

Protocols for the

DENTAL MANAGEMENT OF MEDICALLY COMPLEX PATIENTS

<u>TOPIC</u>	<u>PAGE</u>
1. Bleeding Problems (including anticoagulants)	2
2. Cardiac Problems (heart murmurs, cardiac defects)	5
3. Cardiovascular Problems (high blood pressure, arrhythmias)	10
4. Central Nervous System Problems (seizures, stroke)	14
5. Diabetes	17
6. Immunosuppression	19
7. Infectious Diseases (tuberculosis, hepatitis, HIV, herpes, flu)	21
8. Kidney Problems	26
9. Liver Problems	27
10. Pregnancy	29
11. Prosthetic Joints	31

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Bleeding Problems or Patients on Anticoagulants (1 of 11)

Questions to Ask / Necessary Information:

1. How long have you had a bleeding problem or, depending on the situation, how long have you been on anticoagulant medication?
2. Describe your bleeding problem
3. Have you had problems with previous dental appointments?
4. What is the cause of your bleeding problem or why are you on anticoagulants?
5. Are your anticoagulants or bleeding problems due to low platelets?
6. What are your most recent laboratory results relative to your anticoagulation or bleeding problem status?

Diagnostic Tests:

1. Bleeding problems secondary to liver disease:
 - a) PT - prothrombin time
 - b) PTT - partial thromboplastin time
 - c) INR - international normalized ratios
2. Aspirin and other non-steroidal anti-inflammatory agents.
 - a) Bleeding time.
3. Thrombocytopenia
 - a) CBC with a differential (which will give platelet count)
 - b) Bleeding time
4. Anticoagulant warfarin
 - a) PT
 - b) INR

Management During Dental Treatment:

1. No type of dental treatment should be rendered that has the potential for severe bleeding (i.e. extractions, scale/root plane).
 - a) If bleeding time greater than 10 minutes
 - b) If platelet count less than 60,000
 - c) If PTT greater than 45 seconds
 - d) If PT greater than 22 seconds
 - e) If INR greater than 3.5

Bleeding Problems or Patients on Anticoagulants – continued

2. If bleeding parameters greater than above, medical coordination is required, for example, physician should decrease anticoagulant or provide packed platelets or prescribe supplemental vitamin K until bleeding parameters are brought into line consistent with dental treatment.
3. If hemophilic, have MD administer proper replacement factors and run necessary test to insure patient is within safe parameters.
4. During dental procedures minimize physical trauma and pack extraction sites that have the potential to bleed with local pressures and other coagulation procedures, i.e. Gelfoam. Obtain primary closure on any surgical sites, if possible.
5. Establish primary closure and/or put pressure on potential/actual bleeding site.

Be Alert For:

- 1) Easy or prolonged bleeding with minimal trauma (i.e. probing, wedge placed between teeth for amalgam matrix)
- 2) Easy bruising / multiple bruises

Preventative / Precautions:

1. Assure the patient is aware of necessary lab tests that should be done close to the time of dental treatment (within a week, or closer if they have had previous problems). Some bleeding parameters can change quickly.
2. Avoid drugs that may cause drug interaction, such as erythromycin and ketoconazol, which inhibit warfarin metabolism. Also avoid drugs that can prolong bleeding, such as aspirin or other non-steroidal anti-inflammatories.
3. Encourage patient to keep you informed of any drug changes and their use of any over-the-counter medications.
4. If patient calls from home following treatment, instruct them to apply pressure with gauze or cloth to bleeding site for 10-30 minutes. If bleeding persists, have patient come into office immediately or to a medical emergency room.

<http://www.nlm.nih.gov/medlineplus/bleedingdisorders.html>

http://www.labtestsonline.org/understanding/conditions/bleeding_disorders.html

<http://www.whf.org/> (World Federation of Hemophilia)

DENTAL MANAGEMENT OF MEDICALLY COMPLEX PATIENTS

Centers for Disease Control and Prevention

Hereditary Blood Disorders Team

Internet Address: <http://www.cdc.gov/ncbddd/hbd/default.htm>

HANDI/National Hemophilia Foundation

Phone number: (800) 424-2634

Internet Address: <http://www.hemophilia.org>

- Excellent site on anticoagulants: different types, brands, uses, side effects, and dental precautions – <http://nlm.nih.gov/medlineplus/druginfo/uspdi/202050.html>

Comprehensive site on bleeding problems to recommend to your patients:
http://www.chemocare.com/managingbleeding_problems.asp

DENTAL MANAGEMENT OF MEDICALLY COMPLEX PATIENTS

- Cardiac Problems - heart murmurs, cardiac effects (2 of 11)

Questions to ask / Necessary Information:

1. When was your heart problem first diagnosed?
2. Have you ever been hospitalized because of your heart problem?
3. Did the doctor ever say you needed prophylactic antibiotics prior to dental treatment?
4. Did the doctor ever say you didn't need prophylactic antibiotics prior to dental treatment?

