Health Education Thames Valley

ACUTE PULMONARY EMBOLISM (SURGICAL WARD)

MODULE: ACUTE CARE

TARGET: FY1 & FY2 TRAINEES AND FINAL YEAR MEDICAL STUDENTS

BACKGROUND:

It is estimated that more than 25000 people die in the UK every year from preventable hospital-acquired venous thromboembolism (VTE). Prompt diagnosis and treatment can significantly reduce mortality (20-40% down to 2-8%). Diagnosis can be challenging as the symptoms and signs are often non-specific, so healthcare professionals must have a high index of suspicion in at-risk patients. FY trainees should be able to recognise at-risk patient groups as well as the symptoms and signs of VTE and acute pulmonary embolism (PE). FY2 trainees should be able to work within and lead a team to safely assess and treat patients in a timely manner.

RELEVANT AREAS OF THE FOUNDATION PROGRAMME CURRICULUM

1 Professionalism	**1.4 Team Working:** • Demonstrates clear and effective communication within the team **1.5 Leadership:** • FY2 demonstrates extended leadership role by making decisions and dealing with complex situations across a greater range of clinical and non-clinical situations

7 Good clinical care	**7.5 Safe prescribing** • Prescribes drugs and treatments appropriately, clearly and unambiguously in accordance with Good Practice in Prescribing Medicines (GMC, 2008) • Uses the BNF plus pharmacy and computer-based prescribing-decision support to access information about drug treatments, including drug interactions • Performs dosage calculations correctly and verifies that the dose is of the right order • Chooses appropriate intravenous fluids as vehicles for intravenous drugs and calculates the correct volume and flow rate • Prescribes oxygen appropriately including to patients with the risk of carbon dioxide retention • Relates prescribing activity to available prescribing guidelines / audit data eg antibiotic usage **7.7 Infection control and hygiene** • Demonstrates correct techniques for hand hygiene with hand gel and with soap and water • Takes appropriate microbiological specimens in an timely fashion • Follows local guidelines / protocols for antibiotic prescribing **7.9 Interface with different specialties and with other professionals** • Understands the importance of effective communication with colleagues in other disciplines

8 Recognition and management of the acutely ill patient	**8.1 Promptly assesses the acutely ill, collapsed or unconscious patient** • Uses Airway, Breathing, Circulation, Disability, Exposure (ABCDE) approach to assessing the acutely unwell or collapsed patients • Uses the GCS or Alert, Voice, Pain, Unresponsive (AVPU) to quantify conscious level • Investigates and analyses abnormal physiological results in the context of the clinical scenario to elicit and treat cause • Uses monitoring (including blood glucose) to inform the clinical assessment • Asks patients and staff appropriate questions to prioritise care • Seeks senior help with the further management of acutely unwell patients both promptly and appropriately • Summarises and communicates findings to colleagues succinctly • Appropriately communicates with relatives/friends and offers support **8.2 Responds to acutely abnormal physiology** • Formulates treatment plan in response to acutely abnormal physiology taking into account other co-morbidities and long-term conditions • Administers and prescribes oxygen, fluids and antimicrobials as appropriate (see Good Clinical Care: Safe Prescribing and Infection Control) • Recognises when arterial blood gas sampling is indicated, identifies abnormal results, interprets results correctly and seeks senior advice • Plans appropriate action to try to prevent deterioration in vital signs • Reassesses ill patients appropriately after starting treatment • Recognises the indicators for intensive care unit review when physiology abnormal **8.3 Manages patients with impaired consciousness, including seizures** • Assesses conscious level (GCS or AVPU) • Treats ongoing seizures • Recognises causes of impaired consciousness and seizures and seeks to correct them • Recognises the potential for airway and respiratory compromise in the unconscious patient (including indications for intubation) • Understands the importance of supportive management in impaired consciousness • Seeks senior help for patients with impaired consciousness in an appropriate and timely way
11 Investigations	**11.1 Investigations** • Requests investigations appropriate for patients' needs in accordance with local and national guidance to optimise the use of resources • Seeks out, records and relays results in a timely manner • Plans/organises appropriate further investigations to aid diagnosis and/or inform the management plan • Provides concise, accurate and relevant information and understands the diagnostic question when requesting investigations • Understands what common tests (Table 1) and procedures entail, the diagnostic limitations and contraindications, in order to ensure correct and relevant referrals/requests • Interprets the results correctly within the context of the particular patient/presentation e.g. plain radiography in a common acute condition • Prioritises importance of investigation results

INFORMATION FOR FACULTY

LEARNING OBJECTIVES:

- ABCDE assessment and initial management of deteriorating patient
- Early recognition of patient at risk of PE
- Early and Appropriate investigation and suggestions for initial management of PE
- Appropriate call for help and concise transfer of information

SCENE INFORMATION:

- Location: Surgical Ward

Expected duration of scenario: 15 mins (a), 10 mins (b)
Expected duration of debriefing: 20-30 mins (a), 15-20mins (b)

Mr John Snow is a 38 year old man on the trauma ward. He is 7 days following a high speed RTA and 6 days post-op IM nailing of his right femur. He also has 2 fractured ribs on the right side and a fractured right clavicle. He has regular codeine and paracetamol for pain relief. Overnight he became short of breath (SOB). The nurse has called the doctor because she is worried about the SOB. He will go on to exhibit the symptoms and signs of a PE. (For a good candidate the scenario could progress to a PEA arrest.)

EQUIPMENT & CONSUMABLES

- Mannequin: On ward bed, IV Access
- Stocked airway trolley
  (Specifically: Airway adjuncts (OPA, NPA))
- O2 and selection of masks incl. NRB
- Monitoring equipment (SpO2, ECG, NIBP)
- Syringes, flushes, IV fluid and giving sets
- Simulated drugs (Antibiotics as per local guidelines)
- Blood bottles, culture bottles, request forms
- Observation chart, medical note paper, drug chart
- Stocked crash trolley
- Mock-up anaesthetic equipment/drugs

PERSONS REQUIRED

FY Trainee to lead scenario
Ward nurse as assistant
Medical Registrar (If requested)
ITU Registrar (If requested)

PARTICIPANT BRIEFING: (TO BE READ ALOUD TO PARTICIPANT)

1. Scene-setting: Recognition and initial management of the acutely unwell patient are essential skills to develop during FY training. Today we would like one of you to assess a patient on a surgical ward. Please assess the patient methodically and treat the problems / symptoms that you find.
2. Assistance: An assistant will be present as the scenario begins (faculty will tell you who this is and what experience they have). If other (appropriate) help is needed at any stage, ask for it (the faculty will let you know how to request it).
3. The scenario will run until a natural conclusion, after which we will regroup to discuss the scenario and any related subjects that the group raises. This is not a test of the person who participates in the scenario and they will not be judged in any way on their performance.
4. We may then move back to the manikin again for the next steps in the management of the patient, followed by a further discussion of any matters that arise.

'VOICE OF MANIKIN' BRIEFING:

Your name is John / Joanne Snow. You are 38 years old. You were involved in a high speed RTA 7 days ago and broke your right thigh, collarbone and some ribs. Your thigh was nailed 6 days ago. Initially you were doing well but overnight you became short of breath.

You suffer from asthma which is well controlled on inhalers, but this is not like an asthma attack.

Your breathing has been getting more difficult since yesterday evening. You are now very short of breath, with pain on the right side of your chest and you can only speak in short sentences. If prompted by the faculty, you will deteriorate and become exhausted.

IN SCENARIO BRIEFING:

Ward nurse:
You are looking after Mr John (Miss Joanne) Snow, who is 6 days post-IM nailing of their right femur. The patient also has 2 fractured ribs on the right side and a fractured right clavicle.

The patient has a past medical history of asthma - well controlled on inhalers
Usual medicationss:
- Salbutamol INH PRN
- Becotide INH BD

Additional medications in hospital:
- Paracetamol QDS
- Morphine PCA stopped
- Codeine QDS
- Ibuprofen PRN
- Lactulose BD
- Prophylactic Dalteparin

You have called the FY doctor to review the patient because you are worried about their breathing. It seems to have become more rapid and laboured since you saw them yesterday. Please assist the FY doctor who comes to assess the patient.

ADDITIONAL INFORMATION:

The main focus of this scenario is recognition of the development of a PE with timely investigation and treatment.

If the participant doesn't recognise this and commence treatment, then the patient should deteriorate, however, this may make the scenario too complex for some participants to manage. Instead, the medical registrar may arrive to continue care, or the faculty could choose to pause for a discussion and then continue with another participant managing the further deterioration.

If the participant is doing really well and faculty wish to expand the clinical challenge, then the patient could deteriorate before the senior medical staff arrive. The participant should then continue the relevant ward- based treatments and contact the critical care team for support.

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CONDUCT OF SCENARIO

INITIAL SETTINGS

A: Clear, speaking in short sentences
B: RR28, SpO_2 88% on 21% /92% on 15LO_2, bibasal creps LHS pleural rub
C: HR 120 ST, BP 130/90, CRT 3sec, cool peripheries
D: E3V4M6, PERL 3mm, BM 5.9
E: No rash, temp 37.3°C, sweaty

EXPECTED ACTIONS

- Recognise acutely unwell
- ABCDE Assessment
- O2 facemask
- ECG + NIBP monitoring. Consider DDx
  - incl LVF? HAP? PE?
- Ix: ABG, Bloods, ECG, CXR
- Consider blood cultures, abx as per local guidelines if suspect HAP
- Consider diuresis +/- GTN +/- CPAP if suspect LVF
- Review medical notes and drug chart

DETERIORATION

A: Clear, speaking in single words
B: RR 45, SpO_2 88% 15LO_2, bibasal creps, left pleural rub
C: HR 140 ST, BP 100/60, CRT 3 sec
D: E3V4M5, PERL 3mm
E: unchanged

EXPECTED ACTIONS

- No improvement if treated for LVF or HAP
- Consider other diagnoses incl PE
- Contact seniors re investigation and thrombolysis v. anticoagulation

FURTHER DETERIORATION

A: Clear, speaking in single words
B: RR 48, SpO_2 85% on 15LO_2, bibasal creps, left pleural rub
C: HR 140 ST, BP 90/50, CRT 3 sec
D: Unchanged
E: Unchanged

RESULTS

INTIAL ABG:
pH 7.29
pO2 7 (6 if on room air)
pCO2 5.8
BE -4
Lact 1.4

CXR:
RLZ consolidation

ECG:
Sinus tachycardia, ST depression

ABG After Deterioration:
pH 7.34
pO2 7
pCO2 5.6
BE -4
Lact 1.4

BLOODS:
WCC 10, others also normal

EXPECTED ACTIONS

- Recognition of deterioration consistent with PE: consider Ix & Rx
- Contact Seniors for support

LOW DIFFICULTY

- Medical Registrar arrives early, commences assessment for thrombolysis v anticoagulation and ensures Investigations booked
- Patient improves

NORMAL DIFFICULTY

- Seniors not present initially, but advise to chart anticoagulation.
- CTPA requested
- Patient asks what's happening → explanation given

HIGH DIFFICULTY

- Deterioration to PEA cardiac arrest
- ITU team review history and get thrombolysis prescribed.
- Discussions / decisions re: duration of CPR.

RESOLUTION

Appropriate treatment prescribed, investigations ordered, events discussed with patient, contemporaneous notes, decisions re: ongoing care

RESOLUTION

Airway secure, CPR ongoing, thrombolysis prescribed, timescