

# Dental Assistant: Dental Science 2

Exam Information	Description												
<b>Exam number</b> 721  <b>Items</b> 35  <b>Points</b> 44  <b>Prerequisites</b> Dental Science 1  <b>Recommended course length</b> One semester  <b>National Career Cluster</b> Health Science NCHSE Health Science Bundle  <b>Performance standards</b> Included (Optional)  <b>Certificate available</b> Yes	<p>The Dental Science 2 industry certification exam assesses learners on their ability to assist a dentist or dental hygienist in performing the functions of a dental practice. The exam covers chairside assisting, patient preparation, front office functions, selected dental office laboratory procedures, and an introduction to radiology.</p>												
	Exam Blueprint												
	<table> <tr> <th>Standard</th><th>Percentage of exam</th></tr> <tr> <td>1. Dental Examination Skills</td><td>11%</td></tr> <tr> <td>2. Polish and Fluoride Skills</td><td>18%</td></tr> <tr> <td>3. Radiological Protection &amp; Infection Control</td><td>25%</td></tr> <tr> <td>4. Pain Control</td><td>16%</td></tr> <tr> <td>5. Operative Procedures</td><td>30%</td></tr> </table>	Standard	Percentage of exam	1. Dental Examination Skills	11%	2. Polish and Fluoride Skills	18%	3. Radiological Protection & Infection Control	25%	4. Pain Control	16%	5. Operative Procedures	30%
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## STANDARD 1

Students will be able to perform the skills and responsibilities expected of a dental assistant in a dental examination.

### **Objective 1** Describe the role of the dental assistant in the clinical examination.

1. Receive and prepare patient for treatment
  - a. Seating
  - b. Positioning chair
  - c. Placing napkin
  - d. Positioning patient chart
2. Take vital signs
3. Take radiographs
4. Chart as per dentist dictation
5. Maintain the field of operation during dental procedures.

### **Objective 2** Discuss the importance of a treatment plan.

1. Treatment plan is a compilation of clinical findings and oral diagnosis by a dentist, in an outlined format for presentation purposes.
2. The treatment plan must be presented and accepted by the patient before treatment is rendered.

### **Objective 3** Maintain records in accordance with legal guidelines.

1. All important information pertaining to treatment rendered.
2. Understand how to correct an error on the patient chart.

**Standard 1 Performance Evaluation included below (Optional)**

## STANDARD 2

Students will be able to perform the skills and responsibilities expected of a dental assistant in a coronal polish and application of fluoride.

**Objective 1** Explain the difference between an oral prophylaxis and coronal polishing.

1. Oral prophylaxis-the complete removal of calculus, debris, stain, and plaque from the teeth.
2. Coronal polish/rubber cup polish-a technique used to remove plaque and stains from the crown of the tooth.

**Objective 2** Explain safety precautions to be followed during coronal polish.

1. Operator and patient positioning
2. Polishing/bristle cups
3. Polishing paste
4. Proper handpiece grasp/fulcrum
5. Proper handpiece operation
6. Polishing strokes

**Objective 3** Compare and contrast the methods of fluoride therapy.

1. Systemic
2. Topical

**Objective 4** Explain the set up and use of instruments for dental sealants.

6. Protective eyewear for patient and operator
7. Basic set up
8. Cotton rolls or dental dam
9. Etchant
10. Sealant material
11. Applicator brush
12. HVE: High Volume Evacuator
13. Curing light and shielding
14. Low speed handpiece
15. Articulating paper and holder
16. Dental floss

**Standard 2 Performance Evaluation included below (Optional)**

## **STANDARD 3**

Students will demonstrate radiological protection and infection control as they expose, evaluate, and mount dental

images.

**Objective 1** Explain to a patient the benefits of dental imaging.

1. Detect decay between the teeth in its early stages.
2. Detect bone loss around the teeth.
3. Detect periapical abscess.
4. Detect impacted teeth.
5. Evaluate patient growth and development.
6. Document existing oral conditions.
7. Obtain information during dental procedures.

