INTRODUCTION

Traditionally, the dentist is responsible for all dental diagnosis and treatment; certain circumstances may occur that warrant the Hospital Corpsman (HM) to provide emergency dental treatment to patients. If an emergency occurs, always contact a dental officer to obtain an appropriate treatment plan. The dentist may authorize the HM to provide the following treatments: temporary treatment that provides relief from pain, fights infection, or prevents further damage to the mouth. Following an emergency visit, always instruct the patient to return the next day to dental sick call or to make an appointment in the appropriate dental specialty area for definitive treatment. Advise the patient to keep the appointment even if symptoms disappear.

Oral conditions are identified by signs and symptoms. A sign is what the HM observes when examining the oral structures, such as bleeding gums, carious lesion, or heavy deposits of plaque or calculus. A symptom is what a patient reports about his or her disease or injury such as a toothache or sore gums.

EMERGENCY TREATMENT GUIDELINES

LEARNING OBJECTIVE:

Explain the Emergency Treatment Guidelines for dental emergency treatment of patients.

Certain emergency guidelines have been established to assist the HM in providing emergency treatment to patients. Before any emergency treatment is rendered, the HM must follow the emergency treatment guidelines first as listed below for every dental emergency:

- Check the patient’s general physical condition
- Interview the patient and record the symptoms
- Review patient’s health history
- Examine the patient and record assessment findings, including vital signs
- Check for other injuries if trauma has been found
- Consult with the dentist and report the patient’s condition
- Request instructions from the dentist or other on site provider (IDC, PA, NP) and follow the treatment plan exactly
- Record the emergency treatment provided in the Health Record, Dental, EZ603A
- Advise the patient the treatment provided is temporary and to return for definitive treatment
DISEASES OF THE TISSUES OF THE TEETH

LEARNING OBJECTIVE:

Describe the signs, symptoms, and the emergency treatment for diseases of the tooth tissues.

An important part of the HM’s job is the ability to recognize oral diseases and their signs and symptoms.

DENTAL CARIES

Dental caries, also known as tooth decay or cavities, occurs when bacterial processes damage hard tooth structures (enamel, dentin and cementum, discussed in Chapter 7). Initially, it may appear as a small chalky white spot which may eventually develop into a large cavitation. If the lesion progresses, it will continue into the dentin and eventually involve the pulp.

Symptoms

Once the decay passes through the enamel and into the dentinal tubules, it will expose the tooth nerve resulting in pain.

- Pain may worsen with exposure to heat, cold (more often), or sweet foods and drinks
- Pain from an affected tooth can manifest in a healthy, noninvolved tooth; this is called referred pain

Signs

- Chalky white spot on the enamel
- Roughness on the surface of the tooth
- Dark, stained cavity
- Cavity filled with food or a spongy mass of decaying dentin

Treatment

- Perform emergency treatment guidelines
- Gently remove all debris from the cavity with a spoon excavator
- Flush the cavity with warm distilled water, if unavailable use clean tap water
- Isolate the tooth with cotton rolls or gauze
- Carefully dry the cavity with cotton pellets
- Mix a temporary filling (zinc oxide eugenol, IRM® “Intermediate Restorative Material,” etc.)
- Gently fill the cavity with the temporary filling material
- Check the occlusion (previously discussed in Chapter 7). Make sure the temporary restoration does not touch the opposing tooth
- Instruct the patient to return to the DTF (dental treatment facility) for definitive treatment on the next work day

ACUTE PULPITIS

Acute pulpitis is an inflammation of the pulp usually due to injury from dental caries or trauma. It is the most frequent cause of severe tooth pain. Pressure from inflammation can cause mild to extreme pain depending upon the severity of the inflammation.

Symptoms

- Spontaneous, continuous, or intermittent pain that lingers
- Piercing and pulsating pain in the affected area
- Increased pain when lying down
Signs

- Large carious lesion
- Large carious lesion with pulpal exposure
- Blood or puss oozing from the pulpal exposure
- Fractured tooth or missing restoration (filling)

Treatment

- Perform emergency treatment guidelines
- Gently remove loose debris from the cavity
- Dry the cavity with cotton pellets
- Pack the cavity with a cotton pellet slightly moistened with eugenol
- Gently fill the cavity with a temporary filling material
- Check the occlusion
- Instruct the patient to return to the DTF for definitive treatment

PERIAPICAL ABSCESS

A periapical abscess (Figs. 24-1 and 24-2) usually results from an infection of the pulpal tissue causing the pulp to become necrotic (die). This type of infection causes fluids and by-products to build up within the walls of the pulp chamber and root canal(s). The periapical abscess is formed when these materials escape through the apical foramen of the tooth. An area of pus and fluid accumulation forms in the bone surrounding the apex of the tooth. As the pressure builds up, a channel may form through the alveolar bone and the soft tissue. This channel is called a sinus tract. When the pus reaches the soft tissue, vestibular or facial swelling can occur. Extensive swelling is called cellulitis. Swelling that is confined to a small area at the site of a sinus tract is called a gumboil.

Symptoms

- Constant, throbbing pain in the affected area
- Increased pain when chewing
- Increased pain when lying down
- Bad taste in the mouth
- A gumboil (painful swelling on the gum)
- The tooth “feels longer” than the others
- Malaise
- Tender lymph nodes locally
Signs

- Severe pain reaction is experienced when light pressure is applied to the affected tooth
- A gumboil
- Facial swelling (general or localized)
- Increased tooth mobility
- An elevated temperature
- Enlarged lymph nodes locally

Treatment

- **Perform emergency treatment guidelines**
- Expose a periapical radiograph of the affected tooth. The abscess will appear radiolucent around the apex of the tooth (see Fig. 24-2)
- Drain the abscess
  - If the abscess is soft and pus is evident, drainage can be done without local anesthesia
  - Puncture the most raised portion of the abscess with an explorer
- If a carious lesion is present, gently excavate the cavity

**NOTE:**
If drainage occurs through the cavity, the patient may experience a rapid relief from pain.

- If drainage still does not occur, apply an ice pack to the affected area. This may reduce the patient’s discomfort until the dentist can provide emergency treatment
- When drainage is established, give the patient instructions about home care and notify the dental officer to see if a prescription for antibiotics can be called into the pharmacy
- Instruct the patient to return to the DTF for definitive treatment as soon as possible

**DISEASES OF THE PERIODONTAL TISSUES**

**LEARNING OBJECTIVE:**

*Describe the signs, symptoms, and the emergency treatment for diseases of the periodontal tissues.*

Periodontal diseases are a group of diseases that affect the periodontium that support and anchor the teeth. Left untreated, periodontal disease results in the destruction of the gums, alveolar bone (the part of the jaws where the teeth arise), and will lead to the loss of teeth.

**MARGINAL GINGIVITIS**

*Gingivitis* is an inflammation of the gingival tissue. Marginal gingivitis is a relatively mild inflammation of the borders of the gingival tissue. Sometimes the inflammation is localized; it may exist around one, two, or a group of teeth. If the condition is generalized, then it will exist around all the teeth. The most frequent cause of marginal gingivitis is the presence of bacterial plaque buildup due to lack of adequate oral hygiene, (i.e. daily brushing and flossing).
Symptoms

- Sore or swollen gums
- Bright-red, or purple gums
- Severe oral odor
- Gums that are tender, or painful to the touch
- Gums that bleed easily, even with gentle brushing, and especially when flossing

Signs

- Painful reaction or gingival bleeding when finger pressure is applied
- Red, swollen gingiva with a loss of stippling (healthy gums have an “orange peel” appearance known as stippling)
- Heavy plaque and calculus deposits in the affected area
- Severe oral odor

Treatment

- **Perform emergency treatment guidelines**
  - Give the patient OHI (oral health instruction consists of motivating and educating the patient on proper brushing and flossing techniques)
  - Have the patient rinse with a warm saline solution
  - Gently scale the teeth to remove soft debris and any obvious supragingival (above the gum) calculus using hand scaling instruments

**Necrotizing Ulcerative Gingivitis**

*Necrotizing ulcerative gingivitis (NUG)* (Fig. 24-3) is a severe infection of the gingival tissue, commonly referred to as trenchmouth. The condition is caused by an overpopulation of established oral bacteria due to a number of interacting factors such as poor hygiene, poor diet, smoking, stress, lifestyle, and other infections.

