



Teaching Surgical Judgment with Simulation

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Justification: Teaching Environment in Surgery

- **Vast amount of material in the curriculum**
- **Specific requirements to teach
ACGME/ABMS 6 Competencies**
- **Work Hour regulations**
- **Supervision requirements becoming increasingly
stringent**
- **Competence must be documented prior to resident
working with limited supervision**



Traditional Preceptor Model Limitations

- **Time intense**
- **Instructor dependent**
- **Clinical Material Availability Variable**
- **Logistically challenging**



E Learning-Simulation-Virtual reality Model

- **Widely accepted to teach technical skills**
- **Used successfully in aviation to teach judgment**
- **Appropriate as clinical judgment depends on a series of binary decisions**
- **Data upon which to make the decisions is available [evidence or expert based]**
- **Not dependent on available clinical material**



Advantages of Simulation

- **Documentation of exposure to curriculum and competencies**
- **Practice can reinforce learning**
- **Can create patterning which is transferable to other situations**
- **Following the Dreyfuss model of expertise, you can advance the learner to at least the earlier levels of competence where they have a perception of how their actions effect outcome, can plan and can develop routines of care outside the clinical setting**
- **Can allow indirect supervision earlier**
- **Learn in a safe environment**



Best Education Principles Can Be Applied

- **Can simulate reality**
- **Interactivity increases retention**
- **Interactivity sharpens critical thinking skills**
- **Can create consistent thought processes**
- **Provide immediate feedback**



Best Education Principles Can Be Applied

- **Present information in reasonable time bites**
- **Provides all necessary materials for the learner**
- **Provide safe opportunities to make mistakes**
- **Can reinforce good habits**
- **Can practice conflict resolution**
- **Can reinforce the competencies**



American College of Surgeons Fundamentals of Surgery Curriculum

- **Created by the Division of Education under the leadership of Dr Ajit Sachdeva**
- **The curricular content is out lined in “Successfully Navigating the First year of Surgical Residency: Essentials for Medical Students and PGY-1 Residents”**
- **Authored by surgical educators who were content experts**



ACS FSC Simulation Goals

The overarching goal of the ACS FSC is to expose all postgraduate year one residents to cases dealing with essential curricular material which is delivered in an online, interactive, case-based format.

- Develops critical thinking
- Builds resident confidence
- Enhances evidence-based decisions
- Provides an opportunity for practice
- Creates consistency in experiences
- Supplements program's materials
- Enhances patient and surgeon safety



Program Description

ACS FSC provides 94 interactive scenarios that cover 11 areas of concentration:

- Preoperative Assessment
- On-Call Issues
- Pain Control
- Unresponsive/Agitated Patients
- Respiratory Management
- Gastrointestinal Conditions
- Wound Management
- Nutritional Support
- Fluids and Electrolytes
- Cardiac Conditions
- Safety Issues

These scenarios incorporate the ACGME competencies using best educational principles, including immediate feedback and justification for decisions.

Additional scenarios in other content areas are in preparation.



