

Better Evidence and UpToDate Training Module 3: Additional UpToDate Functionality

Contents

1. Drug Database and Drug Interactions
2. How to use Clinical Calculators
3. Graphics and Algorithms

Drug Database

- UpToDate contains more than 6,300 unique adult, pediatric, and international drug entries provided by Lexicomp®. The following video introduces the drug database.

The screenshot shows the UpToDate website interface. At the top left is the UpToDate logo. A search bar contains the text "dobutamine" with a magnifying glass icon. To the right of the search bar are links for "Better Evidence", "CME 21.5", and "Log Out". Below the search bar is a blue navigation bar with links for "Contents", "Calculators", "Drug Interactions", and "UpToDate Pathways". Underneath this is a light gray bar with a "Back to Search" link, another search bar containing "dobutamine", a "Find" button, and links for "Print", "A" (font size), and "Bookmark".

The main content area is split into two columns. The left column is titled "Topic Outline" and contains a list of links: "Brand Names: Canada", "Pharmacologic Category", "Dosing: Adult", "Dosing: Renal Impairment: Adult", "Dosing: Hepatic Impairment: Adult", "Dosing: Pediatric", "Dosing: Renal Impairment: Pediatric", and "Dosing: Hepatic Impairment: Pediatric". The right column is titled "Dobutamine: Drug information" and includes the following text:

Dobutamine: Drug information Lexicomp®
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(For additional information see "[Dobutamine: Patient drug information](#)" and see "[Dobutamine: Pediatric drug information](#)")
For abbreviations and symbols that may be used in Lexicomp ([show table](#))

Brand Names: Canada
DOBUtamine SDZ

Pharmacologic Category
Adrenergic Agonist Agent; Inotrope

Dosing: Adult

A vertical "Feedback" button is located on the right side of the page.

Drug Database

UpToDate® anaphylaxis

Anaphylaxis: Emergency treatment - UpToDate

Epinephrine (adrenaline) (systemic): Drug Information - UpToDate

< Back to Search Anaphylaxis: Emergency treatment

anaphylaxis Find Patient Print Share A+ Bookmark

within minutes. Anaphylaxis appears to be most responsive to treatment in its early phases, before shock has developed, based on the observation that delayed [epinephrine](#) injection is associated with fatalities. (See '[Immediate management](#)' above.)

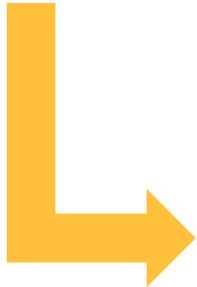
- Initial management is summarized in rapid overview tables for adults ([table 1](#)) and children ([table 2](#)). (See '[Immediate management](#)' above.)
- [Epinephrine](#) is lifesaving in anaphylaxis. It should be injected as early as possible in the episode, in order to prevent progression of symptoms and signs. **There are no absolute contraindications to epinephrine use, and it is the treatment of choice for anaphylaxis of any severity.** We recommend epinephrine for patients with apparently mild symptoms and signs (eg, a few hives and mild wheezing) ([Grade 1B](#)), as well as for patients with moderate-to-severe symptoms and signs ([Grade 1A](#)). (See '[Epinephrine](#)' above.)
- The route of [epinephrine](#) administration depends upon the presenting symptoms. For patients who are **not** profoundly hypotensive or in shock or cardiorespiratory arrest, **intramuscular (IM) injection into the mid-outer thigh** as the initial route of administration is advised, in preference to subcutaneous administration or intravenous (IV) administration ([table 3](#)). (See '[Intramuscular epinephrine injection \(preferred\)](#)' above.)
 - When an exact dose can be drawn up and administered, 0.01 mg/kg (maximum of 0.5 mg) should be administered in the mid-outer thigh every 5 to 15 minutes or more frequently, if necessary.
 - When an autoinjector is used, children weighing less than 25 kg should receive the 0.15 mg dose, and those weighing over 25 kg should receive the 0.3 mg dose administered to the outer thigh every 5 to 15 minutes or more frequently, if necessary. Autoinjector use must be carefully considered in infants and children weighing under 7.5 kg. However, the benefits likely outweigh the risk if this is the only source of [epinephrine](#) available.
- Massive fluid shifts can occur in anaphylaxis, and all patients with orthostasis, hypotension, or incomplete response to [epinephrine](#) should receive large volume fluid resuscitation with normal saline. Normotensive patients should receive normal saline to maintain

Topic Feedback

SUMMARY AND RECOMMENDATIONS

Link to a drug within an article

- **Drug Referencing** – clicking on the drug name within the search result brings up that drug's Lexicomp page, which describes dosing, contraindications, drug interactions, etc.
- [Norepinephrine](#) – Norepinephrine is the most frequently utilized agent in this population because it is effective and less likely to cause tachycardia [16]. Other alternatives include [dopamine](#) and [epinephrine](#), but tachycardia, which can exacerbate hypotension, can occur with these agents [20].



Norepinephrine (noradrenaline): Drug information Lexicomp®

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(For additional information [see "Norepinephrine \(noradrenaline\): Patient drug information"](#) and [see "Norepinephrine \(noradrenaline\): Pediatric drug information"](#))

For abbreviations and symbols that may be used in Lexicomp ([show table](#))

Drug Interactions

- To help minimize risk and increase patient safety, UpToDate includes a drug interactions analysis tool. The following video explores the Drug Interaction tool

UpToDate®

Lexicomp® Drug Interactions

Add items to your list by searching below.

ITEM LIST

Clear List [Analyze](#)

- [Azithromycin \(Systemic\)](#)
- [Digoxin](#)
- [HydroCHLORothiazide](#)

Display complete list of interactions for an individual item by clicking item name.

X Avoid combination	C Monitor therapy	A No known interaction
D Consider therapy modification	B No action needed	More about Risk Ratings ▼

3 Results [Filter Results by Item](#) [Print](#)

C	Digoxin (Cardiac Glycosides) Azithromycin (Systemic) (Macrolide Antibiotics)
C	Digoxin (Cardiac Glycosides) HydroCHLORothiazide (Thiazide and Thiazide-Like Diuretics)
C	Digoxin (P-glycoprotein/ABCB1 Substrates) Azithromycin (Systemic) (P-glycoprotein/ABCB1 Inhibitors)

DISCLAIMER: Readers are advised that decisions regarding drug therapy must be based on the independent judgment of the clinician, changing information about a drug (eg, as reflected in the literature and manufacturer's most current product information), and changing medical practices.

Drug Interactions

The screenshot shows the UpToDate website interface. The browser address bar displays 'upToDate.com'. The page title is 'Lexicomp® Drug Interactions'. The main content area is titled 'Lexicomp® Drug Interactions' and contains the following information:

Title Agents with Antiplatelet Properties / Herbs (Anticoagulant/Antiplatelet Properties) Print

Risk Rating D: Consider therapy modification

Summary Herbs (Anticoagulant/Antiplatelet Properties) may enhance the adverse/toxic effect of Agents with Antiplatelet Properties. Bleeding may occur. **Severity** Major **Reliability Rating** Fair

Patient Management The concomitant use of herbs possessing anticoagulation/antiplatelet properties with other herbs or drugs possessing similar properties should be avoided. If used concomitantly, increased diligence in monitoring for adverse effects (eg, bleeding, bruising, altered mental status due to CNS bleeds) must be employed. For patients scheduled for surgical, dental, or other invasive procedures, anticoagulant/antiplatelet herbs should be discontinued 2 weeks prior to the scheduled procedure.

Agents with Antiplatelet Properties Interacting Members Abciximab, Aceclofenac, Acemetacin, Anagrelide, Aspirin, Cangrelor, Cilostazol, Citalopram, Cildpidogrel, Dapoxetine, Defibrotide, Desvenlafaxine, Dexibuprofen, Dextropropofol, Diclofenac (Systemic), Diclofenac (Topical), Diflunisal, Dilazep, Dipyridamole, Dipyrone, DULoxetine, Eptifibatide, Escitalopram, Etodolac, Etofenamate, Fenoprofen, Fluctafenine, FLUoxetine, Flurbiprofen (Systemic), Fluvoxamine, Ibuprofen, Ibuprofen (Topical), Indobufen, Indomethacin, Ketoprofen, Ketorolac (Nasal), Ketorolac (Systemic), Levomilnacipran, Lornoxicam, Loxoprofen, Meclofenamate, Mefenamic Acid, Meloxicam, Milnacipran, Nabumetone, Naproxen, Oxaprozin, PARoxetine, Pelubipirofen, Phenybutazone, Piracetam, Piroxicam (Systemic), Piroxicam (Topical), Prasugrel, Propyphenazone, Sarpogrelate, Sertraline, Sulfapyrazone, Sulindac, Tenoxicam, Tiaprofenic Acid, Ticagrelor, Ticlopidine, Tirofiban, Tofenamic Acid, Tolmetin, Triflusal, Venlafaxine, Vilazodone, Vorapaxar, Vortioxetine, Zaltoprofen

Herbs (Anticoagulant/Antiplatelet Properties) Interacting Members Alfalfa, Anise, Bilberry, Bladderwrack, Bromelain, Cat's Claw, Celery, Chamomile, Coleus, Cordyceps, Dong Quai, Evening Primrose, Fenugreek, Feverfew, Garlic, Ginger, Ginkgo Biloba, Ginseng (American), Ginseng (Panax), Ginseng (Siberian), Grape Seed, Green Tea, Guggul, Horse Chestnuts, Horseradish, Licorice, Prickly Ash, Red Clover, Reishi, SAME (S-adenosylmethionine), Sweet Clover, Taurine, Turmeric, White Willow

Discussion Many herb products possess the ability to cause bleeding (inhibit clotting/coagulation or primary hemostasis) by one of several mechanisms (e.g., herb contains a coumarin-like constituent or one that is able to inhibit the production/function of platelets).^{1,2,3,4} The concomitant use of such herbs with other herbs or drugs possessing a similar pharmacologic potential may increase the risk of bleeding. Caution is advised.

Footnotes

1. Mousa SA, "Antithrombotic Effects of Naturally Derived Products on Coagulation and Platelet Function," *Methods Mol Biol*, 2010, 663:229-40. [\[PubMed 20617421\]](#)

Drug Interactions

3 Results

C Digoxin (Cardiac Glycosides)
Azithromycin (Systemic) (Macrolide Antibiotics)

C Digoxin (Cardiac Glycosides)
HydroCHLOROthiazide (Thiazide and Thiazide-Like Diuretics)

C Digoxin (P-glycoprotein/ABCB1 Substrates)
Azithromycin (Systemic) (P-glycoprotein/ABCB1 Inhibitors)

DISCLAIMER: Readers are advised that decisions regarding drug therapy must be based on information about a drug (eg, as reflected in the literature and manufacturer's most current

Title Cardiac Glycosides / Thiazide and Thiazide-Like Diuretics

[Print](#)

Risk Rating C: Monitor therapy

Summary Thiazide and Thiazide-Like Diuretics may enhance the adverse/toxic effect of Cardiac Glycosides. Specifically, cardiac glycoside toxicity may be enhanced by the hypokalemic and hypomagnesemic effect of thiazide diuretics. **Severity** Moderate **Reliability Rating** Fair

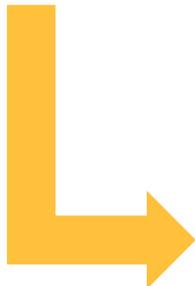
Patient Management Monitor for increased cardiac glycoside toxicity (eg, cardiac arrhythmias) if a thiazide diuretic is initiated or the dose is increased. Careful monitoring of serum potassium and magnesium along with administration of electrolyte replacement therapy to correct hypokalemia or hypomagnesemia may reduce the risk of cardiac glycoside toxicity.

Cardiac Glycosides Interacting Members Digitoxin, Digoxin

Thiazide and Thiazide-Like Diuretics Interacting Members Bendroflumethiazide, Chlorothiazide, Chlorthalidone, Cyclopenthiiazide, HydroCHLOROthiazide, Hydroflumethiazide, Indapamide, Methyclothiazide, MetOLazone, Xipamide

Discussion The risk of cardiac glycoside toxicity increases in the presence hypokalemia and hypomagnesemia, even when serum concentrations are maintained in the therapeutic range.¹ The association of digitalis toxicity and electrolyte disturbances induced by diuretic (loop and thiazide) use has been reported in numerous studies^{2,3,4,5,6,7,8} and case reports^{9,10} In contrast, some studies report that serum potassium levels do not influence the risk of digitalis toxicity,^{11,12,13} possibly because serum potassium concentrations may not correlate with total body potassium stores.

Prescribing information for digoxin recommends careful monitoring of serum potassium and magnesium levels in patients receiving digoxin along with diuretics.¹ Administering electrolyte replacement to correct hypokalemia and hypomagnesemia is recommended.



UpToDate Clinical Calculators

- UpToDate provides easy access to more than 195 medical calculators right in the clinical workflow

The screenshot shows the UpToDate website interface for a BMI calculator. The page title is "Calculator: Body mass index (BMI) for adults (Metric, Patient education)". The calculator form includes input fields for height (182 cm) and weight (60 kg). The result displayed is BMI 18.1. Below the calculator, there is a "BMI interpretation" section with a table of BMI ranges and their corresponding weight categories. A white box highlights this table. At the bottom, there is a "References" section with a citation from the National Institutes of Health.

Calculator: Body mass index (BMI) for adults (Metric, Patient education)

BMI is a measure of weight in relation to height. It is the most practical way to estimate if a person is underweight, healthy weight, overweight, or obese.

Enter height and weight:

Height 182 cm
Weight 60 kg

Result:
BMI 18.1

Reset form

BMI interpretation

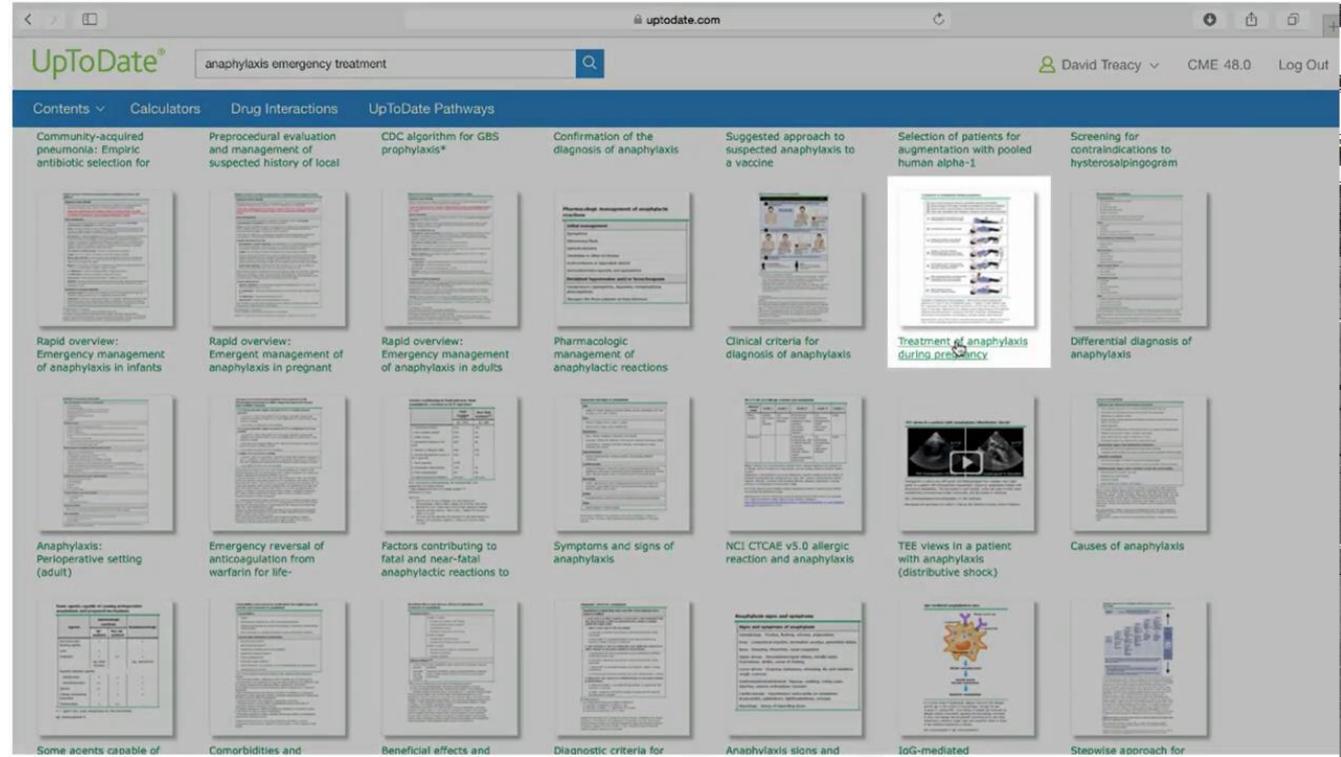
BMI <18.5:	Underweight
BMI ≥18.5 and <25:	Healthy weight
BMI ≥25 and <30:	Overweight
BMI ≥30:	Obesity

References

1. National Institutes of Health (NIH), National Heart, Lung, and Blood Institute (NHLBI). The practical guide: identification, evaluation, and treatment of overweight and obesity in adults. *Bethesda: National Institutes of Health*. 2000, NIH publication 00-4084.

UpToDate Graphics and Algorithms

- UpToDate contains more than 35,000 pictures, figures, tables, graphs, algorithms, and videos.





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