![Image reprinted with permission from: North East Regional Board of Dental Examiners, INC., Silver Spring, MD.](Image)

**Figure 24-3.—Necrotizing Ulcerative Gingivitis**

**NOTE:**
NUG is more common in deployed Sailors and Marines.

Symptoms

- The same symptoms as that of marginal gingivitis
- Bad taste in the mouth
- Pain when eating or brushing
- Excessive bleeding
Signs

- Same as those of marginal gingivitis, but more severe
- Heavy plaque and calculus deposits
- Ulceration and cratering of the interdental papillae. Frequently, so much of the papillae is lost that the triangular area between the crowns of the teeth present a “punched out” appearance
- A gray-white membrane covering the gingiva
- A foul odor from the oral cavity
- Pus oozing from the gingiva
- Elevated temperature

Treatment

- Perform emergency treatment guidelines
- If the patient has an elevated temperature (101° or above), the dentist should treat the patient
- If the HM is authorized to treat the patient, the treatment plan will be the same as for marginal gingivitis

PERIODONTITIS

*Periodontitis* (Fig. 24-4) involves progressive loss of the alveolar bone around the teeth, and if left untreated can lead to the loosening and subsequent loss of teeth. It usually results from untreated marginal gingivitis. It is marked by the gradual loss of attachment of the periodontal tissues. Periodontitis may affect the entire dentition or only localized areas.

![Figure 24-4.—Periodontitis](Image reprinted with permission from: North East Regional Board of Dental Examiners, INC., Silver Spring, MD.)

Symptoms

- “Deep, gnawing pain” in the affected area
- Itching of the gums
- Sensitivity to heat and cold
- Bleeding gums
- Food sticking between the teeth
- Gingival recession resulting in apparent lengthening of teeth
- A tooth aching with the absence of caries
- Uneven bite
- Increased spacing between the anterior teeth
- Halitosis, or bad breath
- Persistent metallic taste in the mouth
- Loose teeth in the later stages
Signs

- Heavy plaque and calculus deposits
- Gingival inflammation, bleeding, or discoloration (bluish-red)
- Localized or generalized gingival bleeding
- Ulcerated or cratered papilla
- Tooth mobility increased

Treatment

- **Perform emergency treatment guidelines**
  - The emergency treatment plan will be the same as for marginal gingivitis

PERIODONTAL ABSCESS

A *periodontal abscess* (Fig. 24-5) is caused by an infection of the periodontal tissues. It is usually the result of a long-continued irritation by food debris, deep deposits of calculus or a foreign object packed in the sulcus or interproximal spaces.

The signs and symptoms for periodontal abscesses are similar to those for periapical abscesses.

**Treatment**

- **Perform emergency treatment guidelines**

**Figure 24-6.—Probing Affected Area with Scaler**

*Photograph provided by the Biomedical Photography Department of Naval Support Command, Bethesda, MD.*

- Gently probing the affected area with a scaler (Fig. 24-6) or an explorer to establish drainage. Probe the space between the tooth surface and the gingival tissue
- If probing does not establish drainage, have the patient apply warm saline to the affected area

**Figure 24-5.—Periodontal Abscess**

*Photograph provided by Captain David Hartzell of the Naval Post Dental Graduate School, Bethesda, MD.*
PERICORONITIS

Pericoronitis (Fig. 24-7) is an inflammation of the gingiva around a partially erupted tooth. During eruption the tooth breaks through the gingiva tissue and sometimes a small flap of tissue remains over the crown of the tooth. Debris accumulates beneath the tissue flap resulting in an acute inflammation. Inflammation can also result from constant contact between the tissue flap and the tooth in the opposing arch. Pericoronitis most often affects mandibular third molars (Teeth #17 & #32).

