



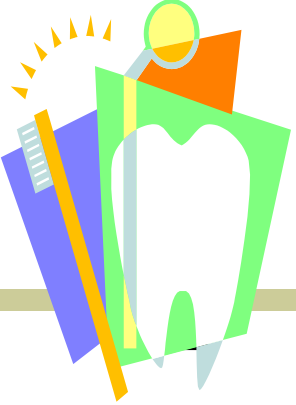
Common medical emergencies in the dental office

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Professor of emergency medicine

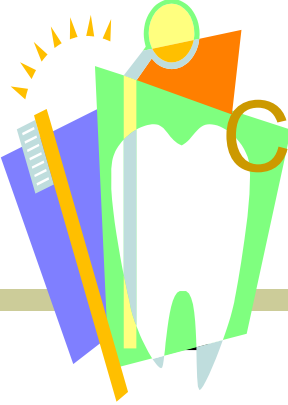
Tabriz university of medical science





Risk factors

- Increased number of older patients
- The therapeutic advances in the medical profession
- The growing trend toward longer dental appointment
- The increasing use and administration of drug in dentistry



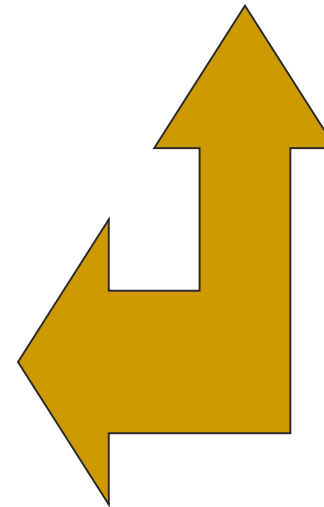
Common medical emergencies in dental office

Unconsciousness
 Vasodepressor syncope
 Orthostatic hypotension
 Acute adrenal insufficiency
Respiratory distress
Airway obstruction
Hyperventilation
Asthma (bronchospasm)
Heart failure and acute pulmonary edema
Altered consciousness
 Diabetes mellitus: hyperglycemia and hypoglycemia
 Thyroid gland dysfunction (hyperthyroidism and hypothyroidism)
 Cerebrovascular accident
Seizures
Drug-related emergencies
 Drug-overdose reactions
 Allergy
Chest pain
 Angina pectoris
 Acute myocardial infarction
Cardiac arrest and cardiopulmonary resuscitation



EMERGENCY SITUATION	NUMBER REPORTED
Syncope	15,407
Mild allergic reaction	2,583
Angina pectoris	2,552
Postural hypotension	2,475
Seizures	1,595
Asthmatic attack (bronchospasm)	1,392
Hyperventilation	1,326
"Epinephrine reaction"	913
Insulin shock (hypoglycemia)	890
Cardiac arrest	331
Anaphylactic reaction	304
Myocardial infarction	289
Local anesthetic overdose	204
Acute pulmonary edema (heart failure)	141
Diabetic coma	109
Cerebrovascular accident	68
Adrenal insufficiency	25
Thyroid storm	4
TOTAL	30,608

Emergencies in private-practice dentistry





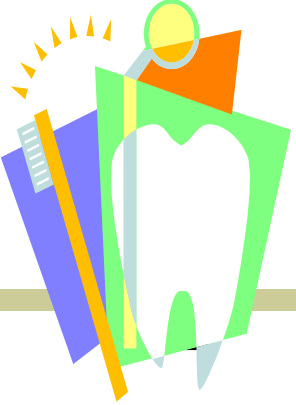
EMERGENCY SITUATION	NUMBER REPORTED
Type	
Convulsive seizures	45
Vasodepressor syncope	41
Hyperventilation	39
Hypoglycemia	24
Postural hypotension	18
Mild allergic reaction	15
Angina pectoris	14
Acute asthmatic attacks	11
Acute myocardial infarction	1
Victim	
Patient (during treatment)	129
Patient (before or after treatment)	45
Dental personnel	24
Other persons in dental office	10

Emergencies at the university of southern California school of dentistry



Goals of *physical evaluation*

1. Determine the patient's ability to **physically** tolerate the stress involved in the planned treatment.
2. Determine the patient's ability to **psychologically** tolerate the stress involved in the planned treatment.
3. Determine whether **treatment modifications** are required to enable the patient to better tolerate the stress involved in the planned treatment.
4. Determine whether the use of **psycho sedation** is warranted.
 - a. Determine which sedation technique is most appropriate.
 - b. Determine whether contraindications exist to any of the drugs to be used in the planned treatment.