Diagnostic Tests:

Medical consult to identify type of heart problem and whether prophylactic antibiotics are needed, if patient unsure. Please note: the American Heart Association Guidelines for the Prevention of Bacterial Endocarditis was revised in May of 2007. Most of the patients who previously needed prophylactic antibiotics for dental procedures, including those patients with diagnosed murmurs, now no longer need them.

Management During Dental Treatment:

PROPHYLACTIC ANTIBIOTIC COVERAGE FOR PREVENTION OF BACTERIAL ENDOCARDITIS

Current American Heart Association Guidelines
Published May 8, 2007, *Circulation*, Vol 115.

Cardiac Conditions for Which Prophylaxis for Dental Procedures is Recommended*

Prosthetic Cardiac Valve

Previous Infective Endocarditis

Congenital Heart Disease (CHD)

Unrepaired cyanotic CHD, including palliative shunts and conduits
Completely repaired congenital heart defect with prosthetic material or device, whether placed by surgery or by catheter intervention, during the first 6 months after the procedure (endothelialization occurs within 6 months of procedure)

Repaired CHD with residual defects at the site or adjacent to the site of a prosthetic patch or prosthetic device (which inhibits endothelialization)

DENTAL MANAGEMENT OF MEDICALLY COMPLEX PATIENTS

Cardiac transplant recipients who develop cardiac valvulopathy

If patient's physician requests prophylaxis procedure, but patient does not meet ADA/AHA criteria for needing it, then physician should prescribe prophylaxis, patient takes it under their direction, and they come to you safe for dental procedures.

Except for the cardiac conditions listed above, antibiotic prophylaxis is no longer recommended for any cardiac condition or problem.

1. If patient needs prophylactic antibiotics, follow **American Heart Association guidelines** below:

Premedication requirements for patients with valvular heart disease or congenital cardiac defects. If in doubt, have patient consult their physician as to need.

Standard Regime

Rx	Amoxicillin 500 mg.	
Disp	4 tablets Sig take 4 tablets (2.0 g) 1 hour before procedure.	
Note	1) Children 50 mg/Kg. Do not exceed adult dose 2) No second dose is required for adults or children	

Standard Regime for Patients Allergic To Amoxicillin/Penicillin

*Rx	Clindamycin 150 mg.	
Disp	4 tablets	
Sig	Take 4 tablets (600 mg) 1 hour before procedure.	

Cardiac Problems - heart murmurs, cardiac effects – continued

Or

Rx	Azithromycin 250 mg	
Disp	2 tablets	
Sig	Take 2 tablets (500 mg) 1 hour before procedure.	

DENTAL MANAGEMENT OF MEDICALLY COMPLEX PATIENTS

Or

Rx	Clarithromycin 250 mg
Disp	2 tablets
Sig	Take 2 tablets (500 mg) 1 hour before procedure.

Or

*Rx	Cephalexin 500 mg.
Disp	4 tablets
Sig	Take 4 tablets (2 g) 1 hour before procedure.

Or

*Rx	Cefadroxil 500 mg
Disp	4 tablets
Sig	Take 4 tablets (2 g) 1 hour before procedure.
* Note:	Cephalosporins should not be used in individuals with immediate p type hypersensitivity reaction (urticaria, angioedema, or anaphylaxis) to penicillins.

