PART IX

Management of the Hospitalized Patient

The willingness and ability of the dental practitioner to manage hospitalized patients can be both a fulfilling experience for the dentist and a tremendous service to the dentist's patients and community. Patients with serious medical problems requiring dental care sometimes need the facilities and staff support available only in a hospital or surgical center. Institutionalized patients frequently find hospitals the only setting in which dental care can be provided. In addition, patients hospitalized for nondental reasons occasionally develop dental problems for which definitive care cannot be deferred until they are discharged. Finally, patients with dental emergencies or facial trauma commonly go to hospital emergency departments and immediately require someone with dental expertise to provide proper evaluation and therapy.

Effective dental practice in a hospital requires more than common sense. Although each hospital is unique, there are common administrative concepts that must be learned to practice in a hospital effectively. Chapter 31 is designed to inform the reader of the common protocols used in hospitals to facilitate communication among care providers and between health care providers and agencies outside of the hospital. This chapter also describes some of the basic problems hospitalized patients may experience, whether they are there for dental care or for other problems.

Management of the Hospitalized Patient



James R. Hupp

CHAPTER OUTLINE

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- Medical Staff Membership

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- Hospitalizing Patients for Dental Care
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- Care of Hospitalized Patient
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- Nausea and Vomiting
- Fever
- Atelectasis
- Fluids and Electrolytes
- Blood Component Transfusion

Most dentists find they can practice without hospital facilities, but the ability to care for patients in a hospital setting adds a stimulating dimension to a dentist's professional life.

As a vital member of a community's health care team, the hospital-affiliated dentist is consulted about the dental needs of patients in the emergency room and of those admitted to the hospital by other doctors or the dentist. Dentists who join a hospital medical staff are permitted to perform dental consultations for hospitalized patients and to bring patients to the hospital to perform procedures best done there. In addition, for dentists seeking to provide care with their patients under general anesthesia, community surgery centers are often the ideal answer.

HOSPITAL GOVERNANCE

Administrative Organization

Hospital organization varies from institution to institution, but most are based on standards of the Joint Commission for the Accreditation of Healthcare Organizations (JCAHO). This national body's mission is to set standards for hospitals and ambulatory care centers, to monitor these facilities to ensure that those standards are being met, and then to accredit hospitals and ambulatory centers meeting the standards.

Most general, acute care community hospitals have a board of trustees that include community leaders who make up the highest governing body of the institution. They are advised in health matters by a joint conference

committee, which is a liaison group that includes members from hospital management, the medical staff, and the board of trustees. The hospital's chief executive officer (CEO) is in charge of the daily operation of the hospital and reports to the board of trustees. Hospital governance from this point is divided into two major organizational bodies: medical staff and hospital administration.

The medical staff includes all the health care professionals who work at the hospital. The chief of staff is the most senior governing member of the medical staff and reports to the hospital president and joint conference committee, and chairs the medical board. The medical board or executive committee commonly includes the chiefs of all the medical departments of the hospital and often includes representatives from nursing and hospital administration. Dentists who join the medical staff typically become members of the dental department or division. Although at some large hospitals dentistry is on equal footing with other major departments, such as psychiatry or pediatrics, it is more often made a division, or section, of the department of surgery, similar to other surgical disciplines, such as urology and neurosurgery. As a member of the medical staff, a dentist is usually asked to serve on committees in which dental expertise is needed, such as those on infection control, as well as and pharmacy and therapeutics.

Hospital administration is managed by the hospital CEO, who has several vice presidents or assistant directors to direct various areas of hospital operations, such as nursing, support services, and finance (Fig. 31-1).

Medical Staff Membership

Membership on a hospital medical staff is not usually gained by simple request. The hospital's credentials committee, consisting of physicians and dentists on the medical staff and their administrative support staff, carefully reviews the qualifications of doctors applying for staff membership to ensure that individuals granted privileges are competent to practice in the hospital environment and have no evidence of criminal, ethical, or other such problems in their past.

Various levels of medical staff membership exist (e.g., active, associate, courtesy), each carrying certain privileges and restrictions. Staff membership, however, never automatically gives the dentist the privilege to admit patients to the hospital or to use the operating room facilities. These privileges are granted based on a review of the applying dentist's education and experience. Dentists who have completed a general practice residency or dental specialty training that provided hospital experience usually have little difficulty gaining medical staff membership and some admitting privileges.

However, because of hospital regulations, most dental patients admitted to a hospital by dentists other than oral and maxillofacial surgeons will require a physician's participation in the admission process.

BOX 31-1

Guidelines for Answering Consultations

- State reason for consultation in opening sentence
- State that chart has been reviewed and patient examined
- Be brief but thorough, particularly with dentofacial portion of the examination
- Be specific with recommendations
- Provide contingency plans
- Follow up written consultation with verbal contact with requesting doctor
- Follow patient's progress until dental problem is resolved

HOSPITAL DENTISTRY

Consultations

The request for consultation carries different connotations among health professionals. To some, the consultant is only expected to render an opinion and not to begin implementing any advice until given permission by the patient's admitting physician or, in the case of the emergency room, by the patient's designated emergency department physician. However, many physicians allow consultants to perform any test or procedure necessary to act on their opinion. Therefore the dental consultant must clarify with the requesting doctor whether only an opinion is being sought or if the dentist can proceed to order tests and render treatment before seeing the patient. In some cases, the consultation request form provides a section in which the requesting doctor can indicate the type of consultation desired.

Emergency room consultations. Emergency room consultations are usually requested verbally because of the urgency of the situation. The dentist should make use of any history and physical examination, laboratory, and radiographic results already available, to avoid excessive duplication. However, the dentist still needs to do a careful, comprehensive history and physical examination of the oral and maxillofacial region and order special radiographs as necessary to allow a complete, well-organized assessment of the patient's dentofacial problems. All of this information is recorded in the medical record on a consultation form, in the progress notes, or in the emergency room record. A recommendation should be offered that considers other medical problems, acute or long-standing, and the urgency of the treatment. Guidelines for answering consultations are shown in Box 31-1, and a sample of a written emergency suite dental consultation is shown in Fig. 31-2.

The way emergency suites are equipped for dental therapy varies. If the dentist cannot offer high-quality care in the emergency setting, the problem should be temporized and an appointment made for definitive care in the dental office. Dentists who are frequently called to hospital emergency rooms sometimes find it useful to carry in their car a set of instruments and supplies necessary for initially handling common oral emergencies.

If more than one dentist serves as a dental consultant to

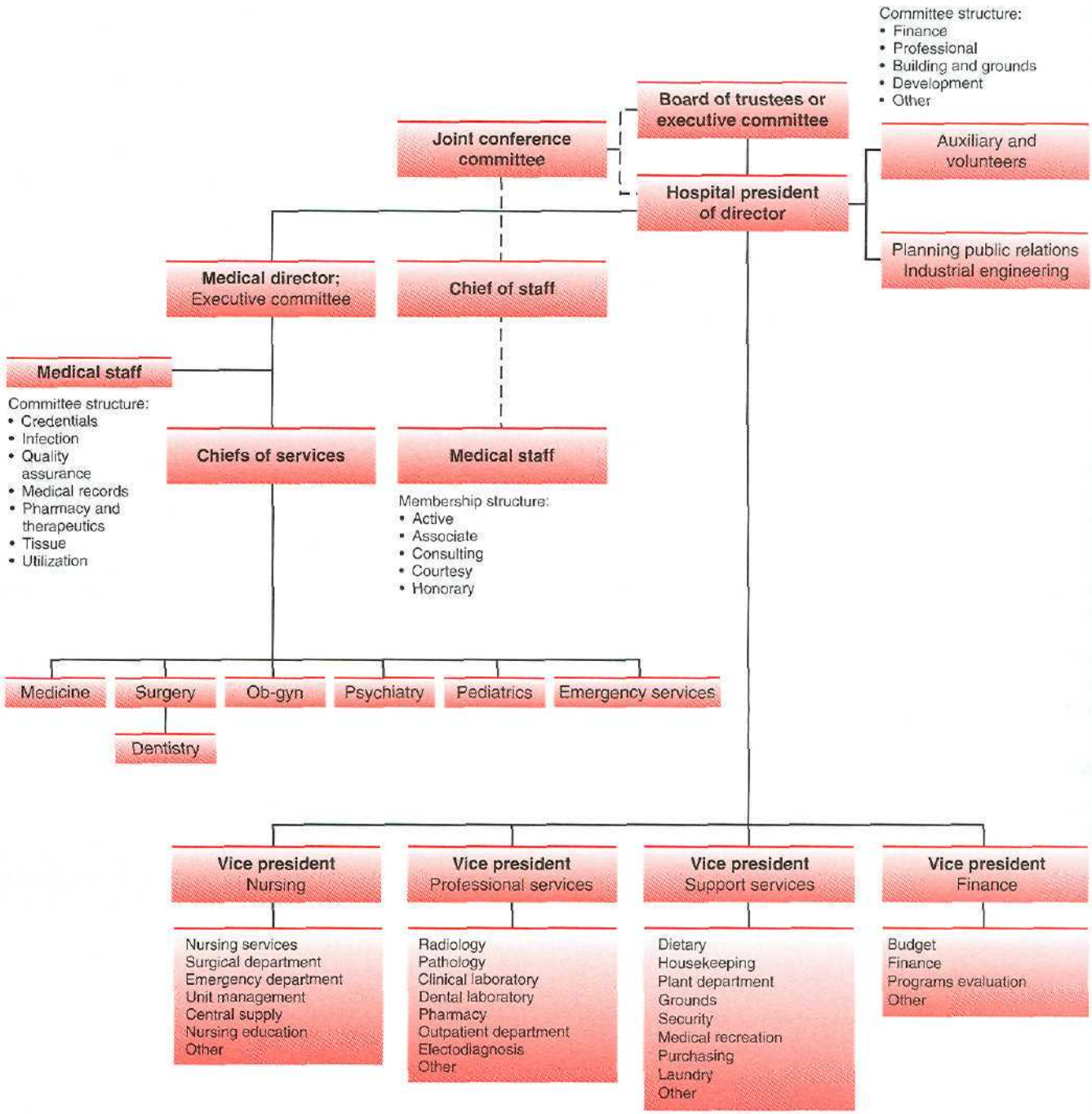


FIG. 31-1 Typical hospital organization flow diagram. Although dentistry is commonly part of surgery department, it may be separate department in some hospitals.

an emergency room, a call schedule is usually established to designate, on a daily, weekly, or monthly basis, which dentist is expected to be available in case of an emergency. When on call, the dentist should keep the hospital aware of how the dentist can be quickly contacted.

Inpatient consultations. Dental consultation **for** a hospitalized patient is similar to consultations for emergency patients: the dentist is expected to evaluate the oral and maxillofacial region, offer an assessment, and formulate a dental treatment plan that considers the overall clinical situation. Dental consultation requests should be written on standard hospital consultation forms on which the requesting physician states the question or questions to be answered by the dental consultant. The requesting doctor should also provide a brief statement of other active problems the patient may have. If a dentist receives an unwritten or unclearly written consultation request, the dentist should make an effort to clarify what is desired. The dentist should make every attempt to answer all consultation requests within 12 to 24 hours.

Written consultations should be sufficiently complete to document all significant findings (both positive and

CONSULTATION REPORT **Patient Identification**

NORTHSIDE GENERAL HOSPITAL

TO: (Consultant and/or Service)	FROM: (Physician and/or Service)	Date Requested
Dr. Brown - Dental	Dr. Scott - ER	12/8/01

Summary and Reason for Request:

9 year old boy hit in face with ball today. Please evaluate and treat dental injuries. Thank You.

James Scott M.D.