Changes in geriatric patient

Central Nervous System

Decreased number of brain cells
Cerebral arteriosclerosis
CVA
Decreased memory
Emotional changes
Parkinsonism

Cardiovascular system

Coronary artery disease
Angina pectoris
Myocardial infarction
Dysrhythmias
Decreased contractility
High blood pressure
Renovascular disease
Cerebrovascular disease
Cardiac disease

Respiratory System

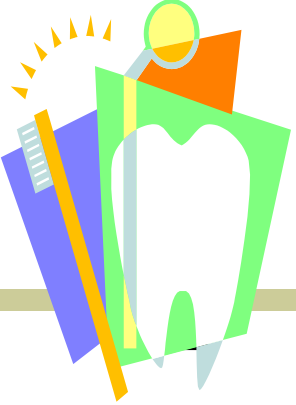
Senile emphysema
Arthritic changes in thorax
Pulmonary problems related to pollutants
Interstitial fibrosis

Genitourinary system

Decreased renal blood flow
Decreased number of functioning glomeruli
Decreased tubular reabsorption
Benign prostatic hypertrophy

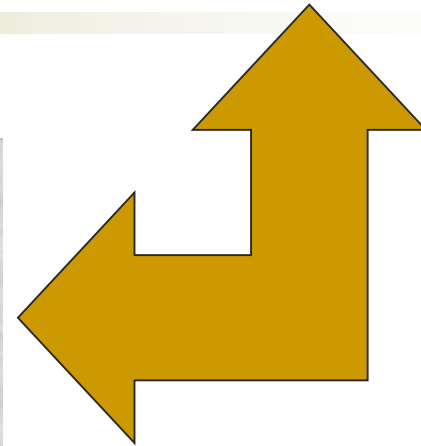
Endocrine system

Decreased response to stress
Type II-adult-onset diabetes mellitus



Pulmonary changes in patients 65 years and older

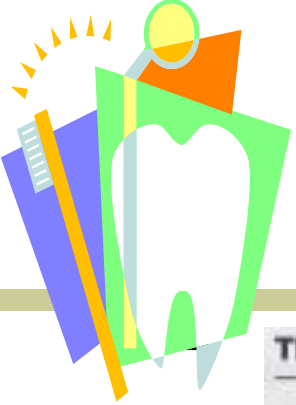
FUNCTION	PERCENTAGE COMPARED WITH CAPACITY AT AGE 30
Total lung capacity	100
Vital capacity	58
O ₂ uptake during exercise	50
Maximum breathing capacity	55



Factors increasing risk during dental treatment



Increased number of older patients
Medical advances
Drug therapy
Surgical techniques
Longer appointments
Increased drug use
Local anesthetics
Sedatives
Analgesics
Antibiotics



TIME OF COMPLICATION	%
Immediately before treatment	1.5
During or after local anesthesia	54.9
During treatment	22.0
After treatment	15.2
After leaving dental office	5.5



Occurrence of systemic complications

Treatment performed at time of complication



TREATMENT	%
Tooth extraction	38.9
Pulp extirpation	26.9
Unknown	12.3
Other treatment	9.0
Preparation	7.3
Filling	2.3
Incision	1.7
Apicoectomy	0.7
Removal of fillings	0.7
Alveolar plastics	0.3

MEDICAL HISTORY

CIRCLE

- | | | |
|---|-----|----|
| 1. Are you having pain or discomfort at this time? | YES | NO |
| 2. Do you feel very nervous about having dental treatment? | YES | NO |
| 3. Have you ever had a bad experience in a dental office? | YES | NO |
| 4. Have you been hospitalized during the past 2 years? | YES | NO |
| 5. Have you been under the care of a medical doctor during the past 2 years? | YES | NO |
| 6. Have you taken any medicine or drugs during the past 2 years? | YES | NO |
| 7. Are you allergic to (that is, experience itching, rashes, swelling of the hands, feet, or eyes) or made sick by penicillin, aspirin, codeine, or any drugs or medications? | YES | NO |
| 8. Have you ever had any excessive bleeding requiring special treatment? | YES | NO |
| 9. Circle any of the following that you have had or have at present: | | |