Symptoms

- Pain when chewing
- Bad taste in the mouth
- Difficultly in opening the mouth
- Swelling in the neck or in the area of the affected tooth
- Fever

Signs

- Partially erupted tooth
- Red, inflamed tissue around a partially erupted tooth
- Pus oozing from under an overlaying tissue flap
- Painful reaction when finger pressure is applied
- Swelling in the cheek near the affected tooth
- Enlarged lymph nodes
- Elevated temperature

Treatment

- Perform emergency treatment guidelines
- Irrigate under the tissue flap with a warm saline solution (Fig. 24-8)
- Gently clean the area with a sonic scaler or hand scaler
- Instruct the patient to rinse with a warm saline solution every 2 hours
- Contact dental officer if patient is febrile or if lymph nodes are palpable. The dental officer will determine the need to prescribe antibiotics

Figure 24-7.—Partially Erupted Tooth with Inflammation

Photograph provided by Captain David Hartzell of the Naval Post Dental Graduate School, Bethesda, MD.

Figure 24-8.—Irrigating Beneath Tissue Flap
OTHER ORAL DISEASES

LEARNING OBJECTIVE:
Describe the conditions resulting from inflammation of the oral mucosa, postexodontic complications, and trauma to the teeth and their supporting structures.

This section describes emergency conditions resulting from inflammation of the oral mucosa, postexodontic complications, and trauma to the teeth and their supporting structures.

STOMATITIS AND RECURRENT LABIAL HERPES

“Stomatitis” is a general term used to denote inflammation of the oral mucosa. Two types of stomatitis are common in dentistry; they are herpetic gingivostomatitis and aphthous stomatitis (canker sore). Herpetic gingivostomatitis usually occurs on the masticatory or keratinized tissues (e.g. gingivae, hard palate), while aphthous stomatitis usually occurs on the lining mucosa or non-keratinized tissue. Both conditions are marked by the formation of small blisters and ulcers on the oral mucosa.

Symptoms
- A painful swelling
- A fever blister, cold sore, or canker sore
- Pain when eating or drinking
- A fever, headache, or rundown feeling (for herpetic gingivostomatitis ONLY)

Signs
- Red, swollen areas with blisters or small craters formed in the center
- Blisters or craters covered with a grayish-white or yellowish membrane

STOMATITIS AND RECURRENT LABIAL HERPES

Signs

TREATMENT

• Perform emergency treatment guidelines
• Follow instructions given by the dentist
• Instruct the patient NOT to smoke, eat acidic or hot foods, or drink alcohol or use products that contain alcohol (such as mouth rinses) that will dry out the mouth.

POSTEXTRACTION HEMORRHAGE

Postextraction hemorrhage may occur any time from a few hours to several days after the extraction of a tooth. The bleeding from the extraction site may be light or heavy. Any form of hemorrhage is considered serious, so inform the dentist as soon as possible.

Symptoms
- Bleeding that starts, or fails to stop, after an extraction
- Large amounts of blood in the mouth
- Weakness in conjunction with blood loss
- Blood on the pillow after sleeping

Signs
- Blood oozing or flowing from a recent extraction site
- Blood or a large blood clot in the patient’s mouth
Treatment

- Perform emergency treatment guidelines
- Notify the dentist
- Monitor the patient’s vital signs watching for changes in his or her condition until the dentist arrives
- To help stop the bleeding, place a pack of moistened sterile gauze over the extraction site and instruct the patient to bite down firmly

POSTEXTRACTION ALVEOLAR OSTEITIS

Postextraction alveolar osteitis is a condition commonly referred to as a “dry socket”. It’s a common occurrence following the surgical removal of mandibular molars, occurring in 20% to 25% of patients. It’s rarely observed in the maxilla. It normally results when a blood clot fails to form or washes out of the socket of a recently extracted tooth. This condition is very painful.