CONSULTANT: Findings and Recommendations: Consultation Date 12/8/01

Thank you for asking me to provide a dental consultation for this unfortunate 9 year old male baseball pitcher who was struck in the nasal area by a line-drive about two hours ago. His parents state that he fell to the ground striking the back of his head and had a 4-5 second long loss of consciousness but the patient claims he remembers being hit by the ball. Epistaxis occurred initially, but spontaneously ceased in about 10 minutes. Since the accident, the patient has been alert and seemed to his parents to be fully oriented. The patient now complains of pain in the nose and upper lip as well as a mild generalized headache.

The patient has no pertinent medical, family or social history. Patient received last tetanus booster 5 yrs. ago. He last saw his dentist 2 months ago.

The patient denies any occlusal change or oral bleeding but thinks both of the maxillary central incisors are loose. He denies any visual disturbance, problems breathing through either nasal passage, or neck pain.

My H & N exam reveals a 2x2 cm abrasion in the occipital region of his scalp. There are no palpable steps or areas of ecchymosis in the facial bones but he is tender to palpation of the nasal tip and upper lip. Inspection of the nasal septum reveals no hematoma but a fresh blood clot is present on the anterior septum of the right nares.

Use one side only: For additional space, use 2nd sheet CONSULTATION REPORT (continued next page) M.D.

FIG. 31-2 Example of dental consultation form written for a patient who suffered sports injury to the face. The dentist was asked to examine the patient in the hospital emergency department.

Continued

CONSULTATION REPORT | **Patient Identification**

NORTHSIDE GENERAL HOSPITAL

TO: (Consultant and/or Service)	FROM: (Physician and/or Service)	Date Requested

Summary and Reason for Request:

M.D.

CONSULTANT: Findings and Recommendations: | Consultation Date

Intraorally the occlusion is Class I and all teeth are stable except #8 & 9 which are in good alignment but can be moved slightly in an A-P direction but cannot be intruded or rotated with gentle pressure. The inside of the upper lip has a 1cm long superficial laceration of the mucosa and the upper lip is mildly edematous. The crowns of all teeth and restorations appear intact. Neck was normal to exam.

I obtained an oblique occlusal film of the maxillary anterior teeth that shows mild enlargement of the periodontal ligament space around teeth #8 & 9 but no root fractures are visible.

Impression: ① Subluxation teeth #8 & 9
② Small laceration mucosal upper lip
③ Contusion upper lip and nose
④ Abrasion scalp
⑤ ? Concussion

Recommendations: ① Avoid biting anything with front teeth
② Intraoral laceration. This size doesn't require repair, but pt should rinse c NS p meals and HS vigorously
③ Shave hair in area of scalp abrasion. Clean c betadine scrub. Keep scalp clean
④ Tetanus booster
⑤ See family dentist within 5 days
⑥ Advise parents & pt. that injured teeth may eventually require endodontic care.

Use one side only: For additional space, use 2nd sheet

CONSULTATION REPORT John Brown D. M.D.

Note: I have gone ahead and carried out these recommendations and will let you make the discharge decision.

FIG. 31-2—cont'd For legend, see page 701.

negative). The assessment should read as a concise dental problem list, and the treatment plan should be clearly written, with an indication of the priority and urgency of any necessary care. The terms used should be those physicians and nurses can understand, rather than technical dental terms. Excessive verbiage should be avoided. If the dentist finds it impossible to finish the evaluation without additional tests, arrangements should be made to obtain necessary tests in the near future, and a preliminary consultation note should be made to inform the requesting physician of the findings and preliminary recommendations. After seeing the patient, it is good practice to call the physician who requested the consultation to inform the patient of findings and recommendations. However, it is still necessary to record a formal answer directly on the consultation form or on a progress note, with an indication on the consultation form of where the answer has been written. In addition, if the consultation request asks for care to be provided, the dentist should carefully document that care. In addition, as in any care provided in the hospital setting, the dentist should collect enough data about the patients to allow the office staff to properly bill for services rendered. Codes for such care and consultations are available in standard medical coding manuals. An example of a dental consultation form is presented in Fig. 31-3.

Requesting a consultation. When a patient has a problem the dentist does not feel qualified to evaluate or manage alone, a formal consultation request can be made. When requesting a medical consultation, the dentist should indicate whether the consultant is free to order necessary tests and to proceed with any necessary treatment. Preferably the requesting dentist should personally call to ask the consultant for an opinion. Alternatively, an order can be written directing a hospital clerk to call the consultant's office.

A consultant's recommendations should be viewed as an educated opinion. A dentist is under no obligation to follow a consultant's advice in its entirety or at all. The patient's attending doctor must make the final decision of which diagnostic tests to perform and what care the patient will receive, including when the attending doctor is a dentist.

Hospitalizing Patients for Dental Care

Deciding on hospitalization. The vast majority of patients needing routine dental care, including oral and maxillofacial surgery, can be safely managed in the dental office. However, occasionally some patients require that dental care be provided in a hospital or surgery center environment.

A patient may be better treated in a hospital setting for several reasons. One of the most common reasons is behavioral management. Patients unable to cooperate (e.g., because of mental retardation), unwilling to cooperate (e.g., uncontrollable children), or who refuse dental care while awake can be deeply sedated or placed under general anesthesia; this allows routine dental care to be delivered to these individuals quickly and safely. An operating room setting for dental treatment may also be necessary for the physically handicapped patient who is either unable to gain access to a dental office or is unable to remain relatively motionless during procedures.

An operating room is also often needed to provide dental care for patients with high-risk medical conditions, such as patients requiring care that cannot be delayed until the medical condition is alleviated or improved, or patients requiring emergency dental care shortly after a serious myocardial infarction (MI). In some cases a patient's physician may be able to provide guidance as to the safety of office-based dental care. A final reason for planning a procedure in an operating room facility is for patients in whom acceptable local anesthesia cannot be attained, such as those requiring care on teeth in an area of severe infection. Usually these patients are best referred to an oral and maxillofacial surgeon, but hospitalization may be an alternative if the dentist feels capable of managing the surgical problem.

Day surgery facilities. In the past, operating room facilities were available only in hospitals, and patients had to be admitted the day before dental surgery and remain in the hospital until the dentist believed discharge was indicated (commonly 1 to 2 days postoperatively). However, changes have occurred in methods of delivering operating room care. Free-standing or hospital-based surgical centers now exist that offer staffed operating and recovery rooms and anesthesiologists for patients not needing preoperative or postoperative hospitalization. Many hospitals also offer the use of their operating room and staff, without requiring hospital admission. A dentist may find that many patients unable to be cared for in the dental office can be effectively treated in day surgery facilities without hospitalization.

Preoperative patient evaluation. Once the decision to use an operating room facility has been made, several steps must be taken before the operation. The operating room staff must be contacted and the operating time scheduled. Most facilities need some biographic information about the patient, the reason for the procedure, the procedure planned, who will perform the procedure, how long the operating room will be in use, the type of anesthesia required (i.e., sedation only or general anesthesia), and whether special equipment will be required. A hospital-based operating room must also know if the patient will be admitted; patients to be admitted must have a room reservation made and an estimated length of stay.

All operating room facilities require that a medical history and physical examination be performed before the operation. See Chapter 1 for guidelines for recording the history and physical examination results in the medical record. This recording can be performed either by the patient's physician before the day of the operation or, in some facilities, by the anesthesiologist during the preanesthetic consultation. Most facilities also require that any medically indicated laboratory tests, radiographs, or electrocardiograms be done at a time proximate to the surgery. Requirements vary from place to place, but the usual minimal testing necessary is a hematocrit.

"Doctor's orders" communicate patient care instructions to nurses and other hospital staff members. The dentist's orders should be accurate, clearly written, and comprehensive.

CONSULTATION REPORT **Patient Identification**

NORTHSIDE GENERAL HOSPITAL

TO: (Consultant and/or Service)	FROM: (Physician and/or Service)	Date Requested
Dr. Cole - Dental	Dr. Smith - Heme - Oncology	7/3/01

Summary and Reason for Request:

Right-sided oral pain for past 3 days. Patient presently receiving chemotherapy for leukemia. Please evaluate and recommend treatment.

Drew Smith M.D.

CONSULTANT: Findings and Recommendations: Consultation Date 7/3/01

Thank you for asking me to see this seriously ill 19 year old leukemic who has a three day history of pain in the area of his lower right posterior teeth. The patient denies any previous problems in this area until a dull pain began 3 nights ago. The pain has gradually worsened and now requires narcotic analgesics for relief. The pain is well localized at the molar region, worsened by chewing, and radiates to his ear. Robert has had a metallic taste in his mouth for 2 days and reports that his gums bleed during brushing. On examination I found the dentition to be well restored but the lower right 3rd molar is only partly erupted. The tissue over-lying that tooth appears inflamed but I was unable to express pus from it on palpation. The opposing tooth tends to impinge on the inflamed tissue when Robert bites. The patient has moderate trismus and I note that although his WBC is only 500, that he is afebrile.

Impression: I believe Mr. Miller has a severe pericoronitis (inflammation of soft tissue over an impacted tooth) which is exacerbated by his immunodeficient state and trauma from the opposing tooth.

Recommendations:

① Panorex radiograph to examine entire tooth and local anatomy
② Coagulation screen including platelet count and Bleeding time
③ Oral hygiene with 50:50 mix of NS and H_2O_2
④ Hold antibiotics unless patient becomes febrile
⑤ If coagulation studies OK, extract tooth #1 under local anesthesia
⑥ Defer removal of involved lower 3rd molar until inflammation resolves and pts. general condition improves. Thank you for letting me see this poor young gentlemen. Please let me know if you want me to carry out my recommendations.

Use one side only: For additional space, use 2nd sheet

CONSULTATION REPORT Neal Cole D.M.D.

FIG. 31-3 Example of dental consultation form for hospital inpatient on hematology and oncology service, whom dentist was asked to see for problem with pericoronitis.

Preoperative orders are necessary for patients being admitted to a hospital or scheduled to be treated in an operating room setting without hospital admission. Orders are best written by the dentist but may be given to nurses over the telephone (dentists must eventually sign telephone orders). An example of admission and preoperative orders is given in Fig. 31-4.

Before surgery the operating dentist should place a note in the patient's record that briefly describes the nature of the patient's medical and dental problems and the expected operating room and hospital course. The hospital staff can then use this note to familiarize themselves with the patient's general condition and reason for admission (Fig. 31-5).

Care of Hospitalized Patient

Operating room protocols. The patient's operating dentist bears the ultimate responsibility for any mishaps that occur in the operating room other than those relating to duties relegated to anesthesiology. Therefore the dentist must be meticulous in monitoring all that is done to the patient and should take charge if anything is being done that may harm the patient.

The operating team usually consists of the operating surgeon and an assistant. The assistant should have sufficient familiarity with the planned procedure to help the dentist by suctioning, retracting, and cutting sutures. Many hospitals allow the dentist to bring an office assistant to assist in the operating suite. Anesthesia may be provided by an anesthesiologist (a medical physician) or by an anesthetist (a nurse with special training in anesthesiology who usually must work under an anesthesiologist's supervision). A scrub nurse, who is sterilely gowned and gloved, passes instruments to the surgeon during the procedure and, among other duties, keeps track of the sponges and needles used. The circulating nurse remains ungowned and assists in setting up equipment, retrieving supplies, and completing nursing records of the operation.

The dentist should try to see the patient in the preoperative area before anesthetic premedication to help clarify any final questions the patient may have, learn who the patient wants notified at the completion of the operation, and give emotional support to the patient.