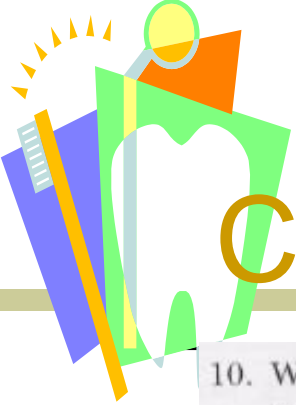
Heart Failure
Heart Disease or Attack
Angina Pectoris
High Blood Pressure
Heart Murmur
Rheumatic Fever
Congenital Heart Lesions
Scarlet Fever
Artificial Heart Valve
Heart Pacemaker

Heart Surgery
Artificial Joint
Anemia
Stroke
Kidney Trouble
Ulcers
Emphysema
Cough
Tuberculosis (TB)
Asthma

Hay Fever
Sinus Trouble
Allergies or Hives
Diabetes
Thyroid Disease
X-ray or Cobalt Treatment
Chemotherapy (Cancer, Leukemia)
Arthritis
Rheumatism
Cortisone Medicine

Glaucoma
Pain in Jaw Joints
AIDS
Hepatitis A (infectious)
Hepatitis B (serum)
Liver Disease
Yellow Jaundice
Blood Transfusion
Drug Addiction
Hemophilia

Venereal Disease
(Syphilis, Gonorrhea)
Cold Sores
Genital Herpes
Epilepsy or Seizures
Fainting or Dizzy Spells
Nervousness
Psychiatric Treatment
Sickle Cell Disease
Bruise Easily



Cont'd



- 10. When you walk up stairs or take a walk, do you ever have to stop because of pain in your chest, shortness of breath, or extreme fatigue? YES NO
- 11. Do your ankles swell during the day? YES NO
- 12. Do you use more than two pillows to sleep? YES NO
- 13. Have you lost or gained more than 10 pounds in the past year? YES NO
- 14. Do you ever awaken short of breath? YES NO
- 15. Are you on a special diet? YES NO
- 16. Has your medical doctor ever said you have a cancer or tumor? YES NO
- 17. Do you have any disease, condition, or problem not listed here? YES NO
- 18. WOMEN: Are you pregnant now? YES NO
- Are you practicing birth control? YES NO
- Do you anticipate becoming pregnant? YES NO

To the best of my knowledge, all the preceding answers are true and correct. If I ever have any change in my health, or if my medicines change, I will inform the doctor of dentistry at the next appointment without fail.

 Date

 Faculty Signature

 Signature of Patient, Parent or Guardian

MEDICAL HISTORY / PHYSICAL EVALUATION UPDATE

Date

Addition

Student/Faculty Signatures

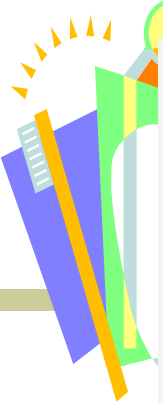
_____	_____	_____	_____
_____	_____	_____	_____



Child's Name: _____ Date of Birth: _____ Age _____ Date: _____
 Address: _____ Telephone: () _____
 Physician's name (Medical Doctor): _____ Telephone: () _____

Please circle the appropriate answer

1. Does your child have a health problem? YES NO
2. Was your child a patient in a hospital? YES NO
3. Date of last physical exam: _____
4. Is your child now under medical care? YES NO
5. Is your child taking medication now? YES NO
If so, for what? _____
6. Has your child ever had a serious illness or operation? YES NO
7. If so, explain: _____
8. Does your child have (or ever had) any of the following diseases?
 - a. Rheumatic fever or rheumatic heart disease ... YES NO
 - b. Congenital heart disease YES NO
 - c. Cardiovascular disease (heart trouble, heart attack, coronary insufficiency, coronary occlusion, high blood pressure, arteriosclerosis, stroke) YES NO
 - d. Allergy? Food , Medicine , Other .. YES NO
 - e. Asthma Hay Fever YES NO
 - f. Hives or a skin rash YES NO
 - g. Fainting spells or seizures YES NO
 - h. Hepatitis, jaundice or liver disease YES NO
 - i. Diabetes YES NO
 - j. Inflammatory rheumatism (painful or swollen joints) YES NO
 - k. Arthritis YES NO
 - l. Stomach ulcers YES NO
 - m. Kidney trouble YES NO
 - n. Tuberculosis (TB) YES NO
 - o. Persistent cough or cough up blood YES NO
 - p. Venereal disease YES NO
 - q. Epilepsy YES NO
13. Has he/she ever required a blood transfusion? YES NO
14. Does he/she have any blood disorders such as anemia, etc? YES NO
15. Has he/she ever had surgery, x-ray or chemotherapy for a tumor, growth, or other condition? YES NO
16. Does your child have a disability that prevents treatment in a dental office? YES NO
17. Is he/she taking any of the following?
 - a. Antibiotics or sulfa drugs YES NO
 - b. Anticoagulants (blood thinners) YES NO
 - c. Medicine for high blood pressure YES NO
 - d. Cortisone or steroids YES NO
 - e. Tranquilizers YES NO
 - f. Aspirin YES NO
 - g. Dilantin or other anticonvulsant YES NO
 - h. Insulin, tolbutamide, Orinase, or similar drug ... YES NO
 - i. Any other? _____
18. Is he/she allergic to, or has he/she ever reacted adversely to, any of the following?
 - a. Local anesthetics YES NO
 - b. Penicillin or other antibiotics YES NO
 - c. Sulfa drugs YES NO
 - d. Barbiturates, sedatives, or sleeping pills YES NO
 - e. Aspirin YES NO
 - f. Any other? _____
19. Has he/she any serious trouble associated with any previous dental treatment? YES NO
If so, please explain: _____
20. Has your child been in any situation which could expose