Symptoms
- Increasing pain and discomfort 3 to 4 days after extraction
- Experiencing radiating pain
- Foul taste and odor

Signs
- The absence of a blood clot
- Food visible in the socket
- Alveolar bone visible in the socket
- A foul odor in the mouth
- An elevated temperature

FRACTURED TEETH

Pain from fractured teeth usually results from exposed dentin, or irritation of the pulp tissue as a result of trauma. The HM may also observe lacerations of the gingiva, lips, and cheeks. Except in a few rare cases, the dental officer will treat all tooth fractures. If authorized, the HM’s primary duty is to lessen the pain and prevent further injury to the patient until the dentist arrives to provide more definitive emergency treatment. The HM must be able to recognize the four different types of tooth fractures.
Symptoms (Type I: Enamel Fracture) (Fig. 24-9)

- Rough or sharp area on a tooth
- Pain when eating or drinking
- Sensitivity to heat, cold, or air

Signs

- A slight chip or fracture of the tooth enamel layer only, or with possible minimal dentin involvement
- No exposure of the dentin or pulp

Treatment

- Perform the emergency treatment guidelines
- Smooth sharp edges of the chipped area with sandpaper strips or disk to eliminate irritation of the tongue and lips
- Carefully dry the chipped area with a cotton roll or pellets
- Apply small coats of cavity varnish over the chipped area with cotton forceps and cotton pellets
- Instruct the patient to eat a bland diet and avoid extremely hot and cold foods or liquids and sticky foods

Symptoms (Type II: Enamel/Dentin Fracture) (Fig. 24-10)

- Very rough or sharp edges
- Severe pain from heat, cold, or air
- Toothache

Signs

- Extensive fracture involving the enamel and dentin layers
- No pulp exposure

Treatment

Except in rare cases, the dental officer will provide emergency treatment. The dental officer may authorize the assistant to cover the exposed dentin with a temporary type paste or place a temporary crown until definitive treatment is available. Begin with performing the emergency treatment guidelines and then going into the remaining treatment steps.
The procedures for covering a Type II fracture with zinc oxide and eugenol (i.e. IRM®) paste or other temporary paste are as follows:

- Isolate area with cotton rolls
- Carefully dry the fractured tooth off with cotton rolls or 2 x 2 gauze (Do not use direct air with the 3-way syringe)
- Coat all exposed dentin with a zinc oxide and eugenol paste or other temporary material, including light cured glass ionomer cement
- Advise the patient that this is a temporary procedure to relieve pain and sensitivity. The coat of zinc oxide and eugenol may come off the fracture
- Instruct patient to eat a bland diet and avoid extremely hot and cold foods, liquids, or sticky foods, and not to chew on the fractured tooth

Procedure for placing a temporary crown on a Type II fracture:

- Select a plastic crown form
  - Trim the form with scissors to adapt it to the fractured crown
  - Ensure that the entire fracture will be covered
- Also ensure the incisal edge in not in occlusion with the opposing teeth, while fitting the plastic crown
- Place two or three small holes in the incisal edge of the crown form with a sharp explorer
- Fill the crown form with a thin mix of calcium hydroxide (i.e. Dycal®) or zinc oxide and eugenol (i.e. IRM®)
- Gently place the crown form over the fractured crown. The HM will see any excess material expressed from the holes of the incisal edge while placing the crown
- Remove any excess material from and around the crown with gauze and cotton pellets
- Instruct the patient to eat a bland diet and avoid extremely hot and cold foods or liquids and sticky foods

Symptoms (Type III: Enamel/Dentin Fracture with Pulp Exposure) (Fig. 24-11)

- Severe, throbbing pain
- Very rough or sharp edges
- Severe pain from heat, cold, or air

Figure 24-11.—Enamel/Dentin Fracture with Pulp Exposure

- Inability to chew food

Signs

- Extensive fracture with the pulp exposed
  *Possible bleeding from the pulp
- Most or all of the crown is fractured off
Treatment

In almost all cases of a fracture this severe, the dental officer will treat the patient. Only in rare cases would the HM treat the patient. The following is a treatment plan that the dental officer might authorize to treat a Type III fracture.