During final preanesthetic patient preparation, the dentist should review the operative plans with the anesthesiologist. These plans include surgical site, length of procedure, oral hazards (e.g., loose teeth, restricted opening), route of intubation desired, and whether the patient will be admitted to the hospital. The dentist should remain near the patient's head during intubation to assist if necessary.

Once the patient is under general anesthesia, the dentist should ensure that steps are taken to prevent accidental injuries. Dental patients are usually operated on in a supine position, with the head end of the operating table raised about 15 degrees. The extremities must be placed in physiologic positions (i.e., positions patients would find comfortable for long periods if they were not anesthetized). Proper positioning helps prevent nerve injuries and excess loading of any part of the anatomy. In addition, padding should be placed in any area of pressure concentration, such as under heels and around elbows, particularly if the dental procedure is likely to last longer than 1 hour. Most hospitals currently place all patients on foam or gel-filled cushions or air mattresses during surgery to help prevent pressure sores. The head should be placed on a contoured cushion to help prevent excessive movement of the head during surgery.

Patient protection during anesthesia is also provided by several other means. If the procedure is expected to last more than 4 hours, a urinary (Foley) catheter should be placed, to prevent overdistention of the bladder. The anesthesiologist may want this done even for shorter operations for monitoring urinary output. If an electrocautery unit will be used, a grounding pad must be placed. To protect the patient's eyes, a lubricating ointment should be applied and the eyelids should be taped closed. Patients who are intubated nasally require close attention to proper tube stabilization; tubes that place excess pressure on the nasal alar cartilage can easily cause pressure sores that result in an unsightly deformity (Fig. 31-6).

The final step before surgery is preparation of the patient's operative site. If necessary, any facial hair can be shaved. Then the skin in the maxillofacial and anterior neck regions should be prepared by scrubbing with a soap-containing solution and painted with a disinfecting solution, such as iodophor. The patient is then draped with two layers of linen material or one layer of waterproof paper material to cover all portions of the body except the operative site. The oral cavity is prepared for the procedure by first gently suctioning the pharynx, placing a moist throat pack, and using large volumes of irrigation solution to help decrease the bacterial count by dilution. The use of a sterile toothbrush and chlorhexidine improves the effectiveness of oral cavity preparation. The anesthesiologist and circulating nurse should be asked to make a note that the throat has been packed so they can help remind the surgeon to remove the pack after the surgery is complete. Local anesthesia is typically administered even when patients will be under general anesthesia to help delay the onset of any postoperative discomfort.

Dental surgeon and assistant preparation. The dental surgeon prepares for surgery by first checking that all instruments and patient records required to perform the surgery successfully are available. This preparation should be done before the day of surgery if the dentist does not regularly use a particular facility (in case any essential equipment or records must be brought from the surgeon's office on the day of surgery).

Before entering the operating room suite, the surgical team changes from street clothes into surgical scrub uniforms. Shoes worn outside of the operating suite are covered with shoe covers. Scalp hair is covered with a cap, Members of the surgical team with long beards should wear head covers that extend across the chin and anterior neck. All jewelry, including watches, rings, necklaces, and earrings, should be removed before scrubbing. A mask that covers the nose and mouth should be tied in

ORDER SHEET

Patient Identification

NORTHSIDE GENERAL HOSPITAL

USE BALLPOINT PEN. BEAR DOWN.
You are making up to four copies.

Unless an order is specifically noted, authorization is hereby given for the dispensing of drugs by non-proprietary nomenclature as set forth by The Pharmacy and Therapeutics Committee.

AUTOMATIC STOP ORDERS Narcotics and anticoagulants must be rewritten within 48 hours of original order; all other drugs within 7 days.

DATE AND TIME	ORDERS	SIGNATURE	TRANSCRIBED BY
10/7/01	Admission / Preoperative Orders ① Admit to 6th Floor - Dental Service Dr Brown : attending office # 555-6427 ② Cond - Good ③ Dx - Impacted Third molars Cerebral palsy Penicillin allergy please label chart ④ NPO ⑤ Med: Lorazepam 2mg PO @ 6:30 a small sip of H_2O ⑥ Void on call to OR ⑦ Ambulate a asst only p premed given ⑧ Solumedrol 125mg on chart to OR with patient Thank You Dr John Brown		

ORIGINAL — CHART COPY ORDER SHEET

FIG. 31-4 Example of admission preoperative doctor's orders written for patient with cerebral palsy admitted to hospital on day of third molar surgery. Because patient is coming to hospital on day of surgery, admission orders and preoperative orders can be combined.

CLINICAL RECORD—IN-PATIENT **Patient Identification**

NORTHSIDE GENERAL HOSPITAL

DATE TIME	DOCTOR'S NOTES	ALL OTHER NOTES BEGIN — ALL ENTRIES MUST BE SIGNED AND POSITION NOTED
10/7/01	◄ BEGIN HERE	◄ HERE Admission note
0730	This is the third admission to this hospital for this 25 yr old cerebral palsy victim for elective surgical removal of four impacted 3rd. molars in the operating room this morning. Performance in OR found necessary due to patients inability to stay relatively immobile for the surgery without general anesthesia. Patient has penicillin allergy but no other medical problems. Patient and parents advised in lay terms of reasons for potential problems including infection, nerve damage, bleeding, mandibular fracture, damage to other teeth and dry socket and they consent to my plans	
		Dr. John Brown

CLINICAL RECORD IN-PATIENT

FIG. 31-5 Example of hospital admission note that attending surgeon uses to document (in record) reason for hospitalization and projected hospital course.

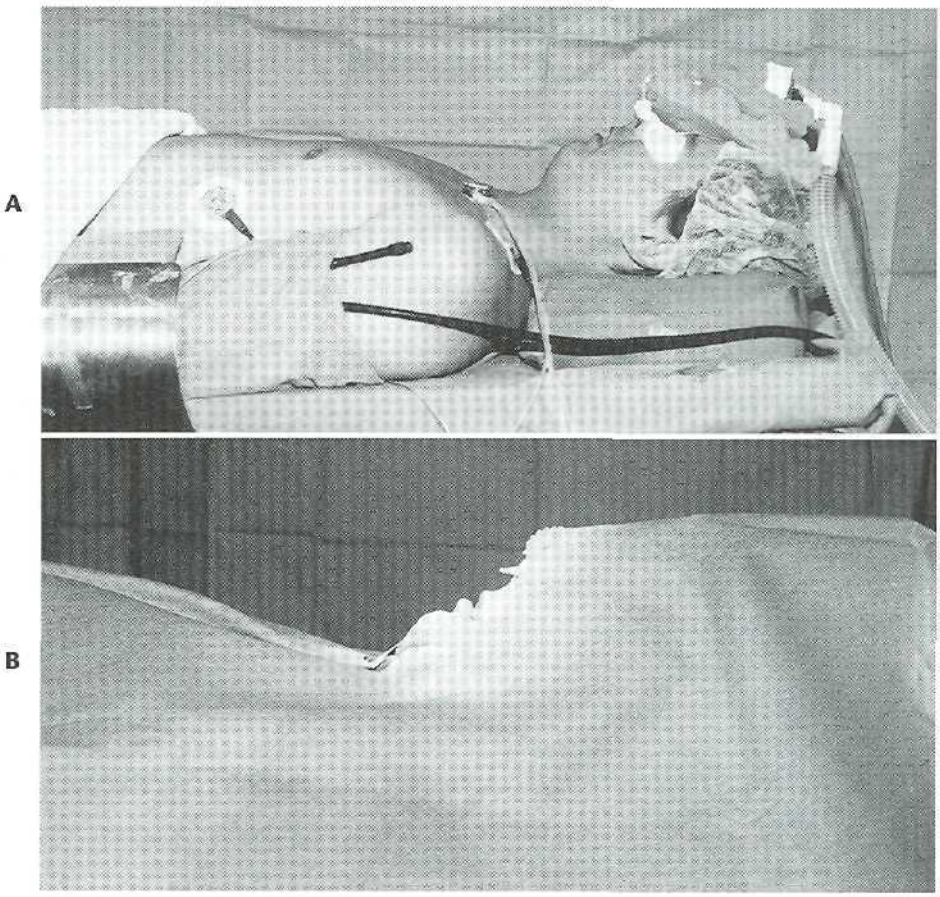


FIG. 31-6 Patient prepared for operating room oral and maxillofacial surgery. A, Patient before draping, with padding of pressure points. Nasoendotracheal tube is supported to prevent alar damage, eye pads are placed to protect eyes, and antiseptic solution is applied on face to reduce number of bacteria not indigenous to patient's facial region. B, Same patient after draping is complete. Only operative site is exposed.

place before the surgeon enters the operating area. Before the surgical scrub, the surgeon should check the patient's records, place radiographs on the view box, adjust overhead lights, check the patient's position, apply defogging solution to eyeglasses, adjust the headlight, and so on.

The surgical hand and arm scrub is then performed to lessen the chance of contaminating a patient's wound. Although sterile gloves are worn, gloves are frequently torn during oral and maxiliofacial surgical procedures, thereby exposing the patient to the surgeon's hands. By proper scrubbing with antiseptic solutions, the hand and arm bacterial level is reduced.

Several acceptable methods may be used to perform a surgical hand and arm scrub. Most hospitals have a surgical scrub protocol that should be followed when doing surgery there. Standard in most techniques is the use of an antiseptic soap solution, a moderately stiff brush, and a fingernail cleaner. The hands and forearms are wetted in a scrub sink, keeping the hands above the level of the elbows until the hands and arms are dried. A copious amount of antiseptic soap from wall dispensers or antiseptic-impregnated scrub brushes is applied to the hands and arms up to the elbows. The antiseptic soap is allowed to remain on the arms, while all visible debris is removed from underneath each fingernail tip with the sharp-tipped fingernail cleaner. Then more antiseptic soap is applied and scrubbing begun using repeated firm strokes of the scrub brush on every surface of the hands and arms, stopping about 5 cm below the elbow (Fig. 31-7). Scrub techniques based on the number of strokes to each surface rather than a set time for scrubbing are more reliable. An individual's scrub technique should follow a set routine designed to ensure that all forearm and hand surfaces are properly prepared. However, scrubbing too long and too firmly can be as detrimental as inadequate scrubbing, because skin that is excessively traumatized by scrubbing develops a much higher resident bacterial flora. Once scrubbing is completed, the hands and forearms should be rinsed free of soap solution under running water, moving the arm through the stream from fingertips to elbow. The hands must be kept higher than the elbows during the entire scrub and rinse to allow all excess fluid to drip off the arm at the elbow.