Cardiac Problems - heart murmurs, cardiac effects – continued

Note: Children's dosage. (Do not exceed adult dose)

Clindamycin 20 mg/kg
Cephalexin 50 mg/kg
Cefadroxil 50 mg/kg
Azithromycin 15 mg/kg
Clarithromycin 15 mg/kg

Patients Unable To Take Oral Medication

DENTAL MANAGEMENT OF MEDICALLY COMPLEX PATIENTS

Ampicillin	2 g IV or IM within 30 minutes before procedure. Children: 50 mg/kg IV or IM within 30 minutes before procedure.
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For Patients Unable to Take Oral Medication and Allergic to Ampicillin, Amoxicillin, Penicillin

Clindamycin	600 mg IV within 30 minutes before procedure. Children: 20 mg/kg IV within 30 minutes before procedure.
*Cefazolin	1 g IV or IM within 30 minutes before procedure Children: 25 mg/kg IV or IM within 30 minutes before operation.
*Note	Cephalosporins should not be used in individuals with immediate-type hypersensitivity reaction (urticaria, angioedema, or anaphylaxis) to penicillin.

2. If patient states they're unsure whether prophylactic antibiotics are needed and contact with physician not possible then treat with standard guidelines if emergency or refer patient for medical consult to establish need or lack of need for antibiotic prophylaxis.
2. Document, in the chart, the time and dosage of antibiotics taken for prophylaxis.

Cardiac Problems - heart murmurs, cardiac effects – continued

Be Alert For at the Time of the Appt:

Flu-like symptoms within two days, most commonly within two weeks, rarely within four weeks following dental procedures. Such symptoms can be signs of bacterial endocarditis, even if the patient has been properly prophylaxed. If they have such symptoms they should see their physician.

Preventative / Precautions:

1. Good oral hygiene.

DENTAL MANAGEMENT OF MEDICALLY COMPLEX PATIENTS

2. Proper teeth cleaning, chlorhexidine rinse prior to extractions to decrease magnitude of possible bacteremias.
3. Gingivitis, and, especially, periodontitis, increases the frequency, intensity, and duration of bacteremias.

Stress to the patient that they should take their prophylactic antibiotic medication within the proper timeframe.

Cardiovascular Problems (3 of 11)

(High blood pressure, arrhythmia, congestive heart disease (angina pectoris))

Questions to Ask / Necessary Information:

A. High blood pressure

1. How high does your blood pressure get?
2. Do you know what your blood pressure usually is?
3. What is your blood pressure when you are taking medications?
4. Have you had any problems / side effects with your blood pressure medication?
5. Have there been any recent changes in your medications?
6. Have you ever had hypertensive episodes when the high blood pressure could not be controlled?
7. Have you ever had to postpone dental treatment or had any problems with dental care, relative to your blood pressure?
8. Did you take your medication today?

B. Arrhythmia

1. What kind of arrhythmia do you have?
2. What triggers the arrhythmia episodes?
3. Do you take your medication for your arrhythmia? If so, what medication, and did you take it today?
4. Is the arrhythmia effectively controlled with medication?

Cardiovascular Problems -continued

C. Congestive heart disease

1. Do you get chest pains on exertion?
2. Can you walk up a flight of stairs without needing to rest to catch your breath or getting chest pains?
3. Do you take medications for your congestive hear failure? If so, did you take them today?

Diagnostic Tests:

A. *High blood pressure:*

1. Take blood pressure.
2. Depending on situation, take blood pressure at beginning and end of appointment.

B. *Arrhythmia's*

1. Take patient's peripheral (radial, carotid) pulse and feel for arrhythmia

C. *Congestive heart disease*

1. Stress test by M.D.

Management During Dental Treatment:

A. *High blood pressure.*

1. Patients with optimal (<120 systolic and <80 diastolic) and pre-hypertensive (120 – 139/80 – 89 mm Hg) blood pressures are good candidates for all dental procedures and can normally receive local anesthesia with epinephrine 1:100,000.
2. Patients with mild to moderate hypertension (140 – 180/90 – 110 mm Hg), require an overall assessment depending on the complexity of the planned dental procedure

Cardiovascular Problems –continued

and patient's level of anxiety. Consider some type of sedation or delay elective treatment until blood pressure controlled.

3. Greater than 180/110, no elective treatment until blood pressure under control. Even if dental emergency treatment is needed, consult with M.D. first to control HBP. Consider sedation with benzodiazepine (valium) or nitrous oxide.
4. In patients with controlled high blood pressure, using local anesthetic with a vasoconstrictor such as 1:100,000 epinephrine or it's equivalent is appropriate. The ADA suggests a maximum of 40 µg (≈2 cartridges of 1:100,000 epi) then wait for at least 10 minutes. If no problems arise, additional cartridges can be administered. For patients with blood pressure above 140/90, epinephrine impregnated retraction cord should be avoided.