FUNDAMENTALS of SURGERY

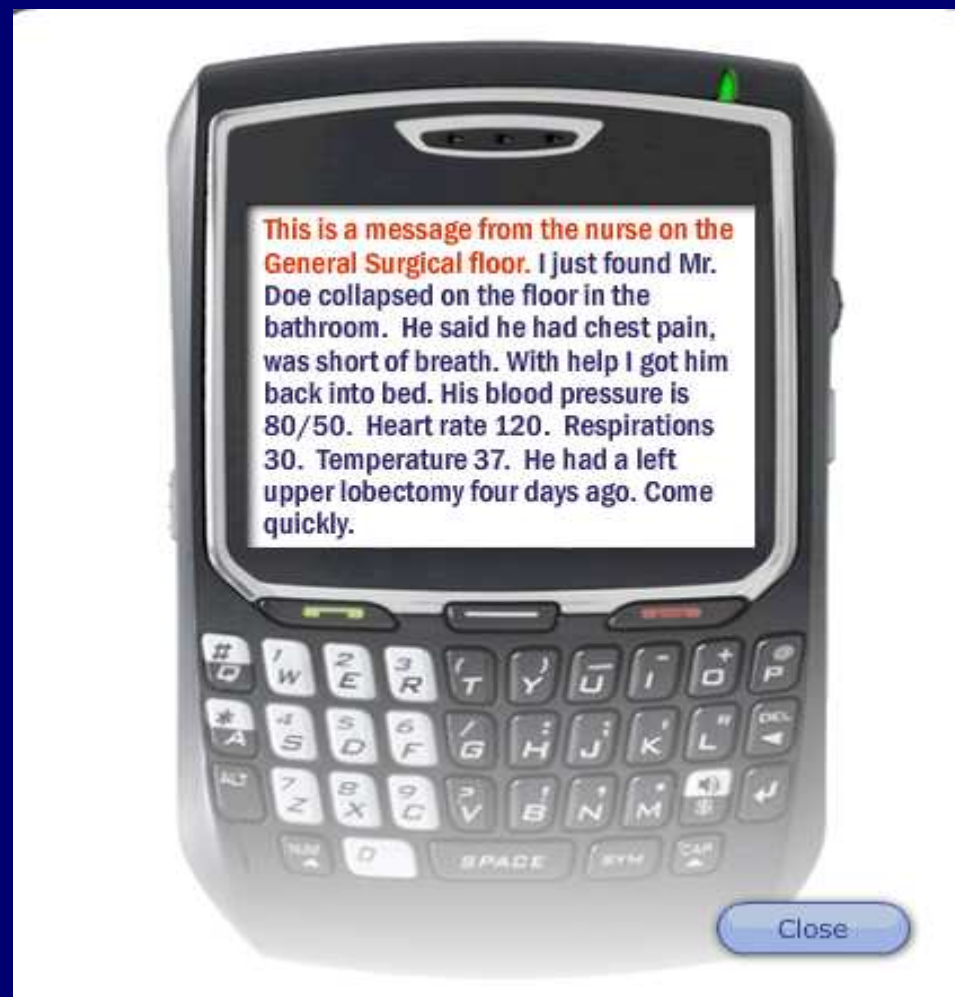
Patient Records Tests References



Most scenarios begin with the information a Resident would expect to receive in a real hospital setting.

The Resident may be notified by a pager message or a telephone call.

When on rounds, the Resident will be given information on a chart.





FUNDAMENTALS of SURGERY

Patient Records Tests References



Patient appears apprehensive, pale and diaphoretic.

The Image of the patient is created to exhibit signs that the Resident should notice.

Where are the patient's hands, and legs? If the patient is moving, what does the movement mean?



This woman appears moderately ill and is moaning in pain.



FUNDAMENTALS of SURGERY

Patient Records Tests References



The Toolbar contains the patient's virtual chart.

As more data is obtained the chart is populated.

Patient

Records

Vital Signs
Patient History and Image

Operative Report
Pulmonary Consultation
Pathology Report
Progress Note
Pre-anesthesia Evaluation
Anesthesia Record

Tests

Master Test List
Test Results

Test Results

Test Results		
Tests	11 Days Ago	ENC
Electrocardiogram		



FUNDAMENTALS of SURGERY

Patient Records Tests References

What are the most important questions to ask this patient?

Open



Questions appear under the Toolbar

When you click "Open"

A selection of answers is presented.

- Potentially correct
- Reasonable but less likely
- Incorrect

The Dots

Continue

100%

The Progress Meter

What are the most important questions to ask this patient?

Close

- Do you use pot or other "fun
- Does anything
- Have you had a
- Have you travel
- How did your p
- How much alcoh
- When did your
- Where is your p

Selected Question

Where is your pain?

Answer

Patient points to her upper abdomen. It is here and goes all the way through into my back.

OK

These are only a few of the questions you would be offered in this scenario within the Course. For this sample, you are only required to select two critical questions in order to "continue". However, you may select all of them if you wish. The questions you asked and the answers you received will be retained in the Patient History Tab in the Patient Section of the Toolbar.

- Critical
- Potentially helpful
- Not relevant

Continue

100%



FUNDAMENTALS of SURGERY

Patient Records Tests References

What is/are the appropriate therapeutic intervention(s)?