Once scrubbing is completed, the surgeon should enter the operating room, taking care to avoid contaminating scrubbed hands and arms. Drying commences with a sterile towel handed to the surgeon by the scrub nurse. The

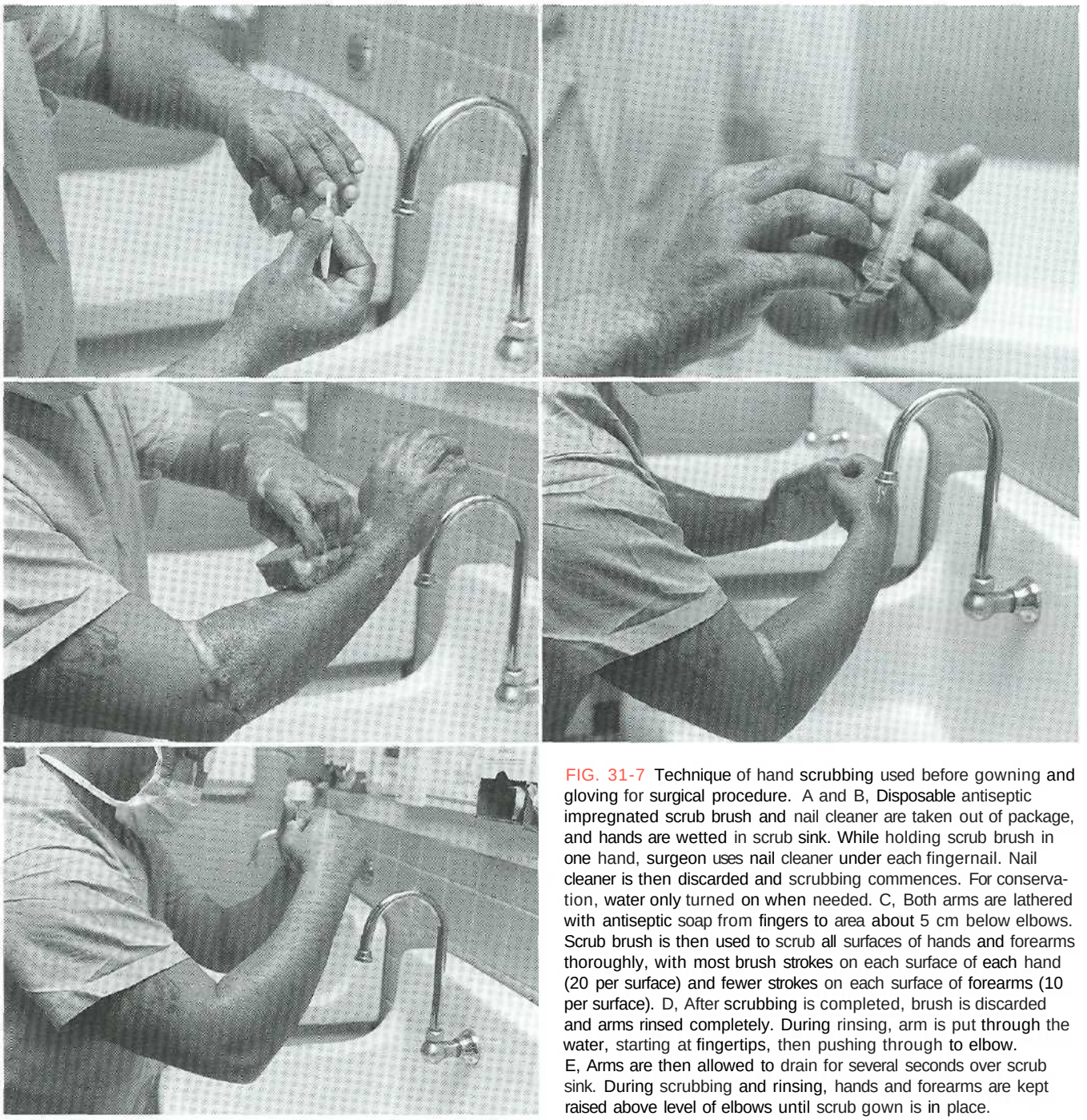


FIG. 31-7 Technique of hand scrubbing used before gowning and gloving for surgical procedure. A and B, Disposable antiseptic impregnated scrub brush and nail cleaner are taken out of package, and hands are wetted in scrub sink. While holding scrub brush in one hand, surgeon uses nail cleaner under each fingernail. Nail cleaner is then discarded and scrubbing commences. For conservation, water only turned on when needed. C, Both arms are lathered with antiseptic soap from fingers to area about 5 cm below elbows. Scrub brush is then used to scrub all surfaces of hands and forearms thoroughly, with most brush strokes on each surface of each hand (20 per surface) and fewer strokes on each surface of forearms (10 per surface). D, After scrubbing is completed, brush is discarded and arms rinsed completely. During rinsing, arm is put through the water, starting at fingertips, then pushing through to elbow. E, Arms are then allowed to drain for several seconds over scrub sink. During scrubbing and rinsing, hands and forearms are kept raised above level of elbows until scrub gown is in place.

towel is held in one hand to dry the other hand, advancing up the forearm and stopping short of the elbow. The towel is then transferred to the dry hand, and the process is repeated on the wet hand with an unused portion of the towel. Next, the scrub nurse fully opens the sterile surgical gown, and the surgeon introduces the hands into the openings for the arms of the gown.

While the scrub nurse helps push the gown up the surgeon's arm, the circulating nurse pulls the gown on from the rear of the surgeon and ties it securely (Fig. 31-8). The scrub nurse then holds the surgical gloves open while the surgeon places one hand into each glove. The gloves should completely cover the hands and wrists and completely overlap the cuff of the surgical gown (Fig. 31-9). The surgeon must not allow the hands to fall beneath waist level from this point until ungowning (Fig. 31-10).

Postoperative responsibilities. Once the operative procedure is completed, the oral cavity is again irrigated and suctioned clear of accumulated fluids. Before throat pack removal, the scrub nurse should be asked if all sponges and needles used during the surgery are account-

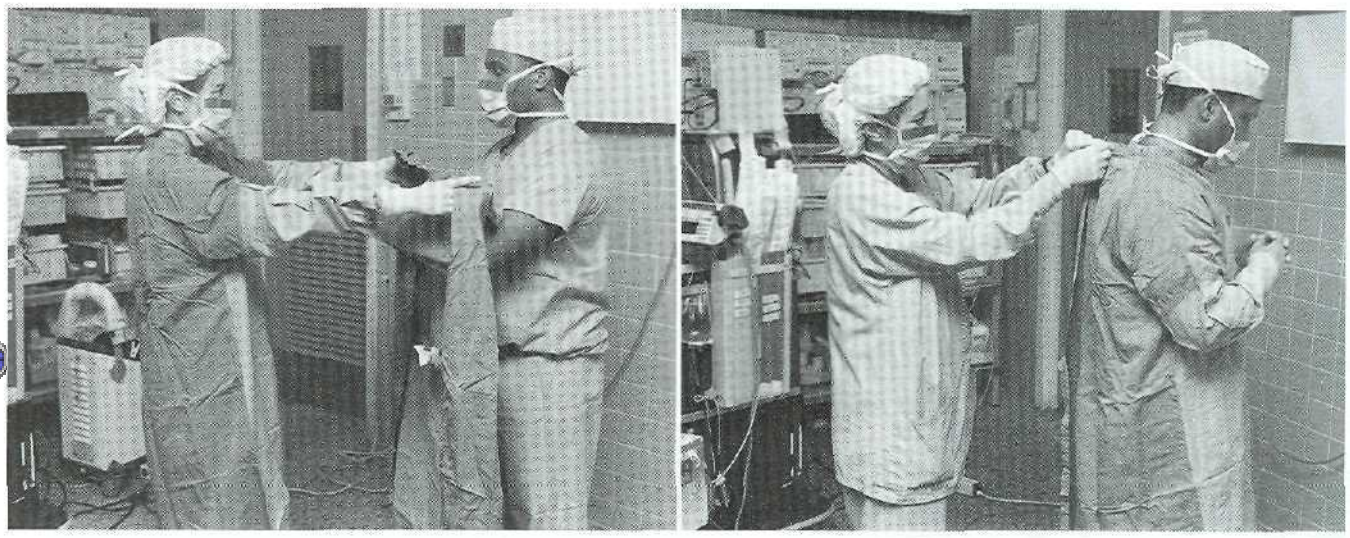


FIG. 31-8 Gowning for operating room surgery. A, Scrub nurse holds sterile gown open for surgeon to place arms into sleeves. The scrub nurse has hands on front side of gown to prevent possibility of accidentally touching ungowned surgeon. Surgeon pushes arms into sleeves of gown, taking care not to thrust through cuff of gown, potentially contaminating scrub nurse. While surgeon is placing arms into sleeves, scrub nurse is pushing gown onto surgeon. B, Unsterile circulating nurse then ties back of surgeon's gown, taking care to touch only inside surfaces of gown.

BOX 31-2

Principal Components of Postoperative Orders

- Diagnosis (or diagnoses) and surgical procedure
- Condition
- Allergies
- Instructions for monitoring vital signs
- Activity and positioning
- Diet
- Medications
- Intravenous (IV) fluids
- Wound care
- Parameters for notification of physician or dentist
- Special instructions (e.g., ice packs, lip protection, hygiene instructions)

ed for; if they are not, a search must be made to find them. If necessary, intraoral gauze packs should be placed for hemostasis, and the packs should have long ends that trail out of the mouth for easy retrieval.

Nurses (under the supervision of anesthesiologists) make many of the immediate postoperative decisions in the postanesthesia care unit. However, the dentist should write postoperative orders immediately after the completion of surgery to ensure that any special instructions can be initiated in the postanesthesia care unit.

Postoperative orders should include statements of the diagnosis, procedure performed, patient allergies, and general condition of the patient after surgery. Nursing actions, such as vital-sign monitoring, wound care, and medication administration schedule, should be clearly spelled out. The patient's diet, activity level, bed positioning, and allowable personal hygiene should be delineated. **Finally,** parameters should be outlined that, if breached, make immediate notification of the dentist or physician mandatory. An outline for postoperative orders is listed in Box 31-2; a sample of postoperative orders is shown in Fig. 31-11.

Shortly after the surgical procedure is completed, a brief operative note should be placed in the patient's record. This note is usually in a relatively standard format that includes listing the preoperative and postoperative diagnoses, the names of the procedures performed during surgery, the name or names of the surgeon or surgeons, the type of anesthesia, the placement of any drains, the estimated blood loss, and whether any specimens were sent for pathologic examination. The hospital staff uses this note to quickly learn general information about the operative procedure.

In addition, before leaving the operating suite a full report of the operation should be dictated, using the designated format of the facility at which the surgery was performed. The general outlines and examples of a brief operative note and transcribed operative report are shown in Boxes 31-3 and 31-4 and in Fig. 31-12.

Patients generally remain in the postanesthesia care unit until they are sufficiently alert, unlikely to injure themselves, and their vital signs are stable within acceptable limits. An anesthesiologist usually makes the decision about discharge to a hospital room or home, unless it is specified that the dentist will make that decision. The discharged patient should be placed directly under the care of a competent adult and not be allowed to go home unescorted.