B. Arrhythmia or congestive heart failure

1. If patient's arrhythmia or congestive heart failure is controlled, no special precautions necessary.
2. If patient has an arrhythmic or congestive heart failure (angina pectoris) episode, dental treatment should be delayed. If arrhythmia occurs in the midst of treatment and it must be completed, discontinue until heart rhythm stabilized (may require hospitalization for cardioversion), then complete treatment quickly and calmly.
3. If angina pectoris occurs, stop treatment, administer oxygen, minimize stress and wait until the pain resolves. Continue as needed, if necessary, and patient feels capable of completing to a safe stopping point
4. Local anesthetic with vasoconstrictor (1:100,000 epinephrine or equivalent) is appropriate. 1:50,000 concentration of epinephrine or equivalent should be avoided. Epinephrine impregnated retraction cord should not be used.

Be Alert For:

A. High blood pressure.

1. Request patient inform you if they feel as though their blood pressure is increasing or if they are getting a headache. Some patients feel jittery, others feel as though there is increased pressure behind the eyes.
2. Profuse bleeding, beyond what would be expected.

Cardiovascular Problems –continued

B. *Arrhythmia*

1. Patient to inform you if they feel an arrhythmia. Sometimes this manifest as a coughing or catching feeling in the chest. Other times it is a feeling of light headedness.

Preventative / Precautions:

Be reassuring with the patient. Under no circumstances should you panic as that will only increase the patient's anxiety which will cause the blood pressure to increase or the arrhythmia to intensify or be prolonged. An alert, concerned, everything is in control, we know what is happening and everything will be fine, professional demure is appropriate.

Central Nervous System (4 of 11)

(Seizures, stroke)

Questions to Ask / Necessary Information:

A. Stroke:

1. When did you have your stroke?
2. What loss of function occurred?
3. Have you recovered some function over time?
4. Have you ever had trouble with dental appointments or medical appointments?
5. Is there anything I need to know that will make you more comfortable or make it easier for you to deal with the dental appointment?
6. Are you taking any medication related to the stroke or to prevent another stroke? If so, what medication?

B. Seizures:

1. What type of seizure do you have?
2. What stimulates a seizure and do you have an aura prior to the seizure?
3. What is the cause of your seizures? (i.e. head injury, born with problem)
4. How frequently and when (time of day) do they usually occur?
5. What type of medications are you taking to control the seizures?
6. Does the medication work?
7. Do you take the medication regularly or do you discontinued it at times? If you did discontinue, was it your decision or your doctor's and what happened?

Diagnostic Tests:

A. Stroke

1. If patient taking anticoagulant, then assess bleeding status (see Bleeding Problems management protocol)

Central Nervous System – continued

B. Seizure

1. If patient unclear about types of seizure or medications, and seizures are poorly controlled, then medical consultation for the above information will be needed.

Management During Dental Treatment:

A. Stroke

1. No special treatment considerations are necessary except those that the patient notes could be of value (modifying dental treatment procedures based on the patient's perceived needs has an enormous positive psychological benefit for the patient).
2. Depending on what areas have lost function, especially if the head and neck or oral cavity area are affected, certain types of dental prostheses may or may not be effective, i.e. removable prostheses may not be effectively retained without adequate muscle tone, so fixed prostheses or implant may be needed.

B. Seizures

1. Schedule patient early morning when they are well rested.
2. Patient should be instructed to take their medication properly for at least the several days prior to the dental appointment.
3. Patient should be questioned at dental appointment whether in fact they have taken the medication correctly.
4. If seizure occurs, it should be allowed to run its course. The primary concern will be protection of the patient so they don't hurt themselves and the protection of the dentist and staff so the patient doesn't hurt them.
5. Following a seizure, the decision to continue or discontinue treatment is based on the patient's condition (does the patient feel like he/she can complete the procedure?) and the treatment needed.

Central Nervous System – continued

Be Alert For:

A. Stroke:

1. Signs of recurrence of stroke, such as slurred speech, confusion, loss of balance and inability to hold saliva in mouth, and transient ischemic attacks (TIA) manifest as fainting and dizziness, with spontaneous recovery.
2. Alert patient's guardian to any new stroke signs or symptoms so physician can follow up.
3. If patient taking anticoagulants, review Bleeding Problems protocol for additional alerts.
4. If stroke has effected swallowing, suction frequently.
5. If stroke has effected eyelids, protect/cover eyes as needed.