- q. Epilepsy YES NO
- r. Sickle Cell disease YES NO
- s. Thyroid disease YES NO
- t. AIDS YES NO
- u. Emphysema YES NO
- v. Psychiatric treatment YES NO
- w. Cleft lip/palate YES NO
- x. Cerebral palsy YES NO
- y. Mental retardation YES NO
- z. Hearing disability YES NO
- aa. Developmental disability YES NO
If yes, explain: _____
- bb. Was your child premature? YES NO
If yes, how many weeks _____
- cc. Other: _____
- 9. Does your child have to urinate (pass water) more than six times a day? YES NO
- 10. Is your child thirsty much of the time? YES NO
- 11. Has your child had abnormal bleeding associated with previous surgery, extractions or accidents? YES NO
- 12. Does he/she bruise easily? YES NO

- 20. Has your child been in any situation which could expose him/her to x-rays or other ionizing radiators? YES NO
- 21. Last date of dental examination: _____
- 22. Has he/she ever had orthodontic treatment (worn braces)? YES NO
- 23. Has he/she ever been treated for any gum diseases (gingivitis, periodontitis, trenchmouth, pyorrhea)? YES NO
- 24. Does his/her gums bleed when brushing teeth? YES NO
- 25. Does he/she grind or clench teeth? YES NO
- 26. Has he/she often had toothaches? YES NO
- 27. Has he/she had frequent sores in his/her mouth? .. YES NO
- 28. Has he/she had any injuries to his/her mouth or jaws? YES NO
If yes, explain: _____
- 29. Does he/she have any sores or swellings of his/her mouth or jaws? YES NO
- 30. Have you been satisfied with your child's previous dental care? YES NO

ADOLESCENT WOMEN:

- 31. Are you pregnant now, or think you may be? YES NO
- 32. Do you anticipate becoming pregnant? YES NO
- 33. Are you taking the Pill? YES NO

To the best of my knowledge, all of the preceding answers are true and correct. If my child ever has a change in his/her health or his/her medicines change, I will inform the doctor at the next appointment without fail.

Parent's Signature: _____ Date _____

MEDICAL HISTORY / PHYSICAL EXAMINATION REVIEW

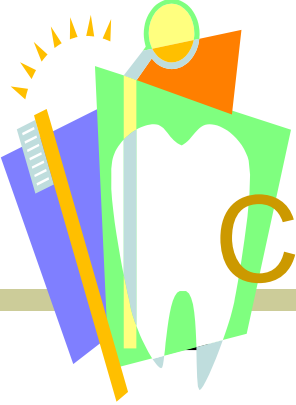
Date	Addition	Student/Faculty Signatures
_____	_____	_____
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Dental drug interactions