Hospital rounds (i.e., patient visits) give the surgeon the opportunity to check the patient's postoperative recovery personally and to revise orders as necessary. Unstable hospitalized patients require frequent visits; stable patients are usually seen twice a day during the first

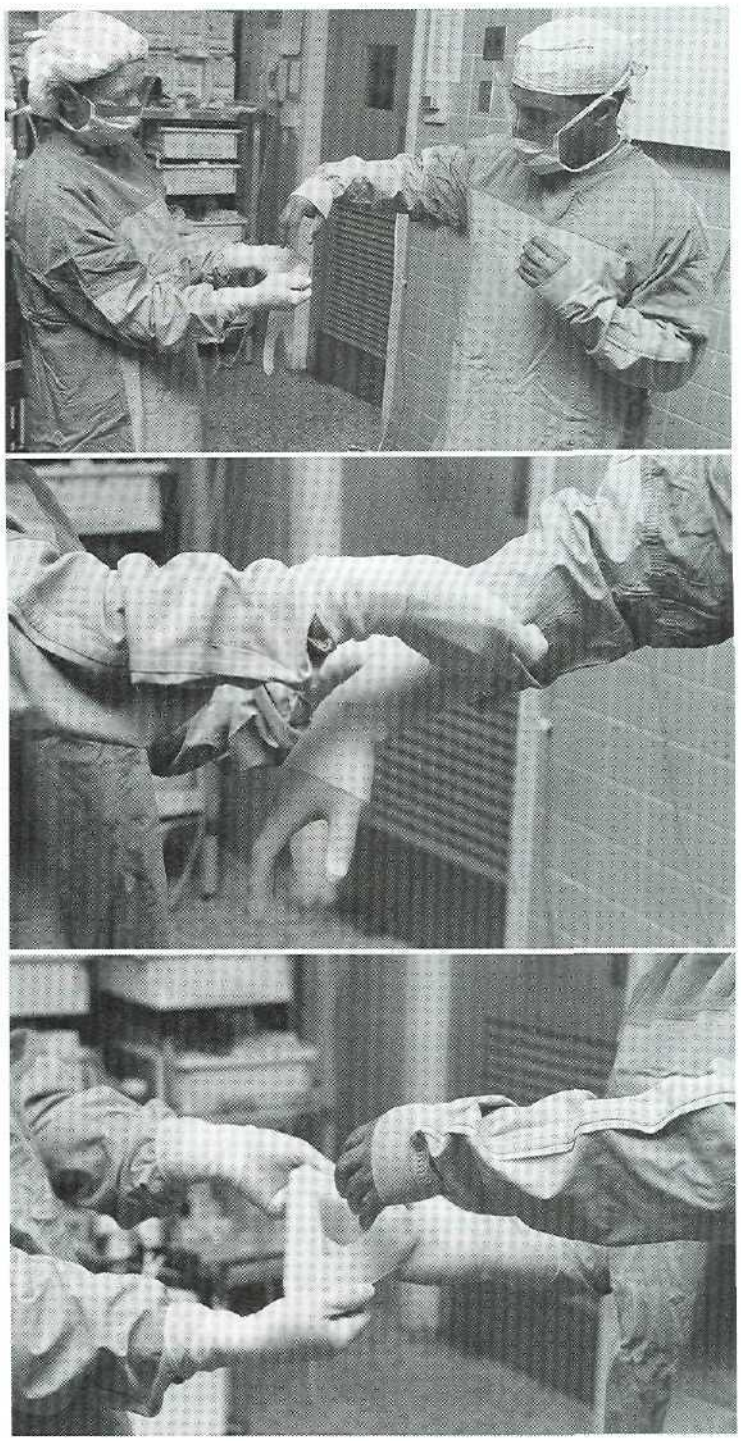


FIG. 31-9 Cloving for operating room surgery. A, Scrub nurse holds open first glove to allow surgeon to insert hand into glove while surgeon's wrist is in flexion. Surgeon pushes hand into glove with fingers adducted, while nurse pulls glove onto surgeon's hand. B, Once surgeon's hand is into palm region of glove, fingers are partially abducted and slipped into appropriate finger holes. Nurse continues to pull glove on until cuff of glove is above cuff of surgeon's gown. Nurse then releases glove. No further adjustments of first glove are made at this time. C, Scrub nurse then holds second glove open in same manner that first glove was presented to surgeon. Surgeon can now help hold cuff of glove open while inserting other hand. Hand being gloved is pushed into glove while other hand assists nurse in pulling glove into place. Once both gloves are in place, they can be used to adjust each other, pulling all slack out of area of fingertips.

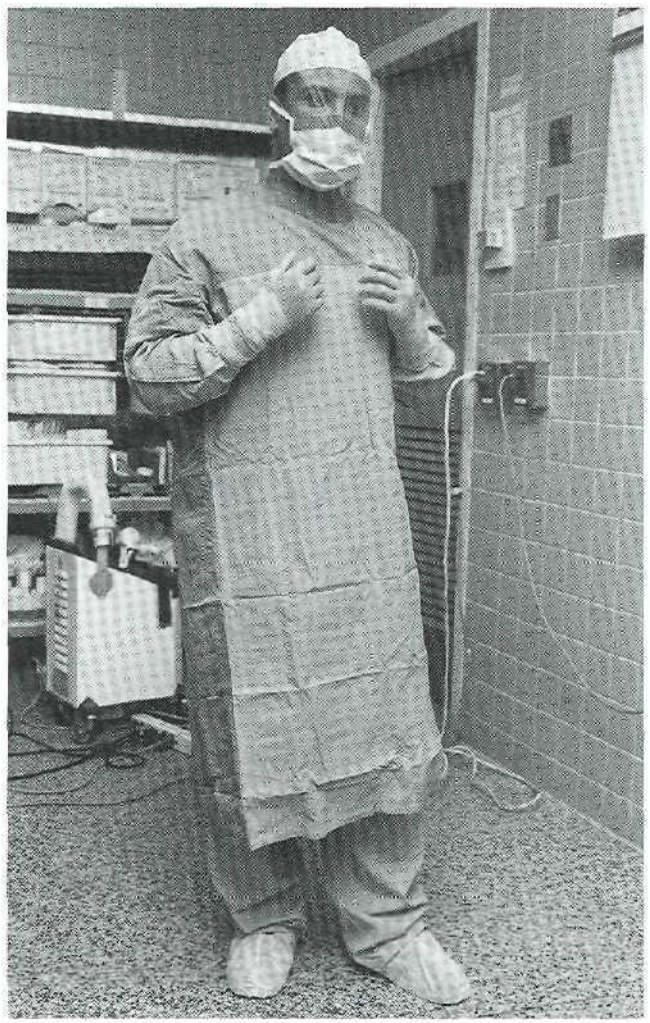


FIG. 31-10 Surgeon ready for operating room surgery. Hands should not be allowed to fall below waist level from this point until the surgery is completed and all surgical wounds are closed and dressed.

week after surgery and once daily thereafter. Each patient visit by the surgeon warrants a brief notation (i.e., progress note) in the record, that documents the patient's progress and any new plans for further care. Notes are usually written using a record format that includes a brief description of how the patient is progressing *subjectively* and *objectively*, an *assessment* of the patient's condition, and a *plan* for further care (SOAP). Figure 31-13 shows a typical postoperative progress notation in the SOAP format.

Discharge planning should begin as soon as the surgical procedure is completed and includes making arrangements for any necessary patient education, such as oral hygiene, wound care, and dietary instructions. In addition, the patient should be told of acceptable activity levels and plans for follow-up office visits. Necessary prescriptions for medications should be provided, as well as instructions on how to contact the appropriate physician or dentist should problems arise. A written discharge note should be included in the progress note section of the medical record (Fig. 31-14 and Box 31-5).

BOX 31-3

Common Format for Recording Brief Operative Note

- Preoperative diagnosis
- Postoperative diagnosis
- Procedure
- Surgeon or surgeons
- Type of anesthesia
- Unusual, unexpected, or significant findings at surgery
- Fluid status, including estimated fluid loss and amount of fluid administered to patient
- Description of anything left in operative site, such as drains or packing
- Specimens (Was specimen sent to pathology or microbiology laboratory?)

BOX 31-4

Common Format for Dictating Operative Note

- Identify dictator
- State that operative note is being dictated
- State patient's name, spelling out last name
- State patient's medical record (hospital) number
- State date of operation
- State preoperative diagnosis
- State postoperative diagnosis
- Give name of procedure performed
- Give name of surgeon and any surgical assistants
- Completely describe surgical procedure, including how the patient was anesthetized and prepared for surgery in the operating room
- Reidentify dictator
- State to whom copies of the dictation should be sent

BOX 31-5

General Information to Include in Written Discharge Note

- Complete a standard SOAP progress note and include the following under *P* (plans) section:
- Deposition (to where and with whom patient will be discharged)
- List of medications that the patient is prescribed or instructed to take, including drug name, dosing regimen, and instructions for use
- Dietary instructions
- Activity instructions
- Hygiene instructions
- Follow-up appointment

ORDER SHEET

Patient Identification

NORTHSIDE GENERAL HOSPITAL

USE BALLPOINT PEN. BEAR DOWN.
You are making up to four copies.

Unless an order is specifically noted, authorization is hereby given for the dispensing of drugs by non-proprietary nomenclature as set forth by The Pharmacy and Therapeutics Committee.

AUTOMATIC STOP ORDERS Narcotics and anticoagulants must be rewritten within 48 hours of original order; all other drugs within 7 days.

DATE AND TIME	ORDERS	SIGNATURE	TRANSCRIBED BY
10/7/01 9:20	Post op orders ① s/p Surgical extraction 4 third molars ② Condition: Good ③ Allergy: Penicillin, please label chart ④ Vital signs: q 15 min until stable then q 1° x 2, then q 4° Oral Temps q 4° w/a ⑤ HOB at least 30°, OOB to assistance only ⑥ Ice packs to face if patient desires, please inquire. ⑦ Diet: clear, cool liquids, advance to full cool liquids as tolerated ⑧ I & O q shift ⑨ Meds: ⓐ M.S. 4 mg. & Phenergan 50 mg IM q 4° prn mod-severe pain or ⓑ Tylox 1 po q 4° prn mod-severe pain ⓒ Acetaminophen 500 mg po q 3° prn mild pain ⓓ Decadron 0.75 mg PO BID ⓔ Compazine 5 mg IM prn N or V. May repeat in 30 min. x1. Call surgeon if nausea persists thereafter. ⓕ Medihaler II puffs q 4° prn wheezing ⑩ IV: D5 ¼ NS @ 100 cc/hr Change to Hep lock when PO > 400 cc/8 hr ⑪ Bite on moistened 4x4 gauze placed over op sites continuously for 45 min prn bleeding ⑫ Keep lips thinly coated with Vaseline ⑬ Call surgeon – office 674-1212, home – 525-66666 if BP > 180/110 < 90/60, P > 120 < 55, T > 101°, uncontrollable bleeding, wheezing or if pt. fails to void by 1700. Thank You Dr. John Brown		

ORIGINAL — CHART COPY ORDER SHEET

FIG. 31-11 Example of postoperative orders written after removal of third molars in operating room.

CLINICAL RECORD—IN-PATIENT **Patient Identification**

NORTHSIDE GENERAL HOSPITAL

DATE / TIME	DOCTOR'S NOTES	ALL OTHER NOTES BEGIN — ALL ENTRIES MUST BE SIGNED AND POSITION NOTED
10/7/01	◄ BEGIN HERE	◄ HERE
9:30	Brief OP Note:	
	Pre-op	dx: 4 impacted 3rd molars
	Post op	dx: same
	Procedure:	Surgical removal of 4 complicated 3rd molars
	Surgeon: Brown	Asst: Goxes
	Anes: Nitrous - narcotic - Ethrane	
	Findings:	Impacted teeth & follicles associated with maxillary impactions
	EBL:	<100 mL
	Fluids:	800 mL D5 ½ NS
	Drains or Packs:	None
	Specimen:	Teeth and follicles to pathology
		Dr. John Brown

CLINICAL RECORD IN-PATIENT

A

FIG. 31-12 A, Example of brief operative note for quick documentation in hospital record of what was performed, whether in operating room or elsewhere in hospital.

Continued

NORTHSIDE GENERAL HOSPITAL

OPERATIVE REPORT

NAME: SCHULTZ, Carl
UNIT NUMBER: X00012345
OPERATIVE DATE: 10-07-01
DOB: 06-06-76

PREOPERATIVE DIAGNOSIS: Full bony impacted teeth Nos. 1, 16
Partial bony impacted teeth Nos. 17, 32
POSTOPERATIVE DIAGNOSIS: Same
SURGEON: John Brown, D.M.D.
ASSISTANT SURGEON: William Jones, D.D.S.
OPERATIONS: Surgical extraction of impacted third molars Nos. 1, 16, 17, and 32

PROCEDURE: The patient was brought to the operating room without premedication and placed onto the operating table in the supine position. After attaching monitoring equipment and checking the vital signs the patient was placed under general anesthesia induced by a combination of inhalational and intravenous agents. A right nasal endotracheal intubation was performed and the tube secured into position after good breath sounds were heard bilaterally on auscultation. The operating table was placed into a 15-degree head-up position, and then the patient was prepped and draped in the usual fashion for intraoral oral surgery.

B

The oral cavity was inspected and suctioned free of gross secretions, and a moist throat pack was placed. 0.5% Marcaine with 1:200,000 epinephrine was infiltrated in the maxillary posterior buccal vestibules, the greater palatine nerve regions, and the inferior alveolar, lingual, and buccal nerves were blocked bilaterally with a total of 45 mg of Marcaine and 0.045 mg of epinephrine. The oral cavity was then irrigated with copious amounts of normal saline irrigation and suctioned free of gross liquid. A medium sized rubber bite block was carefully placed between the arches on the left side. Attention was first directed to the right retromolar region of the mandible, where a No. 15 blade was used to make an incision beginning in the lower fourth of the external oblique ridge of the mandible, bringing the incision forward to the distal line angle of tooth No. 31. The incision was then continued in the buccal gingival sulcus to the distal aspect of tooth No. 30. A No. 9 dental periosteal elevator was then used to create a full-thickness mucoperiosteal envelope type of flap, exposing the buccal aspect of the retromandibular region of the mandible. A right angle retractor was placed into the depth of the envelope flap to protect it, and the assistant used a tongue retractor to protect the tongue. The mesio-angularly impacted tooth No. 32 was identified, and a straight tissue burr in an air-driven handpiece under continuous saline irrigation was used to remove sufficient bone on the buccal and distal aspects of tooth No. 32 to expose the height of contour. The burr was then used to section the tooth along its long axis through the furcation. A large, straight

FIG. 31-12—cont'd **B,** Example of dictated operative note to describe in detail exact procedure performed in operating room.

Continued

dental elevator was used to complete the tooth sectioning. The Crane pick was then used to remove the distal aspect of the tooth, and a small straight dental elevator was used to remove the mesial aspect. The roots of both tooth segments appeared intact. A dental curette was used to gently remove the small remnant of dental follicle remaining in the socket. A bone rasp was used to smooth the bone in regions where elevators had been used, and the sockets and areas under the flaps were irrigated with copious amounts of saline irrigation. Little bleeding was present at that time, so half a capsule of tetracycline was poured into the socket, and the flap was reapproximated with two 4-0 black silk sutures.

Attention was next directed to the right maxillary tuberosity region, where a new No. 15 blade was used to create a crestal incision beginning on the distosuperior aspect of the tuberosity, continuing the incision anteriorly to the posterior aspect of tooth No. 2. The incision was then continued in the buccal gingival sulcus anteriorly to the distal line angle of tooth No. 3. A No. 9 dental periosteal elevator was then used to create a full-thickness mucoperiosteal flap on the buccal aspect of the tuberosity. The Minnesota retractor was used to remove a small amount of thin bone overlying the full bony impacted tooth No. 1. A Potts elevator was used to elevate tooth No. 1 out of the socket along with the attached dental follicle. The root of the tooth appeared to be intact. The socket was inspected and then irrigated with normal saline. The flap was then reapproximated with two 4-0 black silk sutures. A large gauze was then placed over the fresh extraction sites, and attention was directed to the left side of the mouth, where teeth Nos. 16 and 17 were extracted in an identical fashion to teeth Nos. 1 and 32.

The oral cavity was then suctioned free of all gross fluids, and the throatpack was removed. The hypopharynx was then suctioned with a tonsil suction. The patient was extubated in the operating room and taken to the postanesthesia care unit in good condition for recovery.

ESTIMATED BLOOD LOSS:	50 mL
FLUIDS RECEIVED:	1,200 mL Dextrose 5%/Lactated Ringers
DRAINS:	None
DRESSINGS:	Bilateral oral packs that trailed out of the mouth
COMPLICATIONS:	None

John Brown D.M.D.
John Brown, D.M.D.
Attending Surgeon

cc: Dr. William Jones

FIG. 31-12—cont'd For legend, see page 715.

A dictated discharge summary is necessary for hospitalized patients, whereas surgical centers generally accept a written discharge summary on a special form. The dictated summary should include a brief narrative, including the reason for hospital admission and the pertinent history that led to admission. The significant positive and negative findings of the history and physical examination should be described, including any laboratory results. The hospital course, including the name of the operative procedure, should be in the summary. Finally, discharge instructions, prescriptions, and follow-up appointments should be detailed in the report. Arrangements should be made to send copies of the discharge summary to other doctors who may find the information useful, including the patient's family physician (Fig. 31-15 and Box 31-6).

CLINICAL RECORD—IN-PATIENT

Patient Identification

NORTHSIDE GENERAL HOSPITAL

DATE / TIME	DOCTOR'S NOTES	ALL OTHER NOTES BEGIN — ALL ENTRIES MUST BE SIGNED AND POSITION NOTED
10/7/01	◄ BEGIN HERE	◄ HERE
20:00		Post-op check
	S-	Pt. feels drowsy. Moderate pain well controlled with oral narcotic
		Denies nausea
	O-	Vital signs WNL & stable
		Mild facial edema
		Operative sites show slight ooze
		Chest clear to auscultation
		IV site benign
		Intake last 8 hrs. - 1450 mL (250 mL PO)
		Ambulated to BR with assistance
		Voided 600 mL
	A-	Doing well, needs to increase PO intake
	P-	Encourage PO intake
		Slow IV rate to 75 mL/hr
		Bite on moistened gauze if bleeding increases during the night
		John Brown DMD

CLINICAL RECORD IN-PATIENT

FIG. 31-13 Example of hospital progress note made to document patient's course in hospital and to inform others of future plans for patient. Note SOAP format used: S is any comments made by patient (subjective), O is objective findings by dentist, *A* is assessment by dentist of how patient is doing, *P* is plans for future care.

CLINICAL RECORD—IN-PATIENT **Patient Identification**

NORTHSIDE GENERAL HOSPITAL

DATE / TIME	DOCTOR'S NOTES ◄ BEGIN HERE	ALL OTHER NOTES BEGIN ◄ HERE — ALL ENTRIES MUST BE SIGNED AND POSITION NOTED
10/8/01 7#5		P.O.D. - Discharge Note S- Pt. complains of moderate pain - well controlled with oral narcotic. Denies nausea and able to swallow liquids without difficulty O- Vital signs WNL and stable Mild facial edema and moderate trismus Operative sites without soz Chest clear to auscultation Able to ambulate without assistance P.O. intake for past 8 hours - 400cc A- Doing well, Ready for D/C P- D/C to home escorted by father Rx: Decadron 0.75 mg PO bid x 2 days Tylox 1 PO q 4° prn pain x 25 Liquids advanced to soft diet as tolerated Limit activities for 2 days then increase as tolerated Saline rinses p meals and h.s. RTC 10/14/98 at 11 am and prn John Brown DDS

CLINICAL RECORD IN-PATIENT

FIG. 31-14 Example of written discharge note in SOAP format to document patient's progress. Discharge instructions are documented under *P.*

NORTHSIDE GENERAL HOSPITAL

Schultz, Carl
XOOO12345 DOB: 6/6/76

Discharge Summary

Admitted: 10/7/01 Discharged: 10/8/01

This was the third admission at Northside General for this 25 year old male with cerebral palsy. Elective admission was necessary for surgical removal of four impacted third molars which had recently become symptomatic necessitating extraction under general anesthesia.

PMH: Hospitalizations: 1986-restorative dentistry under GA
1990-appendectomy without problems
1994-restorative dentistry under GA
Illnesses: Cerebral palsy due to birth anoxia
Asthma, never needed hospitalization
Medications: Medi-inhaler as needed.
Allergies: Penicillin
Social: Lives at home with parents

Past medical, family and social history otherwise unremarkable.

ROS: Pertinent findings-Intermittent pain and swelling around partially erupted lower third molars. Denies other oral discomfort. Patient claims inability to maintain upright posture without the use of body brace. Weakness in leg asnd back muscles bilaterally. ROS otherwise unremarkable.

PE: Pertinent findings-

HEENT- nasal airways patent, Class I occlusion with well-restored dentition, no mucosal lesions. No adenopathy. All teeth except #1 and 16 visible. Teeth #17 and 32 partially erupted with operculums present.

Chest- Clear to percussion and auscultation without wheezes or rales. Heart had regular rate and rhythm without murmurs or extra sounds present.

Hospital course: On morning of admission patient was placed under general anesthesia in the operating room and had surgical removal of 4 third molars. Surgery and anesthesia tolerated well and patient was discharged to home on the first postoperative day in good condition.

Discharge instructions:
Rx-Decadron 0.75mg PO bid for 2 days
Rx-Tylox 1 PO q4hr prn pain X 25
Cool liquid advanced to soft diet as tolerated
Warm saline rinses after meals and hs
Restrict normal activities for 2 days
Return to office on 10/14/01 at 11 am.

John Brown D.M.D.

John Brown, D.M.D.
Attending Surgeon

FIG. 31-15 Example of dictated hospital discharge summary.

Management of Postoperative Problems

Airway problems. Routine dentoalveolar surgery is unlikely to cause airway compromise unless a condition such as Ludwig's angina is present. However, patients in whom an endotracheal tube has been placed during general anesthesia are at risk for postextubation (i.e., after removal of the endotracheal tube) airway narrowing or obstruction, which is caused by trauma to mucosa lining of the upper respiratory tract that produces edema. The narrowest portion of the upper respiratory tract is the region of the vocal cords through which the endotracheal tube must be passed and on which the tube rests during anesthesia. The amount of respiratory tract mucosal injury depends on the patient's anatomy, the size of tube used, the type of tube, and care used during placement. Injuries caused by tube type have been lessened by **the** use of tubes with high-volume, low-pressure cuff designs. Patients generally do well after extubation, except for mild-to-moderate throat discomfort during swallowing for 1 to 2 days. However, occasionally, laryngeal edema of

BOX 31-6

Common Format for Dictating the Hospital Discharge Summary

- Identify dictator
- State that discharge summary is being dictated
- State patient's name, spelling out last name
- Give patient's medical record (hospital) number
- State date(s) of hospital admission and discharge
- State final diagnosis(ses)
- Give patient's chief complaint on admission
- Describe history of illness or problem requiring surgery
- List any significant findings on history and on physical, radiographic, and laboratory examination
- Briefly describe hospital course, including the following:
  - Description of all therapy rendered
  - Any complications that occurred
  - Outcome of any therapy provided
- Describe discharge instructions given to the patient, including the following:
  - Disposition (to where and with whom the patient is being discharged)
  - Medications
  - Activity
  - Diet
  - Hygiene
  - Follow-up plans
  - Describe patient's condition on discharge
  - Reidentify dictator
  - State to whom copies of the summary should be sent

sufficient severity to compromise the patient's ability to breathe will be produced. The first symptom is usually a crowing sound during attempts to inspire and expire. The patient may also need to use accessory muscles of respiration to force air through the cords.

Prevention of airway trauma is the best form of care. If trauma is known to have occurred during intubation or extubation (or in patients having prolonged intubation), postoperative orders should include the delivery of cooled, humidified air or oxygen, administration of racemic epinephrine through an aerosol, and placement of tracheotomy equipment near the patient's bed. These patients should be closely monitored, preferably under close supervision by an anesthesiologist, until the dentist is comfortable that airway problems are under control.

Nausea and vomiting. Nausea and vomiting occur commonly after general anesthesia, which is part of the rationale for fasting patients preoperatively. The symptoms are primarily related to anesthetic drugs and occasionally to excessive air that might have been forced into the stomach during induction of anesthesia. Nausea and vomiting usually resolve with time but can be a serious problem if the patient is not fully in control of laryngeal reflexes, is in intermaxillary fixation, or is unable to begin taking needed medications and sustenance orally.