B. Seizures:

1. Be alert to dental / oral damage secondary to seizure.
2. Be aware of possible gingival hyperplasia secondary to Dilantin.

Preventative / Precautions:

Strokes and seizures:

1. Minimize stress, avoid procedures that may cause spiking of blood pressure, consider pre-procedural anti-anxiety medication such as Valium, if patient is fearful.

Seizures:

Good oral hygiene. The better the oral hygiene, the less likely or less severe gingival hyperplasia secondary to Dilantin.

Diabetes (5 of 11)

Questions to Ask / Necessary Information

1. Age first diagnosed?
2. Type of diabetes?
3. Medication being taken?
4. If Insulin is being taken, what is time interval and amount?
5. How often do you check your blood sugar?
6. Have you been hospitalized during the past year for problems related to your diabetes?
7. Is your diabetes well controlled or does it get out of control at times?

Diagnostic Tests:

- *1. Fasting blood sugar (reflects current control, that day). (> 126 mg/dL)
 - *2. Random plasma glucose > 200 mg/dL with symptoms (polyuria, polydipsia, unexplained weight loss)
 - *3. 2 hour plasma glucose > 200 mg/dL following a 75g glucose load
 4. Fructosamine test (reflects average control over last 2-3 weeks).
 5. Glycated hemoglobin (reflects average control over last 6-8 weeks). (>7% = problem)
- (*) official diagnostic tests for diabetes

Management During Dental Treatment:

1. Patient should have eaten a balanced meal (includes fat and protein as well as carbohydrates) within the last two hours before coming to the dental appointment.
2. Patient should have taken their medications (if they take medications).
3. Food (Power Bar or some other balanced nutritional supplement) should be available if appointment lasts longer than two hours.
4. Early morning appointments.

Be alert for:

Diabetes – continued

1. Periodontal problems.
2. Candidiasis / xerostomia.
3. Poor response to treatment, especially periodontal therapy.
4. Poor healing.
5. Slow healing.
6. Any dental infection should be treated promptly i.e. with antibiotics and appropriate incision and drainage.

Preventative / Precautions:

1. Good home care.
2. Good glucose control.
3. Take medications predictably.

Immunosuppression (6 of 11)

Diseases: HIV, leukemia, primary immunosuppressive diseases

Medications: Cancer chemotherapeutic agents, immunosuppression drugs used in organ transplant patients, corticosteroids to suppress severe auto-immune diseases.

Questions To Ask / Necessary Information (Questions should be designed to evaluate the severity of the immunosuppression and the reason for it. Questions will vary depending on the reason the patient says they are immunosuppressed):

1. Why are you immunosuppressed?
2. How long have you been immunosuppressed?
3. Have you been hospitalized because of problems resulting from your immunosuppression, i.e. infections?
4. Are you taking any prophylactic medication to prevent infections because of your immunosuppression?
5. Has your doctor said that any special precautions should be taken during medical or dental treatment to prevent (prophylax against) possible infections?

Diagnostic Tests:

1. CBC with a differential (especially platelet count, if planning surgery).
2. T-suppressor cell count (HIV patients).
3. Viral load (HIV patients).

Management During Dental Treatment:

1. Depending on severity of immunosuppressants, laboratory tests, primarily CBC with differential, should be done immediately (within 5 days) of major invasive procedure, i.e. extractions, scaling and root planing, periodontal surgery.
2. If white count below 2,000, no elective treatment until white count restored.

Immunosuppression – continued

3. If platelet count is less than 60,000, no elective treatment. If emergency treatment is needed with the risk of bleeding, then have physician give the patient a packet platelets prior to procedure.
4. If patient is severely immunosuppressed and infection is present, consider prophylactic antibiotics prior to oral surgical or periodontal surgical procedures.
5. Institute aggressive treatment of any dental infection, including antibiotics, incise and drain, and proceed with any necessary endodontic procedure or extraction.
6. Aggressively control any periodontal disease with proper cleaning and supplemental medication such as chlorhexidine rinse.

Be Alert For:

1. Periodontal infections
2. Yeast infections
3. Viral infections
4. Periapical problems, impacted teeth, poorly done endodontic procedures, oral ulcerations.

Preventative / Precautions:

1. Prior to organ transplant or when patient is most immunocompetent, consider aggressive dental therapy to remove / resolve any possible dental problems, i.e. scale / root plane for periodontal disease, extract impacted teeth, complete any needed or expected endodontic procedures. Consider extracting teeth with compromised endodontic prognosis.
2. Good oral hygiene.
3. Prophylaxis for viral and fungal infections.

