

DYNAMIC LEARNING EXERCISE

INSTRUCTOR KEY Reverse Learning

This exercise asks students to think of situations in which they shouldn't use a medication or when it might have a relative contraindication. Contraindications are often an afterthought in learning when compared to indications. Conditions that mimic indications are also explored. This is beneficial for learning and retention of both indications and contraindications. It also helps students identify potential clinical clues and issues both in the field and on the NREMT exam.

This exercise can be used at the end of the medical emergencies module when students have had pharmacology plus instruction on the medical conditions that require these treatments. This exercise is challenging and should be used when students have some exposure to these concepts in class and lab.

Have students complete the chart in groups or individually. Be available for facilitation to answer questions, guide the process, and prevent imprinting of wrong learning in the exercise. Facilitation also helps push reluctant contributors, those with less confidence, and those more challenged in learning. We've included answers for "aspirin" in the student chart to provide an example of what is expected of them.

Facilitation questions (insert at an appropriate time):

- So, what is the indication for this medication?
- Would you be more likely to use this medication on-scene or en route?
- How long would you expect for this medication to take effect?
- What side effects could you expect from this medication?
- How common is this condition? Do you think you would see/do this often as an EMT?
- Ask about some of the indications/mimics and the signs and symptoms.

This will help in using this exercise as a review of not only pharmacology but decision making and the entire medical module.

You may choose to work through one of the medications as an example for the students before they begin their work.

Time: Approximately 45 minutes to an hour.

Student completion: 30 minutes

Discussion and Review: 15 – 30 minutes depending on depth

[A blank student copy of this exercise is included at the end of this packet](#)

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Medication or Modality	Clinical findings that contraindicate use or suggest caution	Conditions that might mimic indications	Assessments to identify mimics	Consequences of improper use
Aspirin	<ul style="list-style-type: none"> Aspirin allergy GI bleed Non-cardiac chest pain cause 	<ul style="list-style-type: none"> Gastrointestinal conditions Non-cardiac chest pain including pneumothorax, pneumonia, aortic aneurysm, and musculoskeletal 	<ul style="list-style-type: none"> Lung sounds, palpation of the chest, careful description of the pain (pleuritic or tearing?), GI signs and symptoms 	<ul style="list-style-type: none"> Exacerbating existing gastrointestinal bleeding or worsening bleeding in other parts of the body (brain)
Albuterol inhaler or SVN	<ul style="list-style-type: none"> Sounds other than wheezing or coughing (crackles, stridor) Respiratory failure 	<ul style="list-style-type: none"> Cardiac asthma, airway obstruction, allergic reaction, inhalation injury 	<ul style="list-style-type: none"> Lung sounds Identifying and differentiating location of sounds (upper vs lower airway) Look for cardiac causes (JVD, pedal edema, ascites) 	<ul style="list-style-type: none"> Tachycardia, anxiety Not treating the actual condition properly or completely (pulmonary edema, anaphylaxis)
Nitroglycerin	<ul style="list-style-type: none"> SBP < 100 mmHg Caution in tachycardia, bradycardia, narrowed pulse pressure Recent use of erectile dysfunction meds Non-cardiac chest pain 	<ul style="list-style-type: none"> Non-cardiac chest pain including pneumothorax, pneumonia, aortic aneurysm, musculoskeletal, gastrointestinal 	<ul style="list-style-type: none"> Lungs sounds, palpation of the chest, careful description of the pain (pleuritic or tearing?) HX erectile dysfunction/take meds? 	<ul style="list-style-type: none"> Crashing hypotension, unresponsiveness Vasodilation in traumatic conditions

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Naloxone	<ul style="list-style-type: none"> • Non-opioid overdoses • Patient not in respiratory failure 	<ul style="list-style-type: none"> • Trauma, stroke, hypoglycemia, non-opioid overdose 	<ul style="list-style-type: none"> • Respiratory rate, depth, effort • Pupils (not all opioids cause miosis) • Scene clues and history 	<ul style="list-style-type: none"> • Causes EMT to ignore/don't treat actual condition. • Use of naloxone with adequate (non-failure) breathing
Oral glucose	<ul style="list-style-type: none"> • Unresponsive or unable to swallow/protect airway • No diabetic history (relative) • Not putting other conditions in initial differential diagnosis list 	<ul style="list-style-type: none"> • Stroke, seizure, syncope, head injury 	<ul style="list-style-type: none"> • BG measurement medical history, stroke scales, indications or bystander reports of seizure activity, post-ictal period • Prodromal symptoms 	<ul style="list-style-type: none"> • Aspiration • Hyperglycemia—especially with stroke • Missing other conditions that could have a benefit with prompt transport (stroke)
Epinephrine (auto-injector)	<ul style="list-style-type: none"> • Allergic reaction not at risk to become anaphylaxis • Increased (but relative) risk of adverse cardiovascular events in patients >40 	<ul style="list-style-type: none"> • Airway obstruction or swelling, contact dermatitis, allergic reaction not meeting anaphylaxis criteria 	<ul style="list-style-type: none"> • Examine for S/S of anaphylaxis – hives, wheezing, angioedema, hypotension, GI symptoms 	<ul style="list-style-type: none"> • Adverse cardiovascular events (MI, tachycardia, hypertension)
((add local medication or modality))				

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Help students succeed on the NREMT and other exams. Our apps focus on critical thinking, pattern recognition and pathophysiology.	Our LC-Ready learning platform gives you access to student tracking and reports, bulk discounts and outstanding personalized service.	This 24-Hour NREMT Remediation program helps test-takers pass... and gives them relevant, deep understanding.	The 7 Things EMS podcast provides fluff-free, boredom-free CE for a variety of topics, from education to toxicology.

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Oral glucose				
Epinephrine (auto-injector)				