Vomiting in a patient with depressed reflexes is best handled by placing the patient in a horizontal position on the right side until reflexes are recovered. Patients in intermaxillary fixation but with normal airway reflexes should be able to eliminate any vomitus through the nose and mouth, because postoperative stomach contents should be of liquid consistency. Even so, constant retching can disrupt a properly set facial fracture or a delicate wound repair, so awake patients in or out of fixation may need to receive antiemetic medications to relieve nausea. However, before giving antiemetic agents, the possibility of depressed gastrointestinal (GI) motility or brain injury should be ruled out. If a patient develops airway problems while in intermaxillary fixation, an instrument capable of releasing fixation should be readily available. Many dentists have a pair of wire cutters taped to the head of a patient's bed.

Fever. Fever is generally defined as an oral temperature of greater than 99° F (37.2° C) or rectal temperature higher than 99.8° F (38° C). A postoperative fever may be produced by a variety of factors. However, based partially on when in the postoperative period fever occurs, it may be attributed to one of a few common causes. For example, fever the night after surgery is usually attributed to bacteremias resulting from organisms in surgical wounds. Fevers occurring in the first or second postoperative day after general anesthesia or major surgery are generally attributed to insufficient depth of breathing, which produces atelectasis (collapse of terminal lung alveoli), or, less commonly, to dehydration. Fever 2 days after surgery can be an early sign of a wound infection or, if the patient had the bladder catheterized or has prolonged atelectasis, it may be caused by a bladder infection or pneumonia.

No matter when a fever arises, an investigation should be undertaken to discover the cause. The patient should be questioned about wound pain, swelling, foul taste, productive cough, and dysuria. On examination, particular reference should be made to the surgical wound, sites of intravenous (IV) catheters, and lungs. Studies such as a white blood cell count, urinalysis, and chest radiographs may be useful in determining an explanation for a postoperative fever, if clinically indicated. A medical consultation may be necessary if a cause for a persistent fever remains obscure. Once it is documented that a fever exists, the patient's symptoms and increased metabolic expenditure from the fever can be lessened by administration of acetaminophen.

Atelectasis. Atelectasis is a common problem in patients who have undergone abdominal surgery and fail to fill their lungs to normal capacity because of the incisional pain provoked by deep breathing. In patients who have had dentoalveolar surgery under general anesthesia, atelectasis can result from (1) inactivity that allows the patient to breathe without filling the lungs to normal capacity; (2) postoperative narcotic analgesics that depress the sigh reflex, which normally functions to prevent atelectasis; or (3) an endotracheal tube misplacement so that only one lung was aerated during surgery.

Prolonged atelectasis can lead to pneumonia; thus prevention of atelectasis is important. Instructing patients to take deep sustained inspirations periodically during the

postoperative period and to begin ambulation as soon as possible after surgery lessen the possibility of developing atelectasis. Limiting the use of unnecessarily large doses of narcotic analgesics can also prevent atelectasis.

***Fluids and** electrolytes.* Hypovolemia can be found in patients after surgery because of insufficient fluid intake to match fluid loss. Fluids are lost through the obvious routes of urination, vomiting, and nasogastric suctioning, as well as by insensible routes, such as expired air and perspiration. The primary source of replacement fluids is normally oral ingestion. However, postoperative patients who are unable or unwilling to maintain necessary fluid intake orally require IV supplementation until oral fluid intake resumes. The usual volume of fluid intake necessary (combination of oral and IV) for a nonfebrile adult in the postoperative period is between 2500 and 3000 mL daily, with a higher volume for patients with higher-than-normal fluid loss and a lower volume for patients susceptible to fluid overloading, such as those with renal or myocardial insufficiency.

The choice of IV fluid type is based on the knowledge that human serum must have certain electrolytes kept within a narrow range to maintain vital physiologic functions. Sodium, potassium, and chloride are the three electrolytes considered when choosing an IV solution. Three standard IV crystalloid solutions are available for use either individually or in combination. Dextrose 5% in water (D_5W) is a 5% glucose solution that provides free water, a source of calories in a fluid that is isotonic with plasma, and no electrolytes. Normal saline, or 0.9% sodium chloride solution, provides 154 mEq each of sodium and chloride per liter of water, which makes the solution roughly isotonic but actually functioning to draw interstitial fluid into the intravascular compartment.* Lactated Ringer's solution contains generally physiologic electrolyte concentrations (Na^+-130 mEq; CI~-109 mEq; K^+-3 mEq) and lactate, which buffers serum acidity by providing a substrate that can be metabolized into bicarbonate.

In general after dentoalveolar surgery the otherwise healthy patient requires a relatively physiologic IV solution with some calories during and after surgery, which can be provided by combination crystalloid solutions, such as 5% dextrose in a 0.45% sodium chloride solution to which 20 mEq of potassium chloride per liter have been added. Patients with special medical problems likely to cause electrolyte abnormalities, such as those on potassium-wasting diuretics or prolonged IV fluids, will need their serum electrolytes monitored to guide IV fluid choice.

•Saline is commonly available in several dilutions (0.9% [normal], 0.45%, 0.33%, and 0.25%).

Blood component transfusion. Blood transfusions are rarely required after dentoalveolar surgery, which is fortunate because of the potential for spread of infectious diseases in the course of transfusions and the risk of incompatibility reactions. The primary reason why transfusions are unnecessary is the nature of oral surgery, which, if properly performed, is unlikely to allow significant blood loss. In addition, placement of patients in reverse Trendelenburg position* and the use of hypotensive anesthetic techniques have further lessened blood loss.

Occasionally, circumstances arise in which blood components are necessary, such as for trauma patients who have lost blood from serious injuries or patients with thrombocytopenia. In the past, patients requiring transfusions were given whole blood; however, modern blood banks currently separate donated blood into its various components (i.e., plasma, red blood cells, platelets, white blood cells). Patients with a low hematocrit and therefore lowered oxygen-carrying capacity of the blood can be given only the portion of blood that they require—packed red blood cells. Similarly, patients who are thrombocytopenic from chemotherapy but require emergency oral surgery can be given platelet concentrates.

Another means of transfusion therapy—autogenous blood transfusion—is available in most centers. This technique is used when it is suspected that an intraoperative blood transfusion may be required. Patients can donate a unit of their own blood before surgery. The blood is then stored and made available for their personal use during surgery.

Various criteria exist to help determine when red cell or platelet transfusions are necessary. In general a healthy patient with normal red cell mass can tolerate an **acute** fall in hematocrit to 25% to 30% without suffering significant ill effects. A chronically anemic patient can easily tolerate an even lower concentration of red blood cells. Dentists managing patients with thrombocytopenia should seek the advice of a hematologist when deciding if platelet transfusion is warranted.

+Patient is supine on operating table, with the head end of the table raised.

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Appendix I

Instrument List and Typical Retail Prices (2002)

Basic tray	
Local anesthesia syringe	$35.00
Woodson elevator	22.00
Periapical curette	43.00
Small straight elevator	45.00
Large straight elevator	45.00
College pliers	15.00
Curved hemostat	28.00
Towel clip	23.00
Austin retractor	42.00
Suction	36.00
TOTAL	**$334.00**

Forceps	
No. 150 upper universal	$128.00
No. 151 lower universal	128.00
No. 53L upper molar	128.00
No. 53R upper molar	128.00
No. 23 lower cowhorn	128.00
No. 17 lower molar	128.00
No. 286 root	128.00
TOTAL	**$896.00**

Surgical tray	
Needle holder	$60.00
Suture	2.00
Suture scissor	57.00
Periosteal elevator	37.00
No. 3 blade handle	11.00
No. 15 blade	0.50
Adson tissue forceps	26.00
Bone file	52.00
Tongue retractor	51.00
Root tip pick	31.00
Russian tissue forceps	37.00
Cryer elevator R	52.00
Cryer elevator L	52.00
Rongeur	156.00
TOTAL	**$624.50**

Biopsy tray	
No. 3 blade handle	$11.00
No. 15 blade	0.50
Needle holder	60.00
Suture	1.80
Suture scissors	50.00
Metzenbaum scissors	50.00
Allis tissue forceps	48.00
Adson tissue forceps	26.00
Curved hemostat	28.00
TOTAL	**$275.30**

Postoperative tray	
Suture scissors	$50.00
College pliers	15.00
Suction	36.00
TOTAL	**$101.00**

Miscellaneous	
Molt mouth prop	$144.00
Rubber bite block	32.00
Minnesota retractor	21.00
TOTAL	**$197.00**

GRAND TOTAL	**$2,427.80**

Note: These prices are average prices from 2002 catalogs from the following companies: Walter Lorenz Surgical Instruments Inc., Jacksonville, FL; KLS Martin, Jacksonville, FL; Atitan Instruments, Jamison, PA.

Appendix II

Operative Note (Office Record) Component Parts

1. Date
2. Patient identification
3. Diagnosis
4. Review of medical history, medications, and vital signs
5. Oral examination
6. Anesthesia (dose and block technique used)
7. Procedure, including statement of progress of procedure and complications
8. Discharge instructions
9. Medications prescribed (drug and amount or copy of prescription)
10. Return appointment (scheduling)
11. Signature (legible or printed underneath)

DATE: July 1, 2002

ID and DX: This 52 y.o.w.m. requires extraction of mandibular left second premolar and first molar. Both teeth are nonrestorable because of extensive caries.

MEDICAL HISTORY: Patient has chronic hypertension for which a thiazide diuretic has been prescribed. Remainder of history is unremarkable. Pulse 84; BP 130/85.

ORAL EXAMINATION: Soft tissue of cheeks, lips, tongue, floor of mouth, and palate are WNL. No palpable nodes or masses.

ANESTHESIA: Lidocaine 36 mg with 0.018 mg epinephrine via mandibular and long buccal blocks.

PROCEDURE: Routine forceps extraction. Distal root of first molar fractured—retrieved with Cryer elevator. No flap required. Patient tolerated procedure without difficulty.

DISCHARGE: Copy of routine postoperative instructions given and reviewed.

MEDICATIONS: Tylenol #3—24 caps. 1 or 2 caps q4h prn pain.

RETURN: Patient asked to return in 1 week for postoperative checkup.

John Jay Jones

FIG. A-1 Example of an oral surgery note.

Appendix III

Drug Enforcement Administration Schedule of Drugs and Examples

A. Schedule I Drugs
These drugs are not available for clinical use in the United States.
Examples: Heroin, marijuana, LSD

B. Schedule II Drugs
These drugs have high abuse liability. Require written prescription and DEA number. Prescription cannot be refilled without a new prescription. Prescription cannot be telephoned to pharmacy.
Examples: Morphine, meperidine, plain codeine, oxycodone compounds, pentobarbital

C. **Schedule III Drugs**
These drugs have lower abuse potential. Prescriptions may be phoned in to pharmacy but require DEA number. The prescription can be refilled up to 5 times in 6 months.
Examples: Codeine compounds, hydrocodone compounds, dihydrocodeine compounds, pentazocine

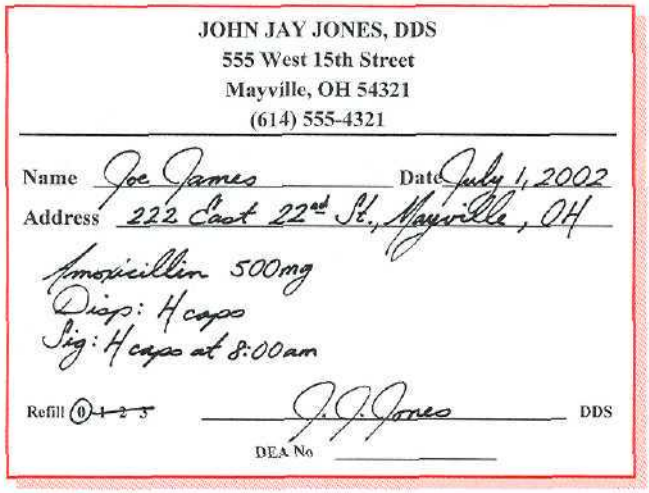
D. Schedule IV Drugs
Nonnarcotic drugs with lower abuse potential. DEA number required.
Examples: Chloral hydrate, diazepam

E. Schedule V Drugs
These drugs are in low-dose preparation for over-the-counter sales. Primarily for cough syrups and antidiarrheal purposes.