Patient told to alert dentist or physician at first sign of any infection.

Infectious Diseases (7 of 11)

(Tuberculosis, hepatitis, HIV, herpes, the flu)

Questions To Ask / Necessary Information:

A. Tuberculosis

1. When were you diagnosed?
2. Are you still having symptoms of active infection, such as coughing? Night sweats?
3. What medications have you taken and for how long?
4. Have you taken them as directed?

B. Hepatitis

1. What type of hepatitis do you have?
2. Are you actively infected at this time?
3. Have you had any signs or symptoms of your hepatitis?
4. Have you had any change in your liver function tests?
5. Have you taken any medication specifically to treat your hepatitis?
6. If you had hepatitis B, do you know your hepatitis antigen status?

C. HIV

1. When were you first infected?
2. What is your current CD4 t-cell count?
3. What is your current viral load?
4. Have you had any bleeding problems?
5. Have you had any specific diseases related to HIV infection?
6. Are you taking any specific medications for HIV infection?

Infectious Diseases – continued

D. Herpes / flu (risk associated with these diseases is transmission to the healthcare provider?)

1. Are you actively infected at this time?

Diagnostic Tests:

A. Tuberculosis

1. If tuberculin test is positive, then an x-ray should be done.
2. If x-ray is positive, or if there is obvious active infection, then sputum test for tuberculosis bacillum should be done.

B. Hepatitis

1. Hepatitis antigens and antibodies should be run.
2. If patient has active hepatitis, then liver function should be run or request physician provide information as to liver function and coagulation status.

C. HIV

1. Current laboratory tests including t-cell count, viral load, CBC with a differential to give platelet count and white count should be done (see protocol for immunosuppression).

D. Herpes / flu

1. No specific laboratory tests need be run.
2. If patient is interested in which type of herpes they have, type 1 versus type 2, then antibody tests can be run.

Management During Dental Treatment:

A. Tuberculosis

1. No elective treatment rendered until physician says patient is not infectious (sputum negative).

Infectious Diseases – continued

2. If emergency treatment is necessary, patient should be treated in a level 3 infection control facility with hepafilter mask and laminar airflow.
3. In an actively infected patient, the air expelled when coughing is infectious and should be avoided.

B. Hepatitis

1. Since all patients are treated as though they are infectious and universal precautions are applied, no special precautions are necessary when treating a patient actively infected with the hepatitis virus (If patient is having liver problems secondary to hepatitis, then review liver protocol).

C. HIV

1. If patient is HIV infected but has had no medical problems, then no special precautions are needed.
2. Since all patients are treated as though they are infectious, the usual universal precautions are adequate for management.
3. If patient has signs and symptoms of immunosuppression, refer to protocols for patients with immunosuppression.
4. Review the patient's medications and any dental medications that may be used, to insure no drug interaction.

D. Herpes / flu

1. Since all patients are treated as though they are infectious, the normal universal precautions apply and patient is safe for treatment.
2. If patient is feeling so poorly that they don't feel strong enough for dental treatment, they should be re-appointed.
3. If patient having herpes attack, no special precaution is necessary though patient may want to have herpetic ulcer lubricated or even topical anesthetic applied to minimize discomfort associated with manipulation of oral cavity.

Infectious Diseases – continued

Be Alert For:

A. Tuberculosis

1. Oral ulceration or head and neck ulceration, advanced forms of tuberculosis can manifest as what is termed caseating necrosis. Clinically it appears as an ulceration. These ulcers have a high content of tubercular bacilli. Patients with such ulcerations should not receive elective dental treatment until their T.B. infection is resolved.

B. Hepatitis

1. Be alert for signs of jaundice. Follow the protocol for liver dysfunction.

C. HIV

1. Be alert for oral manifestations of immunosuppression such as oral yeast infections, viral infections and periodontal problems. Follow the protocol for Immunosuppression.
2. Be alert for poor healing response and bone sequestration following extractions.

D. Herpes / flu

1. With herpes, avoid traumatizing tissue as it may trigger a herpes attack.
2. If patient knows that herpes attack is precipitated by trauma, consider prophylactic antiviral medication.

Preventative / Precautions:

A. Tuberculosis

1. Faithful taking of medication.
2. Good personal hygiene, hand washing, and not coughing on anybody.
3. Good nutrition and rest.