- **Perform the emergency treatment guidelines**
  - Place a crown form over the affected tooth. Refer back to this procedure under the treatment for type II fractures
  - At times, it may be impossible to place a crown form over a fractured tooth. The pressure of the crown form against the pulp tissue may cause the patient pain or there may not be enough tooth structure left for retention of the crown
  - If this occurs, a splint rather than a crown form is placed on the tooth as shown in Figure 24-12

- Place the splint so it covers the affected tooth and the teeth immediately adjacent to it (Fig. 24-12)
- Ensure that the mixture is placed well up on the lingual and facial aspects of the gingival tissue
- Gently compress the splint between a finger and thumb to lock it into the interproximal spaces
- Trim the splint from the incisal edges of the teeth
- Check the occlusion to see if the splint is interfering with the patient’s bite
- Advise the patient to let the splint harden for several hours before attempting to eat
- Tell the patient to return to dental sick call ASAP for more definitive care

**Symptoms (Type IV: Root Fracture)**

(Fig. 24-13)

- Severe pain from heat, cold, air
- Inability to eat anything without severe pain
- A tooth that is moving or loose
Signs

Upon examination of a type IV fracture, the dental officer may direct the HM to take a radiograph of the tooth to determine if there is a fracture of the root. The following may be observed:

- A fractured root (as seen in the patient’s X-ray), which may be further complicated by a fracture of the crown
- Tooth mobility
- Other facial trauma associated with the accident

Treatment

Because of the severity, almost all cases of type IV fractures will be treated by the dental officer. Only in very rare cases, will the HM provide treatment.

- Perform emergency treatment guidelines
- Place a splint in the same way as for the Type III fracture

TRAUMATICALLY EXTRACTED TEETH

If a tooth has been traumatically extracted from the socket (Fig. 24-14), notify the dentist as soon as possible. The dental officer may instruct the HM to replace the tooth back in the socket after rinsing it with sterile saline. Time is of the essence for the replantation to be a success. Perform emergency treatment guidelines and control hemorrhaging until the dentist arrives.

Figure 24-14.—Traumatically Extracted Tooth

Photograph provided by Captain David Hartzell of the Naval Post Dental Graduate School, Bethesda, MD.

FRACTURES OF THE MANDIBLE AND MAXILLA

The dentist will treat this type of injury. The HM’s responsibility is to prevent further injury and to lessen the pain while waiting for the dentist. A person who has a fractured jaw may suffer serious interference with breathing. One of the most important phases of emergency care is to clear the upper respiratory passage of any obstructions. Fractures are usually the result of a high-velocity accident (e.g., the face striking the dashboard of a car). Of all the facial bones, the nasal bones, followed by the mandible, are the most frequently injured (Fig. 24-15).

Figure 24-15.—Fractured Mandible

Image reprinted with permission by: Photograph of Kim E. Goldman. (August 18, 2009). Figure 24-12. Fracture Mandible Associates in Oral & Maxillofacial Surgery. Louisville, KY.
Less common is a fracture of the maxilla. It can be distinguished from a mandibular fracture because the fractured maxilla will cause severe malocclusion consisting of an open bite. The face will also look elongated. Both the mandible and maxilla fractures are treated in the same manner until a dentist arrives.

**Symptoms**

- Difficulty in breathing, talking, eating, or swallowing
- Pain when the mandible or maxilla is moved
- An inability to move the mandible or maxilla
- Bleeding from the gums and around the teeth
- A complaint from the patient that the teeth do not come together
- A complaint that the lower lip is numb (mandibular fracture)

**Signs**

- Facial swelling
- Abnormal occlusion
- Fractured bones on dental radiographs ordered by the dentist
- Abnormal movement of mandible or maxilla

**Treatment**

- **Perform emergency treatment guidelines**
- Reporting the patient’s condition to the dentist
- Immobilizing the injured area by applying an elastic bandage as shown in (Fig. 24-16) and ensuring that a pair of scissors is standing by to cut the bandage off if the patient starts to vomit or has respiratory difficulties

**Figure 24-16.—Bandaging to Immobilize Both Mandible and Maxilla**

- Applying ice packs to reduce swelling of the injured area and to lessen the pain.

**SUMMARY**

Emergency treatment of oral diseases and injuries is key to keeping the Sailors and Marines on task with the mission. Especially in the deployed setting, care of teeth and its support structures can be an extremely difficult task to accomplish. Understanding the various dental diseases (i.e. acute pulpitis, NUG, and stomatitis) and injuries (tooth and jaw fractures) will prepare the HM to provide emergent dental care when most needed to ensure the completion of the mission by dental ready forces.