**Objective 2** Identify types and techniques of intraoral and extraoral radiographs/images and the purpose of each.

1. Intraoral
  - a. Bitewing x-rays-shows crowns of both upper and lower teeth; for decay detection.
  - b. Periapical x-rays-used to show crown, root tip, and surrounding area to diagnose abscesses.
  - c. Occlusal x-rays-used to examine large areas of the jaws to identify impactions or pathological conditions.
2. Extraoral
  - a. Panoramic x-rays-shows entire upper and lower jaw; used to locate impacted teeth, tooth eruption patterns, and lesions in the jaw.
  - b. Cephalometric x-rays-shows the bones and soft tissues of the facial profile; used in orthodontics.
  - c. Cone Beam Computed Tomography (CBCT): Three-dimensional imaging that shows dental related anatomy; used for surgical planning, TMJ, implant placement, bone density, etc.

**Objective 3** Identify the components of the dental x-ray machine and their use including handheld devices.

1. Tubehead
2. Extension arm
3. Control panel

**Objective 4** Discuss methods of radiation protection for the patient during x-ray exposure.

1. Take only those radiographs prescribed by the dentist.
2. Use equipment that is properly maintained.
3. Use proper exposure time based on the individual patient.
4. Use proper exposure techniques including use of digital holding devices.

**Objective 5** Discuss methods of radiation protection for the operator during x-ray exposure.

1. Never stand directly in front of the x-ray tubehead.
2. Always stand at least 6 feet from the x-ray unit, or behind a wall, during exposure.
3. Follow manufacturer's instructions for hand-held units.

**Objective 6** Discuss infection control during x-ray procedures.

**Objective 7** Describe image quality factors of a radiograph.

1. Contrast
2. Radiopaque
3. Radiolucent
4. Density
5. Image detail

**Objective 8** Identify common exposure and technique errors.

1. Blurred images: movement during the exposure
2. Cone cutting: x-ray beam did not cover the entire sensor.
3. Elongation: vertical angulation too flat
4. Foreshortening: vertical angulation too steep
5. Missing apical structures: sensor did not cover the entire tooth.
6. Occlusal plane tilted: sensor not in proper position.
7. Overlapping: central ray not directed through interproximal space

**Objective 9** Identify radiographic landmarks for mounting intraoral films.

1. Mental foramen
2. Maxillary/mandibular roots
3. Maxillary sinus
4. Maxillary tuberosity
5. Retromolar area

**Standard 3 Performance Evaluation included below (Optional)**

## **STANDARD 4**

Students will examine pain control in the dental office setting.

**Objective 1** Explain the set-up and protocol of a local anesthetic injection.

1. Proper handling of the anesthetic syringe
2. Proper handling of the anesthetic cartridge
3. Proper handling of the disposable needle

4. Application of a topical anesthetic

**Objective 2** Compare local anesthetic agents with or without vasoconstrictors.

**Objective 3** Identify the complications and precautions for dental anesthesia.

1. Injection into a blood vessel: aspiration to verify.
2. Adverse reaction: check patient's dental/medical history for previous reactions
3. Temporary numbness: caution patient not to bite tongue, lips, or cheeks.
4. Paresthesia (temporary or permanent): use only sterile solution and proper injection technique.

**Objective 4** Explain the use and procedure of nitrous oxide in dental treatment.

1. Inhalation sedation
2. Procedure
  - a. Dentist supervision
  - b. 100% oxygen to begin/end
  - c. Do not leave patient unattended – continual monitoring
  - d. Do not use with a pregnant patient
  - e. Not for recreational purposes

**Objective 5** Describe the equipment used in nitrous oxide/oxygen analgesia.

1. Cylinders
  - a. Blue – Nitrous
  - b. Green – Oxygen
2. Control valve
3. Flowmeter
4. Reservoir bag
5. Gas hoses
6. Mask
7. Scavenger system

**Standard 4 Performance Evaluation included below (Optional)**

## **STANDARD 5**

Students will identify components of operative procedures and assist in patient treatment.