Infectious Diseases – continued

B. Hepatitis

1. See liver dysfunction protocol.

C. HIV

1. See immunosuppression protocol.

D. Herpes / flu

1. For herpes, keep lesion lubricated.
2. Consider antiviral therapy.
3. Remind patient that herpetic lesion is contagious, especially when blister present and up to two days after it bursts. Encourage them to observe appropriate personal hygiene and avoid mucous membrane contact with other people when active lesion present.
4. For flu, wash hands frequently.
5. Avoid coughing on people or possible contact with nasal secretions.

Kidney Problems (8 of 11)

Questions to Ask / Necessary Information:

1. What kind of kidney problem do you have?
2. Does it interfere with your everyday living?
3. Does it alter the way you eliminate medication?

Diagnostic Tests:

1. BUN (blood, urea, nitrogen)
2. Creatine clearance rate

Management During Dental Treatment:

1. Do not use drugs toxic to the kidney i.e. acetaminophen
2. Use caution and alter dosage form when using drugs eliminated by the kidney i.e. penicillin (often reduced to 500 mg two times per day versus four times per day)
3. If patient on renal dialysis, dental treatment should be done on the day following dialysis.
4. If patient has kidney transplant, see considerations under immunosuppression protocol.

Be Alert For:

1. Drug toxicity because of accumulation.
2. Poor healing and oral ulcerations.

Preventative / Precautions:

1. No special dental precautions needed

Patient should be counseled as to potential toxicity problems from certain prescriptions and over-the-counter drugs, plus alcohol.

Liver Problems – (9 of 11)

Questions to Ask / Necessary Information:

1. How long have you had a liver problem?
2. What type of liver problem is it and how was it caused?
3. Do you feel unwell relative to the liver problem?
4. Have you noticed any problems such as bleeding, difficulty in metabolizing / digesting food, or increased or decreased sensitivity to medication, from the liver problem?
5. Do you ever get jaundice (do the whites of your eyes or your skin turn or look yellow)?
6. Have you ever needed to be hospitalized because of your liver problem?

Diagnostic Tests:

1. SMA20 (specifically SGOT, AST, ALT)
2. PT & PTT
3. INR

Management During Dental Treatment:

1. If bleeding problems, follow bleeding problem protocol.
2. If unable to metabolize drugs, avoid using drugs metabolized in the liver such as erythromycin and ketoconazol. Minimize local anesthetics.
3. If patient having problem with drug interactions, avoid drugs with high potential for drug interaction used in dentistry i.e. erythromycin and ketoconazol.
4. Avoid drugs with potential for liver toxicity i.e. acetaminophen, Tylenol and any other over-the-counter / non prescription drug.

Be Alert For:

1. Easy bleeding

Liver Problems – continued

2. Yellow tint to skin, oral mucosa, and the whites of the eye.
3. Poor healing
4. Oral ulcers

Preventative / Precautions:

1. Good oral hygiene to minimize oral hygiene problems.
2. Avoidance of drugs that are toxic to the liver i.e. acetaminophen, alcohol.

Pregnancy (10 of 11)

Questions to Ask / Necessary Information:

1. What month of pregnancy are you in?
2. Have there been any complications?
3. Have you had complications with prior pregnancies?

Diagnostic Tests:

None. Patient will make the diagnosis.

Management During Dental Treatment:

1. First three months of pregnancy –
 - a) No dental treatment except emergencies.
 - b) If dental treatment rendered, minimum medications or trauma.
 - c) Educate patient about the value of good oral hygiene.
2. Second trimester and first half of third –
 - a) This is the appropriate time for all dental treatment necessary or desired during the pregnancy.
 - b) Minimize drug use including OTC drug use.
 - c) Emphasize proper periodontal care to minimize adverse pregnancy outcome
3. Last half of third trimester –
 - a) No dental treatment except emergencies
 - b) If dental treatment rendered, minimum medications or trauma.
 - c) If treatment required, be alert for supine hypotensive syndrome (allow the patient to turn on her side.)

Be Alert For:

1. Periodontal problems. Besides the patient's own risk of bone loss, severe periodontal disease has been associated with low birth weight pre-term babies. Good periodontal health is paramount to minimizing this risk.
2. Pyogenic granulomas (pregnancy gingivitis).