Note: Nonstewidal antiinflammatory drugs (NSAIDs) are not scheduled drugs.

Appendix IV

Examples of Useful Prescriptions

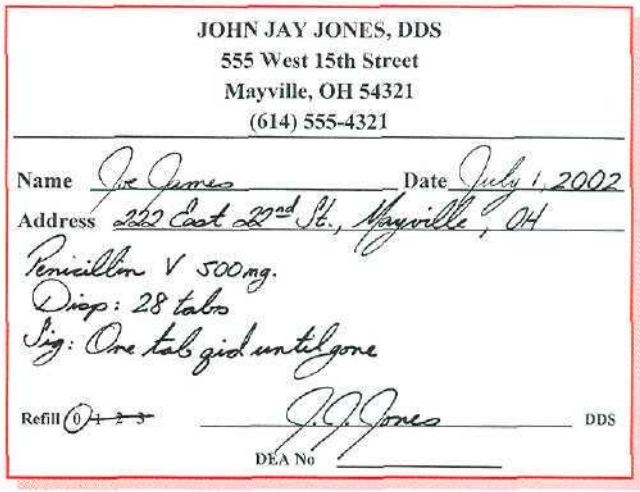

JOHN JAY JONES, DDS
555 West 15th Street
Mayville, OH 54321
(614) 555-4321

Name Joe James Date July 1, 2002
Address 222 East 22nd St., Mayville, OH

Amoxicillin 500mg
Disp: 4 caps
Sig: 4 caps at 8:00am

Refill 0 ~~1 2 3~~ J.J. Jones DDS
DEA No

FIG. A-2 Prescription for oral subacute bacterial endocarditis prophylaxis with amoxicillin.

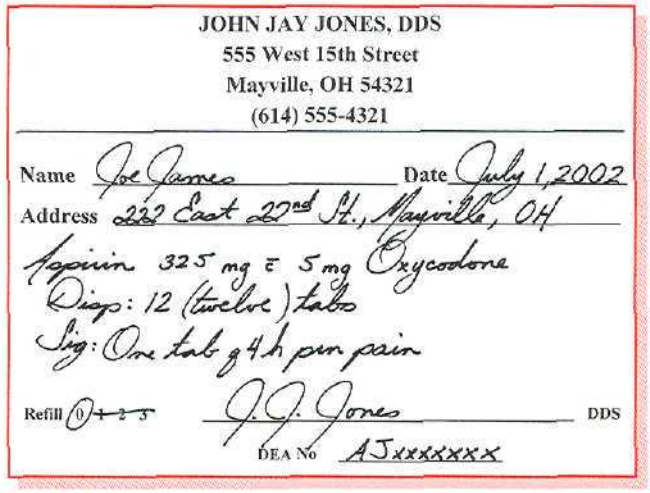

JOHN JAY JONES, DDS
555 West 15th Street
Mayville, OH 54321
(614) 555-4321

Name Joe James Date July 1, 2002
Address 222 East 22nd St., Mayville, OH

Penicillin V 500mg.
Disp: 28 tabs
Sig: One tab qid until gone

Refill 0 ~~1 2 3~~ J.J. Jones DDS
DEA No

FIG. A-3 Prescription for oral penicillin therapy of odontogenic infection.

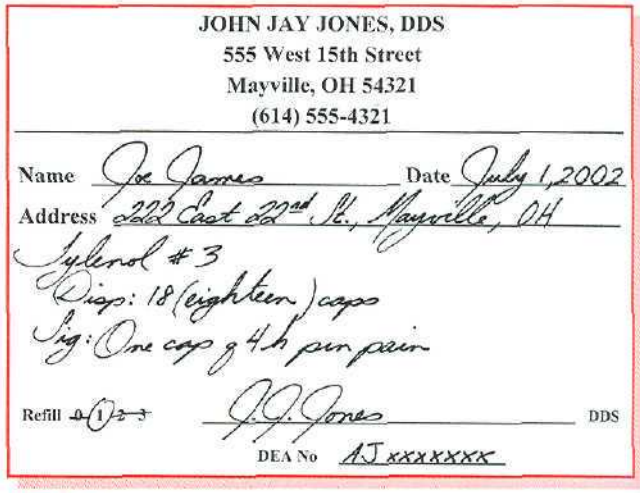

JOHN JAY JONES, DDS
555 West 15th Street
Mayville, OH 54321
(614) 555-4321

Name Joe James Date July 1, 2002
Address 222 East 22nd St., Mayville, OH

Aspirin 325 mg ē 5 mg Oxycodone
Disp: 12 (twelve) tabs
Sig: One tab q 4 h prn pain

Refill 0 ~~1 2 3~~ J.J. Jones DDS
DEA No AJxxxxxxx

FIG. A-4 Prescription for aspirin with oxycodone. This prescription must have DEA number and cannot be phoned in.


JOHN JAY JONES, DDS
555 West 15th Street
Mayville, OH 54321
(614) 555-4321

Name Joe James Date July 1, 2002
Address 222 East 22nd St., Mayville, OH

Tylenol #3
Disp: 18 (eighteen) caps
Sig: One cap q 4 h prn pain

Refill ~~0~~ 1 ~~2 3~~ J.J. Jones DDS
DEA No AJxxxxxxx

FIG. A-5 Typical brand name prescription. This compound has 650 mg of acetaminophen and 30 mg of codeine.

Appendix V

Consent for Extractions and Anesthesia

1. I, _____, give my permission for Dr._____ and any assistants deemed necessary, to perform the procedure(s) discussed below in #2.

2. The reason(s) for the surgery and anesthesia have been explained to me and I understand the procedure(s) to consist of:

   Lay terminology _____

   Medical terminology _____

   Sensible alternative procedures including not doing surgery at all have been discussed with me.

3. I have been advised of potential complications of this procedure that are able to be reasonably anticipated which are:

   _____

   _____

4. I understand that anesthesia will be necessary for my surgery and give permission for the use of medications the doctors feels are necessary except those to which I am allergic that are listed below:

   _____

5. I understand that no guarantees can be given of the results of surgery on the human body, but that the doctor and office staff will do their best to achieve excellent results.

6. All my questions concerning this procedure have been answered to my satisfaction.

Patient's signature indicating agreement with statements 1 through 6:

_____ Date _____

Witness of the consent signature:

_____ Date _____

FIG. A-6 Example of a patient consent form.

Appendix VI

Antibiotic Overview

I. Cephalosporins

The cephalosporins are a group of p-lactam antibiotics that are effective against gram-positive cocci and many gram-negative rods. A large number of cephalosporins are available and are roughly divided into three generations, based on their activity against gram-negative organisms. The first-generation antibiotics have a similar activity, including activity against gram-positive cocci, *Escherichia coll, Klebsiella* organisms, and *Proteus mirabilis.*

The second-generation cephalosporins have broader activity against gram-negative bacteria and increased activity against the anaerobic bacteria. They have less activity against the gram-positive cocci than the first generation.

The third-generation cephalosporins are much more active against enteric gram-negative rods but are decidedly less active than first- and second-generation cephalosporins against gram-positive cocci.

Two useful oral cephalosporins are effective in odontogenic infections: (1) cephalexin (Keflex) and (2) cefadroxil (Duricef). Although neither of these is the drug of first choice for odontogenic infections, they may be useful in certain situations in which a bactericidal antibiotic is necessary.

The toxicity of the cephalosporin group is primarily related to allergy. Patients who are allergic to penicillin drugs should be given the cephalosporin antibiotics *with caution.* Patients who have had anaphylactic reactions to penicillin should not be given the cephalosporins.

II. Clindamycin

The antibacterial spectrum of clindamycin includes the gram-positive cocci and almost all anaerobic bacteria. It is effective for streptococci, staphylococci, and anaerobic infections. It is more expensive than penicillin and erythromycin and may have increased gastrointestinal toxicity in susceptible patients.

III. Erythromycin

Erythromycin has a spectrum similar to that of penicillin in that it is effective against gram-positive cocci and oral anaerobic bacteria. The major adverse effect is mild gastrointestinal (GI) disturbance that increases with increased doses. Oral erythromycin is useful in mild odontogenic infections but should not be used for serious infections. It is a bacteriostatic antibiotic and should usually not be used for the patient with depressed defenses.

IV. Metronidazole

Metronidazole is an antibiotic that is effective *only* for anaerobic bacteria. It has no effect on aerobic bacteria, such as streptococci. It is primarily used in periodontal disease therapy but may also be useful in the management of anaerobic odontogenic infections alone or in combination with antiaerobk antibiotics, such as penicillin.

V. Penicillin

Penicillin is the drug of choice for odontogenic infections, because its antibacterial spectrum includes the gram-positive cocci (except staphylococci) and oral anaerobes. Penicillin G is the form given parenterally, and penicillin V is preferred for oral administration. Penicillin has little toxicity except for allergic reactions, which occur in about 3% of the population.

Penidllinase-resistant penicillins are a group of drugs that are useful for penicillinase-producing staphylococci. Dicloxacillin is the preferred penicillinase-resistant penicillin for oral use. These drugs should be used only for culture-documented infection caused by staphylococci.

Several extended-spectrum penicillins exist. The ampicillin-amoxicillin group are effective against more gram-negative rods than penicillin. Amoxicillin is absorbed better from the GI tract than ampicillin and is thus preferred when the drug is given orally. Amoxicillin is the drug of choice for prevention of bacterial endocarditis because of its excellent GI absorption and slow renal elimination.

VI. Tetracyclines

The tetracyclines are available for oral and parenteral administration and are generally considered to be broad-spectrum antibiotics. However, common bacterial resistance to these drugs exists. At this time, tetracyclines are useful only against anaerobic bacteria, which forms the basis for their use in odotongenic infections.

Their toxicities are generally low but include staining of developing teeth if given to children or to pregnant or lactating women. Minocycline and doxycycline are preferred, because they need be taken only once or twice daily.

The tetracyclines have an anticollagenase effect. This activity may make them useful for treatment of periodontal and periimplant disease. Doxycycline 100 mg qd. may be especially useful.

VII. Fluoroquinolones

This recently introduced family of antibiotics includes ciprofloxacin (Cipro) and ofioxacin (Floxin). The antibiotics are broad-spectrum, bactericidal, orally taken antibiotics. Unfortunately they are only marginally effective against streptococci and have little or no effect against anaerobic bacteria. Therefore their usefulness in odontogenic infections is quite low. They should rarely, if ever, be used empirically for a patient with an odontogenic infection.

The third generation of fluoroquinolones have high antistreptococcal and antianaerobic activity. These drugs may be especially useful when a bactericidal antibiotic is necessary for a patient with severe penicillin allergy. Drugs such as moxifloxicin and levofloxacin are examples of this drug group.

VIII. Antifungal Drugs

Mucosal candidosis, or oral thrush, should be treated with the topical application of antifungal agents. The two drugs of choice are (1) nystatin and (2) clotrimazole. Both drugs are available as lozenges that are held in the mouth until they dissolve. The patient should use one lozenge four to five times daily for 10 days for effective control and to prevent relapse of the candidosis.

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ISBN 0-323-01887-4

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