**Objective 1** Identify reasons for dental treatment.

1. Treat caries, fractures, abrasions, erosion, defects in tooth structure
2. Replace failed restorations
3. Restore a tooth to normal function and appearance
4. Improve the appearance of teeth due to discoloration, developmental abnormalities, abnormal spacing, or trauma

**Objective 2** Outline the responsibilities of the dental assistant in operative dental procedures.

1. Prepare a treatment room.
2. Know proper sequence of procedures in order to anticipate the dentist's needs during patient treatment.
3. Mix materials.
4. Prepare retainers.
5. Assist in the following:
  - a. Administration of local anesthesia
  - b. Moisture control
  - c. Maintaining patient comfort
6. Apply appropriate exposure control protocols.
7. Perform only those expanded functions allowed by the State Dental Practice Act.

**Objective 3** Identify handpieces and burs, their common uses in operative dentistry, and maintenance.

1. Low-speed
2. High-speed
3. Fiber optic light
4. Air abrasion
5. Laser handpiece
6. Burs: round, inverted cone, straight fissure plain and crosscut, pear, end cutting
7. Diamonds
8. Trimming and finishing burs
9. Polishing disks and wheels
10. Stones
11. Rubber points

**Objective 4** Outline treatment options for vital bleaching.

1. In-office treatment
2. At-home treatment
3. Over-the-counter treatment

**Objective 5** Explain the setup and use of instruments for a composite procedure.

1. Instruments
  - a. Basic setup

- b. Spoon excavator
- c. Composite placement instruments
- 2. Accessories
  - a. Local anesthetic setup
  - b. HVE tip
  - c. Saliva ejector
  - d. Three-way syringe tip
  - e. High and low speed handpieces with assortment of burs
  - f. Matrix setup including wedge
    - i. Mylar
    - ii. Sectional
    - iii. Tofflemire
  - 1. Assortment of dental liners
  - 2. Bases
  - 3. Sealers and bonding agents
  - 4. Composite materials
  - 5. Curing light
  - 6. Finishing burs
  - 7. Dental floss
  - 8. Articulating paper and holder
  - 9. Cotton rolls
  - 10. 2x2 gauze
  - 11. Abrasive strips
  - 12. Polishing kit and paste

#### Objective 6 Explain the steps for composite procedures

- 1. Prepare
- 2. Etch
- 3. Rinse
- 4. Bond
- 5. Cure
- 6. Fill
- 7. Cure
- 8. Finish
- 9. Record in the patient chart

#### Standard 5 Performance Evaluation included below (Optional)

### Dental Science 2

Performance assessments may be completed and evaluated at any time during the course. The following performance skills are to be used in connection with the associated standards and exam. To pass the performance standard the student must attain a performance standard average of 8 or higher on the rating scale. Students may be encouraged to repeat the objectives until they average 8 or higher.



**Student's Name:** \_\_\_\_\_

**Class:** \_\_\_\_\_

## Performance standards rating scale

0	Limited skills	2	→	4	Moderate skills	6	→	8	High skills	10
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### Standard 1 — Dental Examination Skills

**Score:**

- Prepare room for treatment
- Chart existing restorations or conditions
- Maintain moisture control during dental procedures
- Demonstrate appropriate instrument transfer

### Standard 2 – Polish & Fluoride Skills

**Score:**

- Perform coronal polish
- Apply topical fluoride
- Apply pit and fissure sealants
- Assemble the XCP instrument

### Standard 5 – Operative Skills

**Score:**

- Demonstrate techniques for intraoral x-rays
  - Paralleling technique
  - Bisecting angle technique
  - Bite-wing technique
  - Occlusal technique
- Mount radiographs
- Prepare for a local anesthetic injection
  - Proper handling of the anesthetic syringe
  - Proper handling of the anesthetic cartridge
  - Proper handling of the disposable needle
  - Application of a topical anesthetic
- Assemble matrix systems

### Workplace Skills

Describe the characteristics of a professional dental assistant.

- Professional appearance
- Teamwork
- Attitude
- Dedication
- Responsibility
- Initiative
- Legal requirements/confidentiality
- Personal qualities
- Courtesy and respect for patients and team members
- Attendance of work hours
- Professional communication (grammar)
- Problem solving
- Critical thinking
- Dependability
- Accountability

**Performance standard average score:**

**Evaluator Name:** \_\_\_\_\_

**Evaluator Title:** \_\_\_\_\_

**Evaluator Signature:** \_\_\_\_\_

**Date:** \_\_\_\_\_