Bridging the Gap

A Course to Promote Local Scenario-Based Training in Emergency Medicine

Eric Dryver
EuSEM Education Committee

- Local training
- Scenario-based
- Checklists
Outsourced Training
Train As You Fight

- Same equipment
- Same routines
- Same colleagues
# Fight As You Train

1. **SITUATION**
   - Team introduction: first name + profession
   - Patient’s age & problem

2. **BACKGROUND**
   - Patient’s prior medical history
   - Current event (e.g. ambulance report)

3. **ASSESSMENT**
   - Potential Conditions?
   - Potential Measures?

4. **RECOMMENDATION**
   - Division of labor; need for extra personnel?
   - Suggestions from team-members?
Scenarios

”What the student does is actually more important in determining what is learned than what the teacher does.”
T J Shuell
ENGINE FIRE
or
Engine Severe Damage or Separation

Condition: One or more of these occur:
• Engine fire warning
• Airframe vibrations with abnormal engine indications
• Engine separation.

1. Autothrottle (if engaged) . . . . . . . . Disengage

2. Thrust lever
   (affected engine) . . . . Confirm . . . . Close

3. Engine start lever
   (affected engine) . . . . Confirm . . . . CUTOFF

4. Engine fire switch
   (affected engine) . . . . Confirm . . . . Pull
   To manually unlock the engine fire switch, press the override and pull.

5. If the engine fire switch or ENG OVERHEAT light is illuminated:
   Engine fire switch . . . . Rotate to the stop and hold for 1 second
   If after 30 seconds the engine fire switch or ENG OVERHEAT light stays illuminated:
   Engine fire switch . . . . Rotate to the other stop and hold for 1 second

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Barriers to Local Scenario Training

- Write scenario
- Write checklist
- Equipment

- Write pretest
- Develop SOPs
- EM new specialty
Emergency Medicine Core Competences
Emergency Medicine for Interns
Course Evaluation

- Course delivered \( x \ 30 \) since February 2015 to \( 541 \) interns

- "Would I definitely recommend this course to others?" \( 5.92 \) (Likert scale 1-6)
# Emergency Medicine Core Competences

<table>
<thead>
<tr>
<th>Monday</th>
<th>Tuesday</th>
<th>Wednesday</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>B</td>
<td>C</td>
</tr>
<tr>
<td>P1</td>
<td>P1</td>
<td>D</td>
</tr>
<tr>
<td>D</td>
<td>D</td>
<td>P2</td>
</tr>
<tr>
<td>D</td>
<td>P1</td>
<td>N</td>
</tr>
<tr>
<td>N</td>
<td>N</td>
<td>P2</td>
</tr>
<tr>
<td>C</td>
<td>C</td>
<td>EKG</td>
</tr>
<tr>
<td>BG</td>
<td>BG</td>
<td>EKG</td>
</tr>
<tr>
<td>C</td>
<td>C</td>
<td>C</td>
</tr>
<tr>
<td>BG</td>
<td>BG</td>
<td>EKG</td>
</tr>
</tbody>
</table>

63 Scenarios
## Critical Scenarios

| 1. Situation | □ Team introduction  
□ Patient's age & problem |
|---------------|------------------------|
| 2. Background | □ Patient's prior medical history  
□ Current event/ vital signs |
| 3. Assessment | □ Potential conditions?  
□ Potential measures? |
| 4. Recommendation | □ Division of labor?  
□ Suggestions? |
## Critical Scenarios

### ABCDE Algorithm

| 1. Airway & C-spine |
| --- | --- |
| ☐ Head & neck inspection |
| ☐ Assess airway sounds // EtCO₂¹ |
| ☐ Oral cavity // ET tube¹ inspection |
| 2. Breathing |
| ☐ SpO₂ |
| ☐ Respiratory rate |
| ☐ Chest wall examination |
| ☐ Pulmonary auscultation |
| 3. Circulation |
| ☐ Pulse/blood pressure/CRT³ |
| ☐ Heart rate |
| ☐ 3-lead-EKG |
| 4. Disability |
| ☐ Level of consciousness⁴ |
| ☐ Eyes (opening, gaze, pupils) |
| ☐ Distal sensation & strength |
| ☐ Glucose |
| 5. Exposure |
| ☐ Front of the body examination |
| ☐ Back of the body examination |
| ☐ Temperature |
Critical Scenarios

MANAGEMENT

1. Adrenalin IM
   • Indication: first-line therapy. Fatal outcomes associated with delayed administration.
   • Adrenalin 1 mg/ml 0.3-0.5 ml (10 µg/kg or 0.15 mg) IM deeply into the anterolateral, mid thigh. The dose may be repeated every 5 min.