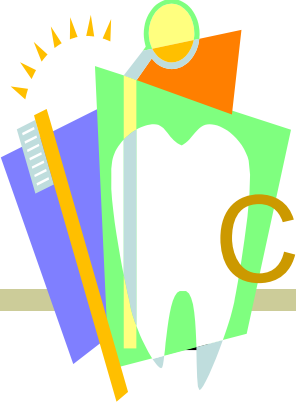
DENTAL DRUG	INTERACTING AGENTS	RESULTING EFFECT
Anesthetics, general	Antidepressants Antihypertensives	Hypotension Hypotension
Antihistamines	Alcohol Phenothiazine (Compazine, Thorazine)	CNS depression Increased sedation
Anticholinergics (atropine)	Antihistamines Levodopa Phenothiazine (Compazine, Thorazine) Antidepressants, tricyclic (Vivactil, Surmontil, Tofranil)	Increased anticholinergic effect Increased anticholinergic effect Increased anticholinergic effect
Barbiturates	Alcohol Anticoagulants, oral Antidepressants, tricyclic (Vivactil, Surmontil, Tofranil) β -Adrenergic blockers (Lopressor, Inderal) Corticosteroids Digitoxin (digitalis) Doxycycline Griseofulvin (Fulvicin, Grisactin, Grifulvin, Grivate) Phenothiazine Quinidine Rifampin	Enhanced sedation, increased Decreased anticoagulant effect Decreased antidepressant effect Decreased β -blocker effect Decreased steroid effect Decreased digitoxin effect Decreased doxycycline effect Decreased griseofulvin effect Decreased phenothiazine effect Decreased quinidine effect Decreased barbiturate effect
Benzodiazepines	Alcohol Barbiturates	Enhanced sedation Enhanced sedation increased respiratory depression



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Carbamazepine	Anticoagulants, oral Doxycycline Propoxyphene	Decreased anticoagulant effect Decreased doxycycline effect Increased carbamazepine effect
Cephalosporin antibiotics	Aminoglycoside antibiotics Ethacrynic acid Furosemide	Increased nephrotoxicity Increased nephrotoxicity Increased nephrotoxicity
Clindamycin	Curariform drugs Lomotil	Neuromuscular blockade Increased diarrhea, colitis
Corticosteroids	Barbiturates Ephedrine Phenytoin Rifampin	Decreased corticosteroid effect Decreased dexamethasone effect Decreased corticosteroid effect Decreased corticosteroid effect
Erythromycin	Lincomycin	Decreased antimicrobial effect
Fluoride	Aluminum hydroxide	Decreased fluoride absorption



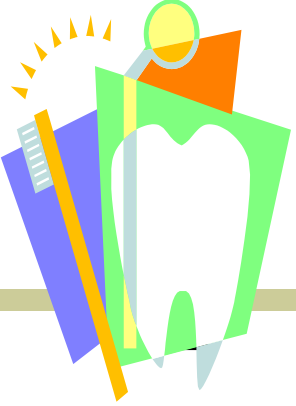
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DENTAL DRUG	INTERACTING AGENTS	RESULTING EFFECT
Lincomycin	Curariform drugs	Neuromuscular blockade
	Kaolin, pectin	Decreased lincomycin effect
	Diphenoxylate-atropine and similar products (Lomotil, Latropine)	Increased diarrhea, colitis
Meperidine	Barbiturates	Increased CNS depression
	Curariform drugs	Increased respiratory depression
Furoxone matulate	MAO inhibitors (Marplan, Nardil, Parnate)	Hypertension
Phenothiazine	Alcohol	Increased sedation (promethazine)
	Guanethidine	Decreased phenothiazine effect
	Levodopa	Decreased levodopa effect
	Lithium	Decreased phenothiazine effect
Propoxyphene	Alcohol	Increased respiratory depression
	Carbamazepine	Increased carbamazepine effect
	Curariform drugs	Increased respiratory depression



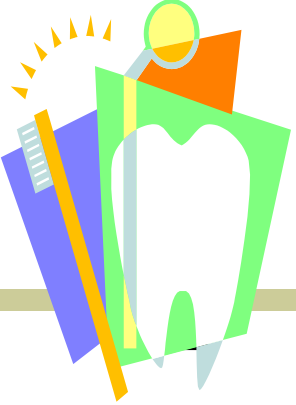
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Salicylates (aspirin)	Acetazolamide Antacids Anticoagulants, oral Dipyridamole Hypoglycemics Methotrexate Probenecid	Increased salicylate CNS toxicity Decreased salicylate levels Increased bleeding risk Increased effect on platelet function Increased hypoglycemia Increased methotrexate toxicity Decreased uricosuric effect
Sympathomimetic amines (epinephrine, phenylephrine, nordefrin)	Antidepressants, tricyclic (Vivactil, Surmontil, Tofranil) Antihypertensive drugs β -Adrenergic blockers (Lopressor, Inderal) Halogenated anesthetics Digitalis drugs Indomethacin	Hypertension, hypertensive crisis Decreased hypertensive effect Hypertension with epinephrine Cardiac dysrhythmias Tendency for cardiac dysrhythmias Severe hypertension
Tetracycline	MAO inhibitors (Marplan, Nardil, Parnate) Antacids Barbiturates Bismuth subsalicylate Carbamazepine Iron, oral Methoxyflurane Milk and dairy products Phenytoin Zinc sulfate	Hypertensive crisis Decreased tetracycline effect Decreased doxycycline effect Decreased tetracycline effect Decreased doxycycline effect Decreased tetracycline effect Increased nephrotoxicity Decreased tetracycline effect Decreased doxycycline effect Decreased tetracycline effect



