responsibilities of the dental assistant in relation to the State Dental Practice Act

- g. Document any patient refusal of recommended routine and emergency treatment

## **VIII. DENTAL RADIATION HEALTH AND SAFETY (19%)**

- A. Expose and evaluate
  - 1. Select appropriate radiographic technique
    - a. Describe use and purpose of various intraoral and extraoral radiographs, such as:
      - 1. periapical
      - 2. bitewing
      - 3. occlusal
      - 4. panoramic
      - 5. cephalometric and other extraoral views
    - b. Select appropriate radiographic film to examine, view, or survey conditions, teeth, or landmarks, such as:
      - 1. caries
      - 2. temporomandibular joint
      - 3. periodontal conditions
      - 4. apical pathology
      - 5. sinus areas
      - 6. dental anomalies
      - 7. edentulous arches
      - 8. localization of impacted teeth, foreign objects, etc
      - 9. dental implants
  - 2. Select appropriate equipment for radiographic techniques.
    - a. Describe purpose of accessories for radiographic techniques, including lead apron and thyroid collar
    - b. Storage
      - 1. Inspect and evaluate film storage areas for proper temperature, humidity, radiation protection and inventory control
        - a. Identify and correct errors related to improperly storing exposed and unexposed radiographic film
  - 3. Select patient management techniques before, during, and after radiographic exposure
    - a. Address patient concerns about radiation, including patient refusal of radiography
    - b. Describe techniques for patient management while exposing radiographs, including patients with special needs
  - 4. Expose dental films, using various techniques
    - a. Define radiographic exposure concepts, including:
      - 1. film speed
      - 2. kilovoltage
      - 3. milliamperage
      - 4. collimation
      - 5. filtration
      - 6. film density
      - 7. latent image
    - b. Intraoral
      - 1. Define factors that influence quality of exposure, such as:
        - a. mA setting

- b. kVp setting
    - c. primary beam angles (horizontal and vertical)
    - d. PID (cone) length
    - e. exposure time
  - 2. Identify the parts and functions of an x-ray film packet
- c. Extraoral
  - 1. Identify function and maintenance of film cassettes and intensifying screens
  - 2. Describe appropriate technique for exposing (patient positioning)
    - a. panoramic radiography
    - b. cephalometric radiography
- 5. Demonstrate basic knowledge of digital radiography and other modern imaging techniques
  - a. Advantages/disadvantages of digital radiography
  - b. Image receptors
  - c. Infection control for digital equipment
- 6. Evaluate radiographs for diagnostic value
  - a. Describe features of a diagnostically acceptable radiograph
  - b. Identify and correct errors related to exposing intraoral radiographs, including:
    - 1. elongation
    - 2. foreshortening
    - 3. horizontal overlapping
    - 4. cone cutting
    - 5. light image
    - 6. dark image
    - 7. film bending
    - 8. reverse film (herringbone effect)
    - 9. blank (clear) film
    - 10. blurred image
    - 11. superimposed image
    - 12. double exposure
    - 13. film placement errors
  - c. Identify and correct errors related to exposing extraoral radiographs, including patient positioning errors

**B. Process**

- 1. Prepare, maintain, and replenish radiographic solutions for manual and automatic processors
  - a. Describe functions of processing solutions
  - b. Describe procedures for maintaining the integrity of processing solutions
- 2. Process exposed intra- and extraoral radiographs by use of manual and automatic techniques, but not limited to:
  - a. Identify optimum conditions and procedures for processing radiographs
  - b. Identify and correct errors related to radiographic processing, including:
    - 1. fogging
    - 2. light and dark images
    - 3. clear (blank) film

4. partial images
5. overlapped films
- c. Identify and correct errors due to improper film handling, including:
  1. scratches
  2. white or black lines
  3. static electricity artifacts
  4. fingerprints
3. Properly dispose of all chemical agents and other materials used in dental radiography procedures
4. Implement quality assurance procedures (e.g., daily recording of solution temperatures, dates of solution changes, test film runs, clean maintain equipment, knowledge of periodic inspections)
- C. Prepare radiographs for legal requirements, viewing, and duplication
  1. Identify methods for duplicating radiographs
  2. Identify information that must legally appear on the mount label
  3. Identify reasons for exposing and retaining radiographs
- D. Radiation Safety – Patient
  1. Apply the principles of radiation protection and health physics and hazards in the operation of radiographic equipment
    - a. Demonstrate knowledge of the factors affecting x-ray production, including kVp, mA, and exposure time
      1. Describe the characteristics of x-radiation
    - b. Demonstrate understanding of x-ray machine factors that influence radiation safety, including concepts of filtration, shielding, collimation, and PID (cone) length
    - c. Demonstrate understanding of x-radiation physics:
      1. primary radiation
      2. scatter (secondary) radiation
    - d. Describe protocol for suspected x-ray machine malfunctions
  2. Practice patient safety measures to provide protection from x-radiation
    - a. Identify major causes of unnecessary x-radiation exposure
    - b. Demonstrate understanding of x-radiation biology
      1. Short- and long-term effects of x-radiation on cells and tissues
      2. Demonstrate understanding of concepts of x-radiation doses, and effective dose
    - c. Identify ways to reduce x-radiation exposure to patients (ALARA)
    - d. Identify guidelines that determine frequency of exposure
- E. Radiation Safety – Operator/Other Staff
  1. Practice operator safety measures to provide protection from x-radiation
    - a. Identify sources of x-radiation to operators/other staff while exposing radiographs
    - b. Identify safety measures to reduce operator x-ray exposure
    - c. Demonstrate understanding of x-radiation physics and biology pertaining to the operator exposure
  2. Describe techniques for monitoring individual x-radiation exposure
    - a. Describe the ALARA principle as related to operator safety
    - b. Explain the function of a personal monitoring device