2. Trigger Removal
   • Indication: all cases of anaphylaxis
   • Remove the trigger if possible, e.g. discontinue infusion, remove stinger after a bee sting.

3. Oxygen
   • Indication: all cases of anaphylaxis
   • Oxygen (≥ 10 L/min via mask with reservoir) for patients with severe allergic reactions.

4. Upper Airway Measures?
   • Indication: upper airway compromise (e.g. stridor, swelling, subjective narrowing)
   • Call anesthesia and/or ENT specialist
   • Adrenalin 1 mg/ml 1 ml nebulized (400 µg/kg, max dose of 5 mg)
   • Cricothyroidotomy (surgical or needle) if complete upper airway obstruction develops
Differential Diagnosis Scenarios

Excerpts from "Dyspnea"

BACKGROUND

M  □ Current medications?
□ Birth control pill, other hormonal treatments?
A  □ Allergies?
P  □ Past medical history?
□ Prior heart- or thromboembolic disease?
L  □ Life circumstances? (e.g. occupation, pets)?
E  □ Alcohol: how often? How much?
S  □ Smoking: amount? Prior smoking?

HISTORY

O  □ When did the dyspnea start? Activity?
□ Time till max intensity: sec? min? hr?
P  □ Worsen when lying down?
Q  □ Air hunger? Chest tightness?
R  □ Worse with exertion?
S  □ Effect on daily function?
T  □ Constant or intermittent? Increasing?
□ Prior similar episodes?
+ □ Chest pain or discomfort?
□ Leg pain or swelling?
□ Fever / chills?
□ Cough (dry or productive-sputum colour?)

CONSIDER
1. Upper respiratory tract problem
2. Acute coronary syndrome
3. Pulmonary embolism
4. Pneumonia

2017-1

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Differential Diagnosis Scenarios

### Wells Simplified Score for Pulmonary Embolism

<table>
<thead>
<tr>
<th>RISK FACTORS</th>
<th>POINTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clinical signs and symptoms of deep venous thrombosis*</td>
<td>3</td>
</tr>
<tr>
<td>Alternative diagnosis less likely than pulmonary embolism</td>
<td>3</td>
</tr>
<tr>
<td>Heart rate &gt; 100/min</td>
<td>1.5</td>
</tr>
<tr>
<td>Immobilization (&gt; 3 days) or surgery in the previous 4 weeks</td>
<td>1.5</td>
</tr>
<tr>
<td>Previous pulmonary embolism or deep ven thrombosis</td>
<td>1.5</td>
</tr>
<tr>
<td>Hemoptysis</td>
<td>1</td>
</tr>
<tr>
<td>Malignancy (receiving treatment, treated in the last 6 mo or palliative)</td>
<td>1</td>
</tr>
</tbody>
</table>

* minimum of leg swelling and pain with palpation of the deep veins

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**Graph**
- **Pre test**
- **Post test**
Ventilation with Bag-Valve-Mask

1. Prior
☐ Choose a mask of the correct size (cover the patient’s nose and mouth but not the eyes)
☐ Chose a bag of the correct size
☐ Head in neutral or sniffing position, dentures (if any) left in place

2. Procedure
☐ Apply the mask to the face covering nose and mouth (one or two hand technique)
☐ Lift the mandible using one hand (C-E clamp technique) or two hands
☐ Ventilate using appropriate tidal volume, pressure and rate

3. Post
☐ Assess chest movements
☐ Assess for air leak around the mask
☐ Assess vital signs (e.g. SpO2%)
☐ Assess for gastric insufflation, consider nasogastric tube
# EKG Interpretation

## Systematic EKG Interpretation

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1. O</strong></td>
<td>Rate?</td>
<td>Rhythm?</td>
</tr>
<tr>
<td><strong>2. P</strong></td>
<td>Atrial hypertrophy?</td>
<td>PR length/depression?</td>
</tr>
<tr>
<td><strong>3. Q</strong></td>
<td>Pathological Q waves?</td>
<td>QRS width?</td>
</tr>
<tr>
<td><strong>4. R</strong></td>
<td>Axis?</td>
<td>Ventricular hypertrophy?</td>
</tr>
<tr>
<td><strong>5. S</strong></td>
<td>Ventricular hypertrophy?</td>
<td>ST elevation/depression?</td>
</tr>
<tr>
<td><strong>6. T</strong></td>
<td>T wave elevation/inversion?</td>
<td>QTc duration?</td>
</tr>
<tr>
<td><strong>7. +</strong></td>
<td>Additional findings?</td>
<td></td>
</tr>
</tbody>
</table>

