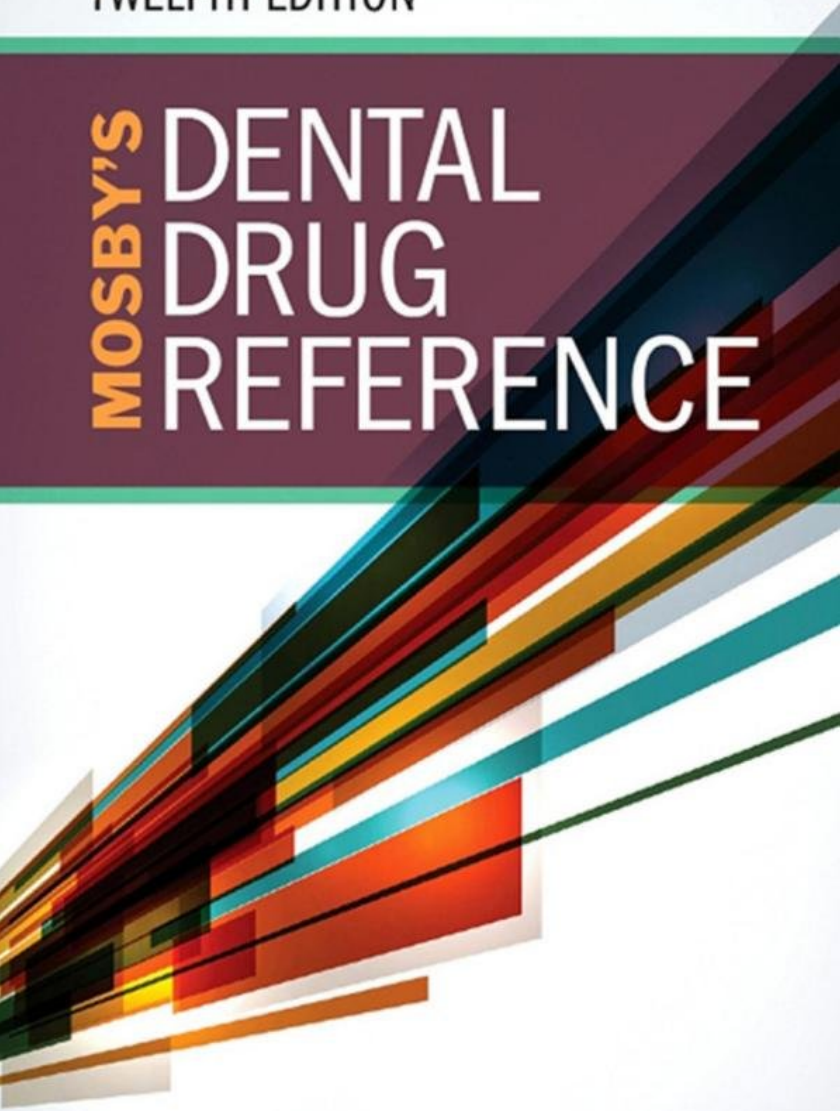
TWELFTH EDITION

MOSBY'S DENTAL DRUG REFERENCE



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Preface

This twelfth edition of ***Mosby's Dental Drug Reference*** represents Elsevier's commitment to providing comprehensive and current information on prescription drugs and recommendations for the care of the dental patients who take them. As in past editions, new individual drugs as well as new drug classes are included in this concise reference book, which is designed to address the need of oral health care practitioners and educators for readily accessible and up-to-date drug information and guidance for the dental management of medically compromised patients. This edition incorporates many of the features of past editions, and it now contains updated information on monoclonal antibodies and other biologically targeted agents, in addition to many new monographs for 21st-century drugs used in the management of diabetes, cardiovascular disease, and cancer.

A DETAILED GUIDE TO *MOSBY'S DENTAL DRUG REFERENCE,* TWELFTH EDITION

Mosby's Dental Drug Reference provides essential drug information in a user-friendly format. The bulk of this handbook contains an alphabetical listing of drug entries by generic name. Drug entries include the following:

Generic and Brand Names. Drug entries begin with the generic drug name, followed by its pronunciation and its U.S., Canadian, and Australian brand names.

Category and Schedule. This section lists the drug's pregnancy risk category and, when appropriate, its controlled substance schedule or over-the-counter (OTC) status.

Mechanism of Action. This section clearly and concisely describes the drug's mechanism of action and therapeutic effects.

Pharmacokinetics. Under this heading, a quick-reference chart outlines the drug's route, onset, peak, and duration, when known. This information is followed by a brief description of the drug's absorption, distribution, metabolism, excretion, and half-life.

Indications and Dosages. Here, you'll find the approved indications and routes, along with age-appropriate dosage information and, for selected agents, dosage adjustments for preexisting conditions, such as liver or kidney disease.

Precautions/Contraindications. Using a practice-oriented format and written specifically for dentistry, this section presents precautions and considerations for each drug entry. Each entry lists conditions in which use of the generic drug is contraindicated.

Interactions. For drugs, herbal supplements, and food, this section supplies vital information about adverse interactions of the medical drug with drugs prescribed in dentistry.

Adverse Effects. Unlike other handbooks that mix more common adverse effects with rare, minor ones in a long, undifferentiated list, this book ranks side effects by frequency of occurrence, indicating expected, frequent, occasional, and rare.

Serious Reactions. Because serious adverse reactions can be life-threatening emergencies that require prompt intervention, this section highlights them separately from other side effects for easy identification.

Mosby's Dental Drug Reference*, Twelfth Edition,** is an easy-to-use source of current drug information for a wide spectrum of dental care providers. When it comes to providing quality patient care, all members of the dental team can rely on the twelfth edition of ***Mosby's Dental Drug Reference for current, dentally relevant information presented in an easy-to-use format. As you use the book, please keep in mind the following:

- The majority of the monographs are descriptions of drugs that are utilized on an outpatient basis and are, therefore, more likely to be encountered in dental practice. Vaccines, biologicals, and medications used only intraoperatively in hospitalized patients are generally not included, and the reader is referred to other resources for this information.
- The Evolve website (http://evolve.elsevier.com/Jeske/dental/) can be consulted for updates and new information pertinent to this text.
- Several important "Dental Considerations" are relevant to all of the drugs described in the monographs, including the following:
  1. The use of a prescription medication indicates the presence of a medical condition that is being managed by one or more physicians. The physical status of the patient and his or her ability to tolerate dental treatment must be determined.
  2. In collaboration with the treating physician(s), the physician, not the dentist, should guide all decisions related to changes in the use of prescription drugs for medical conditions.
  3. Vital signs and/or other assessments should be determined at every dental treatment visit, as appropriate and as indicated; many drugs used for systemic conditions result in adverse oral conditions, such as xerostomia. Strict attention must be paid to the prevention of negative outcomes of these conditions, particularly caries and periodontal disease; education of the patient and the patient's family about his or her medications should be reinforced by the dental team, particularly as it relates to the prevention of oral complications of medication use.
  4. This text does not constitute advice about the dental management of specific patients, each of whom must be evaluated individually using all pertinent diagnostic information, and the monographs contained in this book do not constitute full prescribing information for the drugs.

In the production of the book, we have endeavored to make it as current and relevant as possible while emphasizing the busy oral health care provider's need for rapid access and dentally relevant information. On behalf of the Editor-in-Chief and Elsevier, we proudly thank our reviewers, Ruth Fearing Tornwall, RDH, MS, Lamar Institute of Technology; Lincoln Edwards, DDS, PhD, University of Texas Health Science Center; and Demetra Logothetis, RDH, MS, University of New Mexico, and our monograph content contributors, Meera K. Shah, PharmD, AAHIVP, and Thomas Viola, RPh, CCP, for their expertise and contributions. Finally, this edition is respectfully dedicated to the teachers and practitioners of dentistry, dental hygiene, and dental assisting around the world whose application of the book for students and patients continues to inspire our work.

Internet References for Additional Drug Information and Professional Guidelines

1. ADA Center for Evidence-Based Dentistry: http://ebd.ada.org/ (library of oral health systematic reviews and critical summaries of systematic reviews of dental topics)
2. Cochrane Library Oral Health Group: http://www.ohg.cochrane.org/ (library of systematic reviews of randomized controlled trials only)
3. American Heart Association: http://circ.ahajournals.org/cgi/content/full/116/15/1736 (complete publication on antibiotic prophylaxis to prevent infective endocarditis)
4. Global RPh: http://www.globalrph.com/corticocalc.htm (calculator to convert corticosteroid supplemental dosages to equivalents of various drugs)
5. Food and Drug Administration: http://www.fda.gov/ (comprehensive information on drugs, drug safety, drug approvals, etc.)
6. American Association of Oral & Maxillofacial Surgeons (AAOMS), medication-related osteonecrosis of the jaw: http://www.aaoms.org/docs/govt_affairs/advocacy_white_papers/mronj_position_paper.pdf (AAOMS guidelines for managing medication-related osteonecrosis of the jaw)
7. University of Washington Oral Health Fact Sheets: http://www.dental.washington.edu/departments/omed/decod/special_needs_facts.php (concise information on dental care of patients with a variety of childhood and adult medical conditions)
8. American Association of Endodontists: http://www.aae.org/colleagues/ (archives of "Colleagues for Excellence" publications, guidelines on the management of endodontic patients, including antibiotic use and local anesthesia)
9. American Academy of Pediatric Dentistry: http://aapd.org/policies/ (guidelines on fluorides, local anesthesia, antibiotics, and more in pediatric dental patients, updated q. 3 yrs)
10. Guide to Diagnosis and Management of Common Oral Conditions: http://www.intechopen.com/books/diagnosis-and-management-of-oral-lesions-and-conditions-a-resource-handbook-for-the-clinician/ (open-access oral medicine reference text)

Medication-Related Osteonecrosis of the Jaw

In 2014, the American Association of Oral and Maxillofacial Surgeons (AAOMS) updated its *Position Paper on Medication-Related Osteonecrosis of the Jaw* (MRONJ), formerly termed *bisphosphonate-related osteonecrosis of the jaw* (BRONJ). This update expanded the list of drugs known to increase the risk for MRONJ to include antiangiogenic drugs (e.g., denosumab, Prolia®) and corticosteroids. The updated document provides estimates of risk for MRONJ, comparisons of the risks and benefits of medications related to osteonecrosis of the jaw, guidance for clinicians on the differential diagnosis of MRONJ, and prevention measures and management strategies for patients with disease-stage MRONJ. The complete document can be accessed at: http://www.aaoms.org/docs/govt_affairs/advocacy_white_papers/mronj_position_paper.pdf

According to this AAOMS document, medication-related risk for MRONJ is increased in cancer patients who have been exposed to zoledronate (Zometa®, Reclast®) and antiangiogenic monoclonal antibodies (e.g., denosumab) and tyrosine kinase inhibitors (e.g., sunitinib), but it is not as frequent in osteoporotic patients exposed to the same agents.

Local factors for risk of MRONJ include the following:

- Operative treatment (e.g., tooth extraction)
- Anatomic factors (e.g., mandible, denture use)
- Concomitant oral disease (e.g., inflammatory dental disease)

The position paper also provides information on genetic, demographic, and systemic factors in MRONJ and a summary of the dental management strategies for patients at risk for MRONJ, including the following:

- Extraction of nonrestorable teeth and those with a poor prognosis prior to initiation of antiresorptive/antiangiogenic therapy
- Elimination of mucosal trauma by removable prostheses
- Consultation with the patient's physician(s) to follow osteonecrosis-prevention protocols;
- Maintenance of good oral hygiene and dental care
- Avoidance of dental implant placement in oncology patients receiving intravenous antiresorptive therapy or antiangiogenic medications

For patients taking *oral* bisphosphonates (e.g., alendronate, Fosamax®), specific guidance for cases based on length of exposure to medications includes the following:

- For individuals who have taken an oral bisphosphonate for less than 4 years and have no clinical risk factors, no alteration or delay in planned oral surgery is necessary (this includes any and all procedures common to oral and maxillofacial surgeons, periodontists, and other dental providers).
- For those patients who have taken an oral bisphosphonate for less than 4 years and have also taken corticosteroids or antiangiogenic medications concomitantly, the prescribing physician should be contacted to consider discontinuation of the oral bisphosphonate (drug holiday) for at least 2 months prior to oral surgery if systemic conditions permit.
- For those patients who have taken an oral bisphosphonate for more than 4 years with or without any concomitant medical therapy, the prescribing physician should be contacted to consider discontinuation of the antiresorptive for 2 months prior to oral surgery if systemic conditions permit.

The complete AAOMS position paper should be consulted for detailed patient-care information, including management of patients with established MRONJ.

Monoclonal Antibodies and Other Biologic Drugs

Summary:
Monoclonal antibodies, anti–tumor necrosis factor (anti-TNF) agents, and other preparations are now in widespread use as immune modulators in the management of autoimmune disorders and account for a very high proportion of drug sales in the United States. Although limitations on their use include the need for injection of many of these agents, they have had a significant impact on the treatment of several important diseases, particularly rheumatoid arthritis, Crohn's disease, and more severe forms of psoriasis. They are generally large proteins that can be manufactured via recombinant DNA methodologies. The types of agents described in this section may be recognized by the suffixes of their official ("generic") names, (e.g., "-mab" indicates "monoclonal antibody," "-ib" indicates "inhibitor," etc.).

Classification:

T-cell modulators: e.g., abatacept (Orencia®)
B-cell cytotoxic agents: e.g., rituximab (Rituxan®)
IL-1 (interleukin-1) blockers: e.g., anakinra (Kineret®), rilonacept (Arcalyst®), canakinumab (Ilaris®)
Anti-IL-6 (interleukin-6) receptor antibodies: e.g., tocilizumab (Actemra®)
Janus kinase (JAK) inhibitors: e.g., tofacitinib (Xeljanz®)
TNF-α blockers: e.g., adalimumab (Humira®), certolizumab (Cimzia®), etanercept (Enbrel®), golimumab (Simponi®), infliximab (Remicade®)

DENTAL CONSIDERATIONS FOR MONOCLONAL ANTIBODIES/BIOLOGICALLY TARGETED AGENTS

General:

- Consult prescribing information for specific drug interactions.
- Patients taking biologic agents are being treated for serious systemic autoimmune disorders, which may require postponement or modification of dental care.
- Patients are at increased risk of infections because of the immunosuppressive effects of biologic agents; patients should be monitored accordingly.
- Screen for latent or active tuberculosis and opportunistic infections.
- Consult physician to assess disease status and ability of patient to tolerate dental procedures.
- Many biologic agents must be injected; injection site discomfort and acute symptoms may occur following injection (nausea, diarrhea).

Monoclonal Antibodies Approved for Use in the United States

Official Name	Trade Name(s)	Primary Indications/Uses
Abciximab	ReoPro	Adjunct for prevention of thromboembolism
Adalimumab	Humira	Rheumatoid arthritis
Alemtuzumab	Campath	Chronic lymphocytic leukemia
Basiliximab	Simulect	Anti-rejection (for renal transplantation)
Bevacizumab	Avastin	Metastatic colorectal and other tumors
Canakinumab	Ilaris	Cryopyrin-associated periodic syndromes

(Continued)

Official Name	Trade Name(s)	Primary Indications/Uses
Certolizumab	Cimzia	Rheumatoid arthritis
Cetuximab	Erbitux	Squamous cell carcinoma and other tumors
Daclizumab	Zenapax	Anti-rejection (for renal transplantation)
Denosumab	Prolia	Osteoporosis with high risk of fractures
Eculizumab	Soliris	Nocturnal hemoglobinuria
Golimumab	Simponi	Rheumatoid arthritis
Ibritumomab tiuxetan	Zevalin	Non-Hodgkin's lymphoma
Infliximab	Remicade	Rheumatoid arthritis
Ipilimumab	Yervoy	Unresectable metastatic melanoma
Muromonab	Orthoclone	Anti-rejection (for renal transplantation)
Natalizumab	Tysabri	Multiple sclerosis, Crohn's disease
Ofatumumab	Arzerra	Chronic lymphocytic leukemia
Omalizumab	Xolair	Allergic asthma
Palivizumab	Synagis	Respiratory syncytial virus
Panitumumab	Vectibix	Metastatic colorectal cancer
Ranibizumab	Lucentis	Macular degeneration
Rituximab	Rituxan	Non-Hodgkin's lymphoma
Tocilizumab	Actemra	Rheumatoid arthritis
Trastuzumab	Herceptin	Breast and gastroesophageal cancers
Ustekinumab	Stelara	Plaque psoriasis
Vedolizumab	Entyvio	Adult ulcerative colitis, Crohn's disease

Consultations:
- Consult patient's physician to determine disease status and ability of patient to tolerate dental procedure.

Teach Patient/Family to:
- Report changes in medical status and drug therapy.
- Report signs and symptoms of infections.
- Use effective oral hygiene to prevent soft tissue inflammation.

REFERENCE:

Katzung BG, Trevor AJ, editors: *Basic and Clinical Pharmacology*, ed 13, New York, 2015, McGraw-Hill.

abacavir

ah-**bah′**-cah-veer
(Ziagen)

CATEGORY AND SCHEDULE

Pregnancy Risk Category: C

Drug Class: Antiviral, nucleoside analogue

MECHANISM OF ACTION

An antiretroviral that inhibits the activity of HIV-1 reverse transcriptase by competing with the natural substrate deoxyguanosine-5′-triphosphate (dGTP) and by its incorporation into viral DNA. ***Therapeutic Effect:*** Inhibits viral DNA growth.

USES

Used in combination with other antiviral drugs for treatment of HIV-1 infection

PHARMACOKINETICS

Rapidly and extensively absorbed after PO administration. Protein binding: 50%. Widely distributed, including to CSF and erythrocytes. Metabolized in the liver to inactive metabolites. Primarily excreted in urine. Unknown if removed by hemodialysis. ***Half-life:*** 1.5 hr.

INDICATIONS AND DOSAGES

▸ **HIV Infection (in combination with other antiretrovirals)**

PO

Adults. 300 mg twice a day.

Children (3 mo–16 yr). 8 mg/kg twice a day. Maximum: 300 mg twice a day.

▸ **Dosage in Hepatic Impairment**

Mild Impairment. 200 mg twice a day.

Moderate to Severe Impairment. Not recommended.

SIDE EFFECTS/ADVERSE REACTIONS

Adults

Frequent

Nausea, nausea with vomiting, diarrhea, decreased appetite

Occasional

Insomnia

Children

Frequent

Nausea with vomiting, fever, headache, diarrhea, rash

Occasional

Decreased appetite

PRECAUTIONS AND CONTRAINDICATIONS

Hypersensitivity to abacavir or its components

Caution:

Breast-feeding, bone marrow depression, renal or hepatic impairment, use with other antivirals to avoid emergence of resistant viruses, avoid alcohol use

DRUG INTERACTIONS OF CONCERN TO DENTISTRY

- None reported

SERIOUS REACTIONS

! A hypersensitivity reaction may be life threatening. Signs and symptoms include fever, rash, fatigue, intractable nausea and vomiting, severe diarrhea, abdominal pain, cough, pharyngitis, and dyspnea.

! Life-threatening hypotension may occur.

! Lactic acidosis and severe hepatomegaly may occur.

DENTAL CONSIDERATIONS

General:
• Examine for oral manifestation of opportunistic infection.
• Patient on chronic drug therapy may rarely have symptoms of blood dyscrasias, which include infection, bleeding, and poor healing.
• Avoid dental light in patient's eyes; offer dark glasses for patient comfort.
• Place on frequent recall because of oral side effects.
• Consider semisupine chair position for patient comfort if GI side effects occur.

Consultations:
• In a patient with symptoms of blood dyscrasias, request a medical consultation for blood studies and postpone treatment until normal values are reestablished.
• Medical consultation may be required to assess disease control.

Teach Patient/Family to:
• Encourage effective oral hygiene to prevent soft tissue inflammation.
• Prevent trauma when using oral hygiene aids.
• Be alert for the possibility of secondary oral infection and the need to see dentist immediately if signs of infection occur.

abarelix

ah-**bar′**-eh-lix
(Plenaxis)

CATEGORY AND SCHEDULE

Pregnancy Risk Category: X

Drug Class: Antineoplastic

MECHANISM OF ACTION

A luteinizing hormone-releasing hormone (LHRH) antagonist that inhibits gonadotropin and androgen production by blocking gonadotropin releasing-hormone receptors in the pituitary.
Therapeutic Effect: Suppresses luteinizing hormone, follicle-stimulating hormone secretion, reducing the secretion of testosterone by the testes.

USES

Treatment of breast cancer, endometrium, and prostate

PHARMACOKINETICS

Slowly absorbed following intramuscular administration. Distributed extensively. Protein binding: 96%–99%. ***Half-life:*** 13.2 days.

INDICATIONS AND DOSAGES

▸ Prostate Cancer

IM

Adults, Elderly. 100 mg on days 1, 15, and 29 and every 4 wk thereafter. Treatment failure can be detected by obtaining serum testosterone concentration prior to abarelix administration, day 19 and every 8 wk thereafter.

SIDE EFFECTS/ADVERSE REACTIONS

Frequent
Hot flashes, sleep disturbances, breast enlargement

Occasional
Breast pain, nipple tenderness, back pain, constipation, peripheral edema, dizziness, upper respiratory tract infection, diarrhea

Rare
Fatigue, nausea, dysuria, micturition frequency, urinary retention, UTI

PRECAUTIONS AND CONTRAINDICATIONS
This drug should not be used in women and children.

DRUG INTERACTIONS OF CONCERN TO DENTISTRY
• None reported.

SERIOUS REACTIONS
! Immediate-onset systemic allergic reaction characterized by hypotension, urticaria, pruritus, periorbital and/or circumoral edema, shortness of breath, wheezing, and syncope may occur.
! Prolongation of the QT interval may occur. Tightening of throat, tongue swelling, wheezing, shortness of breath, and low blood pressure occur rarely.

DENTAL CONSIDERATIONS
General:
• If additional analgesia is required for dental pain, consider alternative analgesics (NSAIDs) in patients taking opioids for acute or chronic pain.
• This drug may be used in the hospital or on an outpatient basis. Confirm the patient's disease and treatment status.
Consultations:
• Medical consultation may be required to assess disease control and patient's ability to tolerate stress.
Teach Patient/Family to:
• Encourage effective oral hygiene to prevent soft tissue inflammation.
• Prevent trauma when using oral hygiene aids.
• Update health and medication history if physician makes any changes in evaluation or drug regimens; include OTC, herbal, and nonherbal remedies in the update.

abatacept
ah-**bat′**-ah-cept
(Orencia)

CATEGORY AND SCHEDULE
Pregnancy Risk Category: C

Drug Class: Antirheumatic, disease modifying

MECHANISM OF ACTION
Selective costimulation modulator; inhibits T-cell activation by binding to CD80 and CD86 on antigen presenting cells, thus blocking the required CD28 interaction and inhibiting autoimmune T-cell activation.

USES
Rheumatoid arthritis (RA), second-line reduction of signs and symptoms of moderate-to-severe active RA, monotherapy or in combination with other disease-modifying antirheumatic drugs (DMARDs) (e.g., methotrexate). Juvenile idiopathic arthritis, moderate-to-severe active.

PHARMACOKINETICS
Absorbed completely following parenteral administration. Distribution: 0.02–0.13 L/kg. ***Half-life***: 13 days (8–25 days).

INDICATIONS AND DOSAGES
▸ Rheumatoid Arthritis (moderate to severe) in patients who have had an inadequate response to one or more disease-modifying antirheumatic drugs

IV
Adults. Dose is according to body weight. Administer over a 30-min infusion. Repeat dose at 2 and 4 wk after initial dose, and every 4 wk thereafter:
- <60 kg: 500 mg
- 60–100 kg: 750 mg
- >100 kg: 1000 mg

Children. Juvenile idiopathic arthritis (moderate to severe), active, polyarticular.
IV Infusion
Children (6 yr and older; weighing less than 75 kg). 10 mg/kg given by IV infusion over 30 min; repeat doses at 2 and 4 wk after first infusion and every 4 wk thereafter.

▸ **Juvenile Idiopathic Arthritis (moderate to severe), active, polyarticular**
IV Infusion
Children (6 yr and older; weighing 75–100 kg). 750 mg given by IV infusion over 30 min; repeat doses at 2 and 4 wk after first infusion and every 4 wk thereafter (MAX dose, 1000 mg).

▸ **Juvenile Idiopathic Arthritis (moderate to severe), active, polyarticular**
IV Infusion
Children (6 yr and older; weighing more than 100 kg). 1000 mg given by IV infusion over 30 min; repeat doses at 2 and 4 wk after first infusion and every 4 wk thereafter (MAX dose, 1000 mg).
Safety and efficacy not established in children less than 6 yr of age.
Screen for tuberculosis (TB) and hepatitis before initiating therapy.

SIDE EFFECTS/ADVERSE REACTIONS

Frequent
Infection, antibody formation, headache, dizziness, nasopharyngitis

Occasional
Nausea, hypertension, fever, urinary tract infection, cough, back pain

PRECAUTIONS AND CONTRAINDICATIONS

Hypersensitivity to abatacept or any component of the formulation.
Tuberculosis (TB), active or latent; initiate treatment for TB prior to initiating abatacept therapy.
Hepatitis B reactivation has been associated with abatacept therapy; screen for viral hepatitis before initiating abatacept therapy.
Use with caution in patients with chronic obstructive pulmonary disease (COPD) because of worsening of breathing, COPD exacerbations, cough, and dyspnea.

DRUG INTERACTIONS OF CONCERN TO DENTISTRY

- None reported

SERIOUS REACTIONS

! Infections: should be cautious when considering the use of abatacept in patients with a history of recurrent infection, underlying conditions that may increase risks of infections, or chronic, localized infections. These patients should be monitored closely. If a patient develops a serious infection, the treatment should be discontinued.
! Anaphylaxis/hypersensitivity reaction may occur.

DENTAL CONSIDERATIONS

General:
- Examine for oral manifestation of opportunistic infection.
- Monitor vital signs at every appointment because of cardiovascular side effects.
- Consider semisupine chair position for patients with respiratory disease.

Consultations:
• Consult physician to assess disease control and ability of patient to tolerate dental treatment.
Teach Patient/Family to:
• Encourage effective atraumatic oral hygiene measures to prevent soft-tissue inflammation.
• Use soft toothbrush to reduce risk of bleeding.
• Immediately report any sign of infection to the dentist.
• Use powered toothbrush if patient has difficulty holding conventional devices.

abciximab

ab-**six′**-ih-mab
(c7E3 Fab, ReoPro)

CATEGORY AND SCHEDULE

Pregnancy Risk Category: C

Drug Class: Glycoprotein IIb/IIIa receptor inhibitor

MECHANISM OF ACTION

A glycoprotein IIb/IIIa receptor inhibitor that rapidly inhibits platelet aggregation by preventing the binding of fibrinogen to GP IIb/IIIa receptor sites on platelets.
Therapeutic Effect: Prevents closure of treated coronary arteries. Prevents acute cardiac ischemic complications.

USES

Adjunct to aspirin and heparin therapy to prevent cardiac ischemic complications in patients undergoing percutaneous coronary intervention and those with unstable angina not responding to conventional medical therapy.

PHARMACOKINETICS

Rapidly cleared from plasma. Initial-phase half-life is less than 10 min; second-phase half-life is 30 min. Platelet function generally returns within 48 hr.

INDICATIONS AND DOSAGES

▸ **Percutaneous Coronary Intervention (PCI)**
IV Bolus
Adults. 0.25 mg/kg 10–60 min before angioplasty or atherectomy, then 12-hr IV infusion of 0.125 mcg/kg/min. Maximum: 10 mcg/min.

▸ **PCI (unstable angina)**
IV Bolus
Adults. 0.25 mg/kg, followed by 18- to 24-hr infusion of 10 mcg/min, ending 1 hr after procedure.

SIDE EFFECTS/ADVERSE REACTIONS

Frequent
Nausea, hypotension
Occasional
Vomiting
Rare
Bradycardia, confusion, dizziness, pain, peripheral edema, UTI

PRECAUTIONS AND CONTRAINDICATIONS

Active internal bleeding, arteriovenous malformation or aneurysm, cerebrovascular accident (CVA) with residual neurologic defect, history of CVA (within the past 2 yr) or oral anticoagulant use within the past 7 days unless PT is less than 1.2 times control, history of vasculitis, intracranial neoplasm, prior IV dextran use before or during PTCA, recent surgery or trauma (within the past 6 wk), recent (within the past 6 wk or less) GI or GU bleeding, thrombocytopenia (less than 100,000 cells/mcl), and severe uncontrolled hypertension.

DRUG INTERACTIONS OF CONCERN TO DENTISTRY
• Increased risk of bleeding: drugs that interfere with coagulation or platelet function, such as NSAIDs and aspirin.

SERIOUS REACTIONS
! Major bleeding complications may occur. If complications occur, stop the infusion immediately.
! Hypersensitivity reaction may occur.
! Atrial fibrillation or flutter, pulmonary edema, and complete atrioventricular block occur occasionally.

DENTAL CONSIDERATIONS
General:
• Monitor vital signs at every appointment because of cardiovascular side effects.
• For use in hospitals or emergency rooms.
• Review patient's medical and drug history.
• Provide palliative emergency dental care only during drug use.
• Patients may be at risk of bleeding; check for oral signs.
Consultations:
• Medical consultation may be required to assess disease control and patient's ability to tolerate stress.
• Medical consultation should include routine blood counts including platelet counts and bleeding time.
• Avoid products that affect platelet function, such as aspirin and NSAIDs.
Teach Patient/Family to:
• Encourage effective oral hygiene to prevent soft tissue inflammation.
• Prevent trauma when using oral hygiene aids.
• Report oral lesions, soreness, or bleeding to dentist.
• Update health and medication history if physician makes any changes in evaluation or drug regimens; include OTC, herbal, and nonherbal remedies in the update.
• Use soft toothbrush to reduce risk of bleeding.

absorbable gelatin sponge
(Gelfoam)

CATEGORY AND SCHEDULE
Hemostatic

Drug Class: Hemostatic, purified gelatin sponge

MECHANISM OF ACTION
Absorbs blood, provides area for clot formation

USES
Hemostasis adjunct in dental surgery

PHARMACOKINETICS
IMPLANT: Absorbed in 4–6 wk

INDICATIONS AND DOSAGES
Dental Use
Adult. Top can be applied dry or moistened with normal saline solution; blot on sterile gauze to remove excess solution, shape to fit with light finger compression; hold pressure until dry. Apply to bleeding surfaces. Material may be cut to appropriate size or secured in extraction sites with sutures.

SIDE EFFECTS/ADVERSE REACTIONS
None reported

PRECAUTIONS AND CONTRAINDICATIONS

Hypersensitivity, frank infection

Caution:

Avoid use in presence of infection, potential nidus of infection, do not resterilize product.

DENTAL CONSIDERATIONS

Teach Patient/Family to:

• Immediately report any sign of infection to the dentist.

acamprosate calcium

ah-kam′-**proe**-sate

(Campral)

CATEGORY AND SCHEDULE

Pregnancy Risk Category: C

Drug Class: Alcohol-abuse deterrent

MECHANISM OF ACTIONS

Actual mechanism unknown; may facilitate balance between GABA and glutamate neurotransmitter systems in the CNS to decrease alcohol craving.

USES

Alcohol-abuse deterrent

PHARMACOKINETICS

Partially absorbed from GI tract, steady-state levels reached within 5 days of dosing. Protein binding negligible. ***Half-life:*** 20–33 hr. Does not undergo metabolism; excreted unchanged in urine.

INDICATIONS AND DOSAGES

▸ Maintenance of Alcohol Abstinence

PO

Adult. 666 mg 3 times a day with or without food.

SIDE EFFECTS/ADVERSE REACTIONS

Oral: Dry mouth

CNS: Headache, somnolence, decreased libido, amnesia, abnormal thinking, tremor

CV: Palpitation, syncope, vasodilation, changes in B/P

GI: Vomiting, dyspepsia, constipation, increased appetite

RESP: Rhinitis, cough, dyspnea, pharyngitis, bronchitis

GU: Impotence

EENT: Abnormal vision, taste alterations

INTEG: Rash

MS: Myalgia, arthralgia

SYST: Back pain, infection, flu syndrome, chest pain, chills, attempts at suicide (see Precautions)

PRECAUTIONS AND CONTRAINDICATIONS

Hypersensitivity, severe renal impairment

Caution:

Renal impairment, depression/suicidal tendency

DRUG INTERACTIONS OF CONCERN TO DENTISTRY

• None reported

DENTAL CONSIDERATIONS

General:

• Assess salivary flow as a factor in caries, periodontal disease, and candidiasis.

• After supine positioning, allow patient to sit upright for 2 min to avoid orthostatic hypotension.

• Avoid alcohol-containing products (elixirs, mouth rinses) to assist maintenance of alcohol abstinence.

Consultations:

• Consult physician to assess disease control.

Teach Patient/Family to:

• Encourage effective oral hygiene to prevent caries and periodontal disease.

• When chronic dry mouth occurs, advise patient to:

  • Use sugarless gum, frequent sips of water, and saliva substitutes.

  • Use home fluoride products for anticaries effect.

  • Avoid mouth rinses with high alcohol content because of drying effects.

acarbose

ah-**car′**-bose

(Glucobay[AUS], Prandase[CAN], Precose)

Do not confuse Precose with PreCare.

CATEGORY AND SCHEDULE

Pregnancy Risk Category: B

Drug Class: Oral antidiabetic

MECHANISM OF ACTION

An alpha-glucosidase inhibitor that delays glucose absorption and digestion of carbohydrates, resulting in a smaller rise in blood glucose concentration after meals.

Therapeutic Effect: Lowers postprandial hyperglycemia.

USES

Use as single drug or in combination with insulin or oral hypoglycemics (sulfonylureas, metformin) in type 2 diabetes (non–insulin-dependent diabetes mellitus [NIDDM]) when diet control is ineffective in controlling blood glucose levels.

PHARMACOKINETICS

PO

Limited oral absorption, absorbed dose excreted in urine, metabolized in the GI tract, and major portion of dose excreted in feces.

INDICATIONS AND DOSAGES

▸ Diabetes Mellitus

PO

Adults, Elderly. Initially, 25 mg 3 times a day with first bite of each main meal. Increase at 4- to 8-wk intervals. Maximum: For patients weighing more than 60 kg, 100 mg 3 times a day; for patients weighing 60 kg or less, 50 mg 3 times a day.

SIDE EFFECTS/ADVERSE REACTIONS

Side effects diminish in frequency and intensity over time.

Frequent

Transient GI disturbances: flatulence, diarrhea, abdominal pain

PRECAUTIONS AND CONTRAINDICATIONS

Chronic intestinal diseases associated with marked disorders of digestion or absorption, cirrhosis, colonic ulceration, conditions that may deteriorate as a result of increased gas formation in the intestine, diabetic ketoacidosis, hypersensitivity to acarbose, inflammatory bowel disease, partial intestinal obstruction or predisposition to intestinal obstruction, significant renal dysfunction (serum creatinine level greater than 2 mg/dl)

Caution:
Use glucose for hypoglycemia, monitor blood glucose levels, pregnancy category B, avoid use in lactation, children.

DRUG INTERACTIONS OF CONCERN TO DENTISTRY
• None reported

SERIOUS REACTIONS
! None known

DENTAL CONSIDERATIONS

General:
• Ensure that patient is following prescribed diet and takes medication regularly.
• Type 2 patients may also be using insulin. If symptomatic hypoglycemia occurs while taking this drug, use dextrose rather than sucrose because of interference with sucrose metabolism.
• Place on frequent recall to evaluate healing response.
• Patients with diabetes may be more susceptible to infection and have delayed wound healing.
• Question the patient about self-monitoring the drug's antidiabetic effect.
• Consider semisupine chair position for patient comfort if GI side effects occur.

Consultations:
• Medical consultation may be required to assess disease control and patient's ability to tolerate stress.

Teach Patient/Family to:
• Encourage effective oral hygiene to prevent soft tissue inflammation.

acebutolol
a-se-**byoo**-toe-lole
(Sectral)
Do not confused Sectral with Factrel, Septra, or Seconal.

CATEGORY AND SCHEDULE
Pregnancy Risk Category: B (D if used in second or third trimester)

Drug Class: Beta-adrenergic blocker (cardioselective); antiarrhythmics, class II

MECHANISM OF ACTION
A beta$_1$-adrenergic blocker that competitively blocks β_1-adrenergic receptors in cardiac tissue; high doses may competitively block both β_1- and β_2-adrenergic receptors. Reduces the rate of spontaneous firing of the sinus pacemaker and delays AV conduction. Exhibits mild intrinsic sympathomimetic activity (ISA) (partial beta-agonist activity). ***Therapeutic Effect:*** Slows heart rate, decreases cardiac output, decreases B/P, and exhibits antiarrhythmic activity.

USES
Mild-to-moderate hypertension
Ventricular arrhythmias

PHARMACOKINETICS

Route	Onset	Peak	Duration
PO (hypertension)	1–1.5 hr	2–8 hr	24 hr
PO (antiarrhythmic)	1 hr	4–6 hr	10 hr

Well absorbed from the GI tract. Bioavailability: approximately 40%. Protein binding: 26%. Undergoes extensive first-pass metabolism to

active metabolite. Eliminated via bile and excretion into GI tract through intestinal wall, as well as partly excreted in urine. Removed by hemodialysis. ***Half-life:*** 3–4 hr (parent drug); 8–13 hr (metabolite).

INDICATIONS AND DOSAGES

▸ Mild-to-Moderate Hypertension

PO

Adults. Initially, 400 mg/day in 2 divided doses. Maintenance 400–800 mg/day. Maximum: 1200 mg/day in 2 divided doses.

▸ Ventricular Arrhythmias

PO

Adults. Initially, 200 mg twice a day. Increase gradually to 600–1200 mg/day in 2 divided doses.

Elderly. Initially, 200–400 mg/day. Maximum: 800 mg/day.

▸ Dosage in Renal Impairment

Dosage is modified based on creatinine clearance.

Creatinine Clearance	% of Usual Dosage
Less than 50 ml/min	50
Less than 25 ml/min	25

SIDE EFFECTS/ADVERSE REACTIONS

Frequent

Hypotension manifested as dizziness, nausea, diaphoresis, headache, cold extremities, fatigue, constipation, or diarrhea

Occasional

Insomnia, urinary frequency, impotence or decreased libido

Rare

Rash, arthralgia, myalgia, confusion (especially in the elderly), altered taste

PRECAUTIONS AND CONTRAINDICATIONS

Hypersensitivity to acebutolol or any component of the formulation

Caution:

Cardiogenic shock
Heart block greater than first degree
Overt heart failure
Severe bradycardia
Caution use in patients with bronchospastic disease, diabetes, hyperthyroidism, impaired renal or hepatic function, inadequate cardiac function, or peripheral vascular disease.

DRUG INTERACTIONS OF CONCERN TO DENTISTRY

- Diuretics, other antihypertensives: May increase hypotensive effect of acebutolol.
- Sympathomimetics, xanthines: May antagonize the effects and reduce bronchodilation.
- Oral hypoglycemics and insulin: May mask symptoms of hypoglycemia and prolong hypoglycemic effect of insulin and oral hypoglycemics.
- Catecholamine-depleting drugs (e.g., reserpine): May have additive effect. Monitor for bradycardia or hypotension.
- NSAIDs: May reduce the antihypertensive effect of acebutolol.
- Digoxin: May cause serious bradycardia.
- Calcium channel blockers (verapamil, diltiazem): May cause hypotension and bradycardia.
- Class I antiarrhythmic drugs: May increase atrial conduction time and negative inotropic effects.

SERIOUS REACTIONS

! Overdose may produce profound bradycardia and hypotension.

! Abrupt withdrawal may result in diaphoresis, palpitations, headache, rebound hypertension, and tremors.
! Acebutolol administration may precipitate CHF or MI in patients with heart disease; thyroid storm in those with thyrotoxicosis; or peripheral ischemia in those with existing peripheral vascular disease.
! Hypoglycemia may occur in patients with previously controlled diabetes.
! Signs of thrombocytopenia, such as unusual bleeding or bruising, occur rarely.

DENTAL CONSIDERATIONS

General:
• Monitor vital signs at every appointment because of cardiovascular side effects.
• After supine positioning, have patient sit upright for at least 2 min before standing to avoid orthostatic hypotension.
• Assess salivary flow as a factor in caries, periodontal disease, and candidiasis.
• Limit use of sodium-containing products, such as saline IV fluids, for those patients with dietary salt restriction.
• Stress from dental procedures may compromise cardiovascular function; determine patient risk.

Consultations:
• Medical consultation may be required to assess disease control.

Teach Patient/Family to:
• Report oral lesions, soreness, or bleeding to dentist.
• When chronic dry mouth occurs, advise patient to:
  • Avoid mouth rinses with high alcohol content because of drying effects.
  • Use daily home fluoride products for anticaries effect.
  • Use sugarless gum, frequent sips of water, or saliva substitutes.

acetaminophen

ah-seet-ah-**min′**-oh-fen
(Abenol[CAN], Apo-Acetaminophen[CAN], Atasol[CAN], Dymadon[AUS], Feverall, Panadol[AUS], Panamax[AUS], Paralgin[AUS], Setamol[AUS], Tempra, Tylenol)
Do not confuse with Fiorinal, Hycodan, Indocin, Percodan, or Tuinal.

CATEGORY AND SCHEDULE

Pregnancy Risk Category: B

Drug Class: Nonnarcotic analgesic

MECHANISM OF ACTION

A central analgesic whose exact mechanism is unknown but appears to inhibit prostaglandin synthesis in the CNS and, to a lesser extent, block pain impulses through peripheral action. Acetaminophen acts centrally on hypothalamic heat-regulating center, producing peripheral vasodilation (heat loss, skin erythema, sweating).
Therapeutic Effect: Results in antipyresis. Produces analgesic effect.

USES

Mild-to-moderate pain, fever; also used in combination with other ingredients, including opioids.

PHARMACOKINETICS

Route	Onset	Peak	Duration
PO	15–30 min	1.5 hr	4–6 hr

Rapidly, completely absorbed from GI tract; rectal absorption variable. Protein binding: 20%–50%. Widely distributed to most body tissues. Metabolized in liver; excreted in urine. Removed by hemodialysis. ***Half-life:*** 1–4 hr (half-life is increased in those with liver disease, elderly, neonates; decreased in children).

INDICATIONS AND DOSAGES

▸ Analgesia and Antipyresis

PO

Adults, Elderly. 325–650 mg q4–6h or 1 g 3–4 times a day. Maximum: 4 g/day.

Children. 10–15 mg/kg/dose q4–6h as needed. Maximum: 5 doses/24 hr.

Neonates. 10–15 mg/kg/dose q6–8h as needed.

Rectal

Adults. 650 mg q4–6h. Maximum: 6 doses/24 hr.

Children. 10–20 mg/kg/dose q4–6h as needed.

Neonates. 10–15 mg/kg/dose q6–8h as needed.

▸ Dosage in Renal Impairment

Creatinine Clearance	Frequency
10–15 ml/min	q6h
Less than 10 ml/min	q8h

SIDE EFFECTS/ADVERSE REACTIONS

Rare

Hypersensitivity reaction

PRECAUTIONS AND CONTRAINDICATIONS

Active alcoholism, liver disease, or viral hepatitis, all of which increase the risk of hepatotoxicity

Caution:

Anemia, hepatic disease, renal disease, chronic alcoholism

DRUG INTERACTIONS OF CONCERN TO DENTISTRY

- Decreased effects: barbiturates, loop diuretics
- Nephrotoxicity: NSAIDs, salicylates (chronic, high-dose, concurrent use)
- Liver toxicity: chronic use of hydantoins, chronic alcohol use, high-dose carbamazepine
- Possible increased effects of zidovudine
- Possible increased effects of acetaminophen: β-blockers, probenecid
- Increased bleeding: warfarin
- Risk of acetaminophen toxicity when used in combination with OTC products

SERIOUS REACTIONS

! Acetaminophen toxicity is the primary serious reaction.

! Early signs and symptoms of acetaminophen toxicity include anorexia, nausea, diaphoresis, and generalized weakness within the first 12–24 hr.

! Later signs of acetaminophen toxicity include vomiting, right upper quadrant tenderness, and elevated liver function tests within 48–72 hr after ingestion.

! The antidote to acetaminophen toxicity is acetylcysteine (Mucomyst), but it should be administered as soon as possible following toxic dose.

DENTAL CONSIDERATIONS

General:

- Reports regarding the concomitant use of acetaminophen and warfarin seem to suggest a possible increase in anticoagulant effects, especially in patients with other diseases or contributing factors, diarrhea, age, debilitation, etc. Patients taking

warfarin should be questioned about recent use of acetaminophen and current international normalized ratio (INR) values. Acetaminophen has been shown to increase the INR depending on the amount and duration of acetaminophen use. A new PT or INR value may be required if surgical procedures are planned. Data from one study (*JAMA* 279:657–662, 1998) indicated that use of four regular-strength acetaminophen tablets (325 mg) qd for 1 wk can increase the INR values. It is important to closely monitor INR values with use of acetaminophen over a long duration and in higher doses.

- Avoid prolonged use with aspirin-containing products or NSAIDs.
- Determine why the patient is taking the drug.
- Patients on chronic drug therapy may rarely have symptoms of blood dyscrasias, which can include infection, bleeding, and poor healing.
- Question patient about the use of other drug products, including OTC products, that contain acetaminophen because of risk of acetaminophen overdose.
- Severe liver injury can occur when more than 4 g of all products that include acetaminophen are taken in a 24-hr period. Warn patient of detrimental effects.

Consultations:

- For a patient with symptoms of blood dyscrasias, request a medical consult for blood studies and postpone dental treatment until normal values are reestablished.

Teach Patient/Family to:

- Question patient concerning other drugs being taken that include acetaminophen. Caution patient to be aware of products that might include acetaminophen.
- Emphasize the potential risks to liver when consuming alcohol and taking acetaminophen.

acetazolamide

ah-seet-ah-**zole′**-ah-mide
(Apo-Acetazolamide[CAN], Dazamide, Diamox, Diamox Sequels)
Do not confuse with acetohexamide.

CATEGORY AND SCHEDULE

Pregnancy Risk Category: C

Drug Class: Diuretic, carbonic anhydrase inhibitor

MECHANISM OF ACTION

A carbonic anhydrase inhibitor that reduces formation of hydrogen and bicarbonate ions from carbon dioxide and water by inhibiting, in proximal renal tubule, the enzyme carbonic anhydrase, thereby promoting renal excretion of sodium, potassium, bicarbonate, water. Ocular: Reduces rate of aqueous humor formation, lowers intraocular pressure.
Therapeutic Effect: Produces anticonvulsant activity.

USES

Treatment of open-angle glaucoma, narrow-angle glaucoma (preoperatively, if surgery delayed), epilepsy (petit mal, grand mal, mixed), edema in CHF, drug-induced edema, acute mountain sickness in climbers, drug-induced edema

PHARMACOKINETICS

Rapidly absorbed. Protein binding: 95%. Widely distributed throughout

body tissues including erythrocytes, kidneys, and blood-brain barrier. Not metabolized. Excreted unchanged in urine. Removed by hemodialysis. ***Half-life:*** 2.4–5.8 hr.

INDICATIONS AND DOSAGES

▸ Glaucoma

PO

Adults. 250 mg 1–4 times a day. Extended-Release: 500 mg 1–2 times a day usually given in morning and evening.

▸ Secondary Glaucoma, Preoperative Treatment of Acute Congestive Glaucoma

PO/IV

Adults. 250 mg q4h, 250 mg q12h; or 500 mg, then 125–250 mg q4h.

PO

Children. 10–15 mg/kg/day in divided doses.

IV

Children. 5–10 mg/kg q6h.

▸ Edema

IV

Adults. 25–375 mg once daily.

Children. 5 mg/kg or 150 mg/m^2 once daily.

▸ Epilepsy

PO

Adults, Children. 375–1000 mg/day in 1–4 divided doses.

▸ Acute Mountain Sickness

PO

Adults. 500–1000 mg/day in divided doses. If possible, begin 24–48 hr before ascent; continue at least 48 hr at high altitude.

▸ Usual Elderly Dosage

PO

Initially, 250 mg 2 times a day; use lowest effective dose.

▸ Dosage in Renal Impairment

Creatinine Clearance	Dosage Interval
10–50 ml/min	q12h
Less than 10 ml/min	Avoid use

SIDE EFFECTS/ADVERSE REACTIONS

Frequent

Unusually tired/weak, diarrhea, increased urination/frequency, decreased appetite/weight, altered taste (metallic), nausea, vomiting, numbness in extremities, lips, mouth

Occasional

Depression, drowsiness

Rare

Headache, photosensitivity, confusion, tinnitus, severe muscle weakness, loss of taste

PRECAUTIONS AND CONTRAINDICATIONS

Severe renal disease, adrenal insufficiency, hypochloremic acidosis, hypersensitivity to acetazolamide, to any component of the formulation, or to sulfonamides

Caution:

Hypercalciuria, chronic use of oral sulfonylureas has been associated with increased risk of cardiovascular mortality; risk is controversial.

DRUG INTERACTIONS OF CONCERN TO DENTISTRY

- Toxicity: salicylates (large doses)
- Hypokalemia: corticosteroids (systemic use)
- Crystalluria: ciprofloxacin

SERIOUS REACTIONS

! Long-term therapy may result in acidotic state.

! Nephrotoxicity/hepatotoxicity occurs occasionally, manifested as dark urine/stools, pain in lower back, jaundice, dysuria, crystalluria, renal colic/calculi.