Pregnancy – continued

3. Minimize drug use. Even though there is little risk with most drugs, spontaneous abortions can occur and concerns about drugs used during dental procedures should not enter into concerns about why abortion occurred.

Preventative / Precautions:

1. Good home care.
2. Emphasize good nutrition. Adequate protein, folic acid supplements, and to eliminate alcohol, tobacco, and other drug use.

Prosthetic Joints (11 of 11)

These guidelines have been revised to reflect the February 2009 American Association of Orthopedic Surgeons, Antibiotic Prophylaxis for Bacteremia in Patients with Joint Replacements guidelines.

The full text of those guidelines can be found at,

<http://www.aaos.org/about/papers/advistmt/1033.asp>

(it is recommended that you read the guidelines in their entirety, it is appropriate to be fully informed and the guidelines are moderately interesting.

Please Note: Non-movable joints / bones (i.e. finger or toe bones), pins, wires, rods, bolts, screws once stabilized (greater than 6 months in place with no problems) are not covered by this protocol and there is no indication prophylactic antibiotic coverage for dental procedures would be valuable.

Questions to Ask / Necessary Information

1. Which joint has been replaced?
2. How long ago was the replacement made?
3. Why was the replacement done?
4. Do you have any medical problems including any inflammatory problems or any immunosuppression problems?
5. Do you have diabetes or any other medical problems?

Diagnostic Tests:

No diagnostic tests required.

Management During Dental Treatment:

If patient has moveable prosthetic joint replacement, then the current **American Association of Orthopedic Surgeons** guidelines state,

"Given the potential adverse outcomes and cost of treating an infected joint replacement, the AAOS recommends that clinicians consider antibiotic prophylaxis for all total joint replacement patients prior to any invasive procedure that may cause bacteremia."

DENTAL MANAGEMENT OF MEDICALLY COMPLEX PATIENTS

The new guidelines go on to note that prophylaxis is particularly important to a group of patients with risk factors for infection.

Below is Table 1 that lists the high risk groups. (It is redundant in places and all the subsequent information is negated by the first line, which notes that All patients with prosthetic joint replacement are at increased risk. But, certainly, if a patient has a prosthetic joint plus any of the other medical problems, their risk of any infection increases.)

Patients at Potential Increased Risk of Hematogenous Total Joint Infection

- All patients with prosthetic joint replacement.
- Immunocompromised/immunosuppressed patients
- Inflammatory arthropathies (e.g. rheumatoid arthritis, systemic lupus erythematosus)
- Drug- induced immunosuppression
- Radiation-induced immunosuppression
- Patients with co-morbidities (e.g.: diabetes, obesity, HIV, smoking)
- Previous prosthetic joint infections
- Malnourishment
- Hemophilia
- HIV infection
- Insulin-dependent (Type 1) diabetes
- Malignancy
- Megaprotheses

Suggested Antibiotic Regimes for "At Risk" patients (select one of these antibiotics)

Rx	Amoxicillin 500 mg
	Cephalexin 500 mg
	Cephadine 500 mg
Disp	4 tablets
Sig	Take 4 tablets (2 grams), 1 hour before procedure.

DENTAL MANAGEMENT OF MEDICALLY COMPLEX PATIENTS

Though no official recommendation is made relative to the appropriate antibiotic to use if a patient has an immediate type allergic reaction (urticaria, angioedema, anaphylaxis) to penicillin/amoxicillin (and, therefore, have a potential for a cross reacting allergy to the cephalosporins), a reasonable alternative, given the organisms found in the oral cavity, is clindamycin.

If patient Allergic to Penicillin/Amoxicillin

Rx Clindamycin 150 mg

Disp 4 tablets

Sig Take 4 tablets (600 mg), 1 hour before procedure.

Be alert for:

Pain in the joint following dental procedures. There is no specific time frame; an infection could arise at any time from any source, including a bacteremia secondary to dental procedures. The likelihood of a prosthetic joint infection secondary to dental procedures is rare. The patient should follow up any unusual discomfort within the joint with their physician.

Preventative / Precautions:

The risk of prosthetic joint infection secondary to dental procedures is very rare. It primarily occurs in unusual situations when comorbidities such as immunosuppression or other types of medical problems are present. These medical problems increase the susceptibility of any patient to any type of infection.

In the long run, the best way to minimize any possible seeding of a prosthetic joint, by bacteria in the oral cavity, is to minimize oral cavity problems through good oral hygiene.