Close

- Administer broad spectrum antibiotics
- Administer oral antibiotics and discharge the patient home to follow up with his surgeon the next day.
- Admit for observation
- Assess the neurologic status of the patient
- Discuss with the patient and his family the implication of his current clinical status.
- Exploration of the surgical wound and surgical debridement under local anesthetic in the ED.
- Inotropic therapy
- IV Fluid therapy
- Mechanical ventilation for acute lung injury
- Notify senior resident and attending surgeon
- Notify the OR of this patient's imminent arrival
- Place central venous catheter
- Place Swan Ganz pulmonary artery catheter
- Prepare the patient for surgical debridement in the OR under general anesthesia
- Recombinant Human Activated Protein C
- Steroids

- Correct
- Potentially helpful
- Incorrect

Additional action required before
you can continue.





FUNDAMENTALS of SURGERY

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Steroids

Administer broad spectrum antibiotics

This should be done while awaiting causative organism identification. It will be necessary to reassess antibiotic therapy following organism identification.

OK

- Correct
- Potentially helpful
- Incorrect

Additional action required before
you can continue.





FUNDAMENTALS of SURGERY

- Patient
- Records
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- References

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Whenever a patient is having an unexpected episode, the family should be informed according to HIPAA regulations. After communication with the surgeon and senior resident, either you or they should communicate with the patient's family regarding the status of the patient. One should always be certain that the patient is informed of the progress of his disease and any changes in his clinical course. It is important to discuss your findings and recommendations with the patient at his level of understanding and to take the time to answer his questions.

OK

Correct

Potentially helpful

Incorrect

Additional action required before
you can continue.





FUNDAMENTALS of SURGERY

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Prepare the patient for surgical debridement in the OR under general anesthesia

A basic principle in the control of sepsis is to control and treat the source. Surgical debridement of the infected wound and all of its extensions is critical. All nonviable tissue must be removed as well as any prosthetic material implanted during the procedure. This is best accomplished in the operating room under general anesthesia.

OK

Correct

Potentially helpful

Incorrect

Additional action required before
you can continue.





Other components

- **Timing of interventions**
- **Physical examination**
- **Testing**
- **Radiograms etc presented for the resident to interpret then they receive an expert interpretation**
- **Practice with formulas**
- **References and tables available for future use**



FUNDAMENTALS of SURGERY

 Patient  Records  Tests  References



You have learned:

- That surgical wound sepsis can lead to toxic shock syndrome.
- That beta hemolytic strep and staph aureus are the common bacteriologic organisms that can cause toxic shock syndrome.
- That adequate surgical debridement of the wound is the most critical necessary treatment for this condition. Necrotizing infections frequently extend along tissue planes into other areas. ALL affected tissue requires surgical debridement.
- To be watchful for signs of multi-organ system dysfunction that can result from toxic shock syndrome.
- That administering broad spectrum antibiotics is critical while awaiting the results of the blood and wound cultures.
- That communication with the other members of the health care team, particularly the attending surgeon, is necessary in order to optimize patient care.
- That whenever a patient is having an unexpected episode, after communication with the surgeon and/or senior resident, either you or they should communicate with the patient and his family in accordance with HIPAA regulations regarding the status of the patient.

Click the Continue button to move on.

Continue



Use and Impact of ACS FSC

- 161 general surgery and 66 surgical specialty programs 1791 residents enrolled*
- There is demand for expansion to international training programs- currently in a few programs
- The majority of the programs use it as a preparation tool for residents entering the first year of their residency – available April 1
- Programs report use of ACS FSC for remediation of problematic residents
- Programs report use of ACS FSC for preparation for the annual standardized examination
- Programs report use of ACS FSC for teaching sessions decreases in-person instruction time
- These templates are being used to create scenarios in other disciplines

** Number of enrolled programs and residents in academic year 2013-14 as of 6/4/2013*



**ACS FSC has shown that Simulation
can be used to teach surgical judgment.
Residents and Program directors have
enthusiastically supported it's use.**

Thank You

www.facs.org/education/fsc/index.html