Anxiety questionnaire

1. If you had to go to the dentist tomorrow, how would you feel about it?
 - a. I would look forward to it as a reasonably enjoyable experience.
 - b. I would not care one way or the other.
 - c. I would be very uneasy about it.
 - d. I would be afraid that it would be unpleasant and painful.
 - e. I would be very frightened of what the dentist might do.
2. When you are waiting in the dentist's office for your turn in the chair, how do you feel?
 - a. Relaxed
 - b. A little uneasy
 - c. Tense
 - d. Anxious
 - e. So anxious that I almost break out in a sweat or almost feel physically sick
3. When you are in the dentist's chair waiting for him or her to get the drill ready and begin working on your teeth, how do you feel?
 - a. Relaxed
 - b. A little uneasy
 - c. Tense
 - d. Anxious
 - e. So anxious that I almost break out in a sweat or almost feel physically sick
4. You are in the dentist's chair to have your teeth cleaned. While you are waiting and the dentist is getting out the instruments with which to scrape your teeth around the gums, how do you feel?
 - a. Relaxed
 - b. A little uneasy
 - c. Tense
 - d. Anxious
 - e. So anxious that I almost break out in a sweat or almost feel physically sick
5. In general, do you feel uncomfortable or nervous about receiving dental treatment?
 - a. Yes
 - b. No



Clinical signs of moderate anxiety



Reception area

Questions to receptionist regarding injections or use of sedation

Nervous conversations with other patients in waiting room

History of emergency dental care only

History of canceled appointments for nonemergency treatment

Cold, sweaty palms

In dental chair

Unnaturally stiff posture

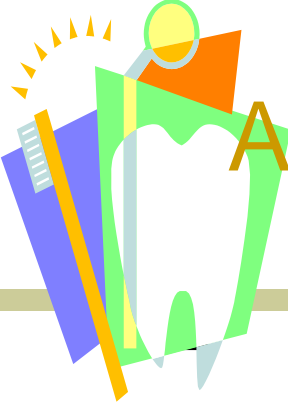
Nervous play with tissue or handkerchief

White-knuckle syndrome

Perspiration on forehead and hands

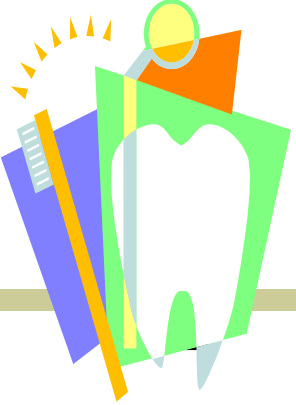
Overwillingness to cooperate with doctor

Quick answers



ASA physical status classification system

- **ASA I:** A normal, healthy patient without systemic disease
- **ASA II:** A patient with mild systemic disease
- **ASA III:** A patient with severe systemic disease that limits activity but is not incapacitating
- **ASA IV:** A patient with incapacitating systemic disease that is a constant threat to life
- **ASA V:** A morbid patient not expected to survive 24hour with or without an operation
- **ASA E:** emergency operation of any variety, with E preceding the number to indicate the patient's physical status (e.g.:ASA E-III)



Dental referral letter

Dear Doctor:

The patient who bears this note is undergoing long-term chronic hemodialysis treatment because of chronic kidney disease. In providing dental care to this patient, please observe the following precautions:

1. Dental treatment is most safely done 1 day after the last dialysis treatment or at least 8 hours thereafter. Residual heparin may make hemostasis difficult. (Some patients are on long-term anticoagulant therapy.)
2. We are concerned about bacteremic seeding of the arteriovenous shunt devices and heart valves. We recommend prophylactic antibiotics before and after dental treatment.

Antibiotic selection and dosage can be tricky in renal failure. We recommend 3 g of amoxicillin 1 hour before the procedure and 1.5 g 6 hours later. For patients with penicillin allergies, 1 g of erythromycin 1 hour before the procedure and 500 mg 6 hours later is recommended.

Sincerely,