![EKG Image](image-url)
Neurology Scenarios

<table>
<thead>
<tr>
<th>Core Neurological Examination</th>
<th>1. Cortex</th>
<th>2. Cranial Nerves</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Level of consciousness</td>
<td>Pupillary size &amp; reactivity</td>
</tr>
<tr>
<td></td>
<td>Language</td>
<td>Eye movements</td>
</tr>
<tr>
<td></td>
<td>Visual fields/neglect</td>
<td>Facial movements</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Soft palate elevation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Tongue motility</td>
</tr>
<tr>
<td>2. Cranial Nerves</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Arm proximal</td>
<td></td>
</tr>
<tr>
<td>3. Motor</td>
<td>Arm distal</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Leg proximal</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Leg distal</td>
<td></td>
</tr>
<tr>
<td>4. Sensation</td>
<td>Hand-touch</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Hand-pinch</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Foot-touch</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Foot-pinch</td>
<td></td>
</tr>
<tr>
<td>5. Reflex</td>
<td>Biceps or triceps</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Patella</td>
<td></td>
</tr>
<tr>
<td>6. Coordination</td>
<td>Finger-nose</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Heel-shin</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Romberg</td>
<td></td>
</tr>
</tbody>
</table>
Emergency Medicine Checklist Compendium: Syndromes

SIGN-IN, ABCDE, SIGN-OUT & EMERGENCY MEDICATIONS

Sign-In ................................................................. 3
ABCD E ....................................................................... 4
Sign-Out ................................................................. 4
Emergency Medications ............................................. 5

ARREST & ANAPHYLAXIS

Cardiac Arrest ......................................................... 6
Neonatal Resuscitation ............................................. 9
Anaphylaxis ........................................................... 10

AIRWAY SYNDROMES

Angioedema ............................................................ 12
Epiglottitis ............................................................. 13
Cricothyrotomy ....................................................... 14
Foreign Body Airway Obstruction ......................... 15

BREATHING SYNDROMES

Asthma Exacerbation .............................................. 16
Chronic Obstructive Pulmonary Disease Exacerbation 18
Cardiogenic Pulmonary Edema ............................. 20
SHOCK
Shock
Hypovolemic Shock
Hemorrhagic Shock
High-Risk Pulmonary Embolism
Tension Pneumothorax
Pericardial Tamponade
Cardiogenic Shock
Sepsis
Adrenal Crisis
Neurogenic Shock

TACHYCARDIAS
Tachycardia
Regular Tachycardias with Narrow QRS Complexes
Regular Tachycardias with Wide QRS Complexes
Irregular Tachycardias with Narrow QRS Complexes
Irregular Tachycardias with Wide QRS Complexes

DISABILITY SYNDROMES
Increased Intracranial Pressure
Status Epilepticus

BLOOD TESTS, TOXIDROMES & EKG SYNDROMES
Diabetic Ketoacidosis
Hyperglycemic Hyperosmolar Syndrome
Hyperkalemia
Hypokalemia
Hyponatremic Encephalopathy
Toxidromes
Sodium Channel Blockade Toxidrome
Potassium Channel Blockade Toxidrome
Calcium Channel/Beta Blocker Toxidrome
STEMI
Emergency Medicine Checklist Compendium: Symptoms

INTRODUCTION
Symptom Checklists ................................................................. 2
MAPLES .................................................................................. 3
OPQRST+ .............................................................................. 3

PAIN
Abdominal/Flank Pain ............................................................ 4
Back Pain .............................................................................. 6
Chest/Thoracic Pain .............................................................. 8
Headache/Facial Pain ............................................................ 10
Joint Pain/Swelling ............................................................... 12
Leg Pain/Swelling ................................................................. 14
Scrotal/Testicular Pain ......................................................... 16
Throat/Neck Pain ................................................................ 18

NEUROLOGICAL SYMPTOMS
Altered Consciousness ......................................................... 20
Neurological Deficit ............................................................. 22
Syncope/Seizure ................................................................. 24
Vertigo .................................................................................. 26
Vision Disturbance .............................................................. 28

TRAUMA
Trauma to the Head/Neck .................................................... 30
Wound .................................................................................. 32

MISCELLANEOUS
Allergic Reaction ............................................................... 34
Diarrhea .............................................................................. 36
Dyspnea ............................................................................. 38
Fever .................................................................................. 40
Poisoning ........................................................................... 42
Checklists
Flipped Classroom

Knowledge

Knowledge

Competence?

Competence?
Lund, Sweden: 171016-18
Annette.kall@skane.se

Leuven, Belgium: 171124-26
Veronique_brabers@hotmail.com

Maribor, Slovenia: 180202-04
Gregorprosen@gmail.com

www.eusem.org
www.lucem.info
e_dryver@hotmail.com

63 residents in EM