Stanford Medical Checklist Study

Training (Slides) v4
pre-test simulation

For more information, call 650-336-5471 or e-mail checklist-study@cs.stanford.edu
These slides will describe a simulated medical crisis in text. As the scenario progresses, slides will advance automatically.
We will ask you questions about what the appropriate next step to take might be. Answer the questions verbally, speaking aloud to give us an idea of what you are thinking.

Only answer questions, **which are colored in green**, when they are asked.
Give the best/most precise answer you can. If you are administering medicine, specify the dosage. If you administer a shock, specify the number of joules, and so on.
Recall the appropriate actions from your prior ACLS training.
If available, you may use a relevant cognitive aid to help you answer the questions.
These aids were developed for use in the operating room, and thus may have extra information.
11: Malignant Hyperthermia

- Call for help.
- Get Malignant Hyperthermia (MH) Kit.
- Volatile Anesthetics stopped/transitional to non-triggering anesthetics?
  - Don’t delay treatment to change circuit or CO₂ absorber.
  - Request chilled IV saline.
- FiO₂ increased to 100%?
- Hyperventilation initiated?
  - 10 L/min or more (or 2-4× patient’s minute ventilation).
- Dantrolene given?
  - Assign dedicated person to mix dantrolene.
- MH hotline called? 1-800-644-9737.
- Procedure terminated (if possible)?
- Bicarbonate given for suspected metabolic acidosis?
  - Maintain pH > 7.2.
- Patient cooled if temperature > 38.5°C?
  - Lavage open body cavities.
  - NG lavage with cold water.
  - Apply ice externally.
  - Cold saline infused intravenously.
** Stop cooling if temperature < 38°C. **
- Hyperkalemia treated if suspected?
- Dysrhythmias treated if present?
  - Standard antiarrhythmics are acceptable; don’t use Calcium Channel Blockers.
- Labs sent? (ABG, venous blood gas, electrolytes, serum CK, serum/urine myoglobin, coagulation profile)
- Foley catheter placed?
  - Monitor urine output.
- ICU called/disposition arranged?
You may use the cognitive aid on the large screen, if available, whenever you’d like to help you answer the questions.

In this experiment, the cognitive aid is synchronized with the scenario, so no direct manipulation is required to change screens.

In other words, the software cognitive aid will advance automatically to match the current medical scenario.
**Malignant Hyperthermia**

**SIGNS**
- ↑ETCO₂, Tachycardia, T: 
- Light anesthesia, Hypo...

**DDX**
- Light anesthesia
- Hypoventilation
- Over-heating (external)
- Thyroid storm
- Pheochromocytoma
- Insufflation of CO₂
- Hypoxemia

**TREAT**
- Anesthetic triggers—discontinue; ↑Gas—10 L/min; TIVA; Hyperventilate—FiO₂ 100%, O₂...

**SECONDARY**

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**T. Stark, 35 yrs, 102.1 kg**

**Conditions**
- Cardiac Arrest, Shrapnel

**Meds**
- Lithium Dioxide

**Other**
- Palladium toxicity, alcoholism
Malignant Hyperthermia

**TREAT**
- Anesthetic triggers—discontinue; increase fresh gas flow to 10L/min
- Convert to TIVA
- Hyperventilate—FiO2 100%, O2 high

- **Dantrolene bolus, dilute in sterile water**
  - Dantrolene—2.5 mg/kg
  - Dantrolene—Rapidly administer until patient stable
  - Na2CO3—1 to 2 mEq/kg

- Cool patient
- Hyperkalemia? CaCl2 1g IV
- Labs

**SECONDARY**
- Patient—Monitor in ICU; Dantrolene—1 mg/kg

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Hyperventilate—FiO2 100%, O2 high

Dantrolene—2.5 mg/kg sterile

Dantrolene—Rapidly administer until patient stable

Na2CO3—1 to 2 mEq/kg

Cool patient

Hyperkalemia? CaCl2 1g IV

Check blood gas for electrolyte abnormalities; CaCl2 1g, D50 1 Amp (25g Dextrose) + Reg. Insulin 10 units; (monitor glucose), or NaHCO3 Amp; No Ca channel blockers

Patient—Monitor in ICU; Dantrolene—1 mg/kg

SECONDARY

Cardiac Arrest, Shrapnel

Lithium Dioxide

Palladium toxicity, alcoholism
You will have two simultaneous tasks to perform. In addition to answering medical questions, you will be asked to monitor a filled circle on a separate display:
Let’s try running the dual task now.

On a separate screen, the circle will change color from gray to red, yellow, or blue.

You will have a limited time to press the keyboard key corresponding to the correct color, changing it back to gray.
Great! Now, let us begin the training simulation. You have a paper-based checklist available for use.
You are in the hospital room of an elderly patient (male) performing an assessment.
In the process of your assessment he gasps and becomes limp and unresponsive.
Assessment

Skin: Pale/Warm/Dry
Cardio: No pulse; (already has IV access)
Resp: None; O2 is already on the patient 2L by NC
CNS: No response
Monitor: No monitor available upon collapse
In the process of your assessment he gasps and becomes limp and unresponsive.
What will you do first?
What will you do first?
You call for help. A nurse calls a code blue.
The nurse says that a crash cart is on the way.

What do you do while waiting?
The nurse says that a crash cart is on the way.

What do you do while waiting?
Begin CPR
As you finish the first cycle of CPR, backup and the crash cart arrive. There is a biphasic defibrillator.
The defibrillator is attached and this is the rhythm you see:
What will you do first?
What will you do first?
The patient quickly recovers.
Great Job!

Now let’s try the same simulation again with a dynamic, software cognitive aid. It visible on the adjacent large-screen display.
You are in the hospital room of an elderly patient (male) performing an assessment.
In the process of your assessment he gasps and becomes limp and unresponsive.
Assessment

Skin: Pale/Warm/Dry
Cardio: No pulse; (already has IV access)
Resp: None; O2 is already on the patient 2L by NC
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In the process of your assessment he gasps and becomes limp and unresponsive.
What will you do first?
What will you do first?
You call for help. A nurse calls a code blue.
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What do you do while waiting?
The nurse says that a crash cart is on the way.

**What do you do while waiting?**
Begin CPR
As you finish the first cycle of CPR, backup and the crash cart arrive.
The defibrillator is attached and this is the rhythm you see:
What will you do first?
What will you do first?
The patient quickly recovers.
Good work.

This concludes the training simulator.

Any questions before we begin the study?