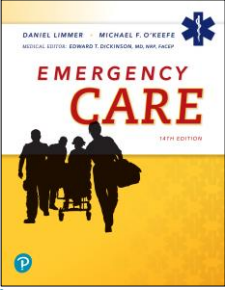


## Emergency Care

Fourteenth Edition



**Chapter 18**  
General Pharmacology

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## Topics

- [Medications EMTs Can Administer](#)
- [EMTs Assisting with Prescribed Medications](#)
- [General Information about Medications](#)
- [Assisting with IV Therapy](#)

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## Medications EMTs Can Administer

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## Medications on the Ambulance

- Aspirin
- Oral Glucose
- Oxygen
- Activated Charcoal
- Naloxone

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## Aspirin



Aspirin is administered to patients with chest pain of a suspected cardiac origin.

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## Oral Glucose



Oral glucose may help a patient with diabetes.

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## Oxygen



Oxygen is a commonly used, but powerful, medication.



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## Activated Charcoal



Activated charcoal is only occasionally used in poisoning cases.



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## Naloxone

- Naloxone
  - Antidote for a patient who is unconscious and in respiratory failure after taking a narcotic
  - Does not work if patient has not had a narcotic



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## EMTs Assisting with Prescribed Medications

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## Bronchodilator Inhaler



A prescribed inhaler may help a patient who has respiratory problems.



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## Prescribed Medications

- Inhaler
- Nitroglycerin
- Epinephrine



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## Bronchodilator Inhalers

- Used in patients with asthma, emphysema, and chronic bronchitis
- Enlarges constricted breathing tubes
- Side effects
  - Increased heart rate
  - Patient jitteriness



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## Nitroglycerin (1 of 2)



Nitroglycerin is often prescribed for chest pain. Forms of nitroglycerin include a spray.



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## Nitroglycerin (2 of 2)

- Taken by patients with history of chest pain of cardiac origin
- Helps dilate coronary vessels
- Contraindications
  - Low blood pressure or taking medications for erectile dysfunction (Viagra, Levitra, Cialis, or similar)
- Side effect
  - Dropping blood pressure



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## Epinephrine Auto-Injector



[For long description, see slide 53: Appendix 1](#)

An epinephrine auto-injector can reverse a severe allergic reaction.



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## Epinephrine Auto-Injectors

- Prescribed and used for patients with severe allergic reactions classified as anaphylaxis
- Vasoconstrictor
  - Relaxes smooth muscles and airway passages
- Side effects
  - Increased heart rate and blood pressure



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## Force Protection Medications

- Atropine auto-injector to treat responders in the event of an attack



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## General Information About Medications

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## Drug Names

- Each drug is listed by its generic name.
- Each drug has at least three names:
  - Chemical name
  - Generic name
  - Trade (brand) name
    - One or more trade names given to the drug by manufacturers



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## What You Need to Know When Giving a Medication (1 of 2)

- Indications
- Contraindications
- Side effects
- Untoward effects



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## What You Need to Know When Giving a Medication (2 of 2)

- Form of the medication
  - Compressed powders or tablets
  - Liquids
  - Gels
  - Suspensions
  - Fine powder
  - Gases
  - Sublingual sprays



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## Medication Safety and Clinical Judgment

- Administering or assisting with medications is a serious responsibility.
- Know the medication.
- Use good judgment.



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## Medication Authorization

- Off-line medical direction
  - Do not speak to physician.
  - Use “standing orders.”
- On-line medical direction
  - Speak directly to physician.
  - Listen to order, then repeat order back.
  - Ask for clarification if necessary.



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## The Five Rights

- Do I have the right patient?
- Is it the right time to administer this medication?
- Is this the right medication?
- Is this the right dose?
- Am I giving this medication by the right route of administration?



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## Think About It

- What would be the potential risk to the patient if each of the “five rights” were not checked prior to administration?



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## Routes of Administration (1 of 2)

- Oral, or swallowed
- Sublingual, or dissolved under the tongue
- Inhaled, or breathed into lungs, usually as tiny aerosol particles, such as from an inhaler, or as a gas, such as oxygen
- Intranasal, or sprayed into the nostrils
- Intravenous, or injected into vein



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## Routes of Administration (2 of 2)

- Intramuscular, or injected into a muscle
- Subcutaneous, or injected under the skin
- Intraosseous, or injected into the bone marrow cavity
- Endotracheal, or sprayed directly into a tube inserted into the trachea



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## Pharmacodynamic Considerations

- Pharmacodynamics
  - Study of effects of medications on body
  - What effect will medication have?
  - How will this medication affect my patient specifically?
  - Patient-specific factors change how medication works.



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## Reassessment and Documentation

- After administering medication, reassess patient.
- Clearly document medications administered.



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## Medications Patients Often Take



Advair is a medication that may be prescribed to a patient for daily management of a respiratory disease. It should not be used for emergency treatment of an acute attack or breathing difficulty. © GlaxoSmithKline



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## Table 18-2 Herbal Agents and What They Are Sometimes Used For

Herbal Agent	Sometimes Used for
Gingko or ginkgo biloba	Dementia, poor circulation to the legs, ringing in the ears
St. John's wort	Depression
Echinacea	Prevention and treatment of the common cold
Garlic	High cholesterol
Ginger root	Nausea and vomiting
Saw palmetto	Swollen prostate
Hawthorn leaf or flower	Heart failure
Evening primrose oil	Premenstrual syndrome
Feverfew leaf	Migraine prevention
Kava kava	Anxiety
Valerian root	Insomnia



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## Assisting with IV Therapy

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## Setting Up an IV Fluid Administration Set (1 of 8)

- Ways fluids and medications may be administered into the vein
  - Heparin (saline) lock
    - Catheter placed into vein
    - Cap (lock) placed over end of catheter
    - Lock contains port for administering medications.



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## Setting Up an IV Fluid Administration Set (2 of 8)

- Ways fluids and medications may be administered into the vein
  - Traditional IV bag
    - Hangs above patient
    - Constantly flows fluids and medications into patient



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## Setting Up an IV Fluid Administration Set (3 of 8)

- Clear plastic tubing connecting fluid bag to needle or catheter
- Three important parts
  - Drip chamber
  - Flow regulator
  - Drug or needle port
- Extension set makes it easier to carry or disrobe patient without pulling out the IV.



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## Setting Up an IV Fluid Administration Set (4 of 8)



Inspect the IV bag to be sure it contains the solution that was ordered, it is clear, it does not leak, and it has not expired.



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## Setting Up an IV Fluid Administration Set (5 of 8)



Setting up the IV administration set includes removing the protective coverings from the port of the fluid bag and the spiked end of the tubing.



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## Setting Up an IV Fluid Administration Set (6 of 8)



Insert the spiked end of the tubing into the fluid bag.



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## Setting Up an IV Fluid Administration Set (7 of 8)



Open the flow regulator.



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## Setting Up an IV Fluid Administration Set (8 of 8)



Turn off the flow.



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## Maintaining an IV

- Troubleshoot flow problems.
- Constricting bands left in place by mistake
  - Flow regulator left closed
  - Clamp closed on tubing
  - Tubing kinked
  - Tubing caught under patient or equipment
- Adjust flow rate properly.
- Monitor IV sites for infiltration.



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## Chapter Review



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## Chapter Review (1 of 4)

- Aspirin, oral glucose, and oxygen are medications that the EMT may administer to a patient under specific conditions that are carried on the ambulance.
- The EMT may assist the patient in taking prescribed inhalers, nitroglycerin, and epinephrine in auto-injectors.
- You may be able to administer intranasal naloxone, or may encounter patients who have received it from a layperson.



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## Chapter Review (2 of 4)

- You may need to have permission from medical direction to administer or assist the patient with a medication. Follow local protocols.



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## Chapter Review (3 of 4)

- There is a wide variety of medications that a patient may be taking. You will try to find out what medications a patient is taking when you take the SAMPLE history (signs and symptoms, allergies, medications, pertinent past history, last oral intake, and events leading to the injury or illness). These drugs may be identified by a variety of generic and trade names. Your main purpose in finding out what medications the patient is taking is to report this information to your medical director or hospital personnel.



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## Chapter Review (4 of 4)

- When administering a medication, first check the expiration date. Keep the five rights in mind: right patient, right medication, right dose, right route, and right time. Fully document all medication administration as soon as possible.



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## Remember (1 of 2)

- EMTs administer aspirin, oral glucose, and oxygen as part of patient care.
- EMTs may assist with prescribed inhalers, nitroglycerine, and epinephrine auto-injectors.
- EMTs should understand the names, indications, contraindications, and side effects of medications that they intend to administer.



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## Remember (2 of 2)

- EMTs must have appropriate authorization to give a drug and always must follow the “five rights” of medication administration.
- Reassessment and documentation are important elements of medication administration.



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## Questions to Consider

- Should I administer a medication?
- How can I get more information about a drug?
- What are the necessary steps that must occur after medication administration?



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## Critical Thinking

- A patient is complaining of chest pain. Here’s some nitroglycerin,” says a family member. “Give him that.” What do you do?



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## Appendix 1

The images are as follows.

- Image A, displays 2 Epipen epinephrine auto injectors.
- Image B, displays auto injector is inside its case.
- Image C, displays 2 Auvi-Q epinephrine auto-injectors. The injector on the left is the actual injector while the injector on the right is a trainer that does not contain any active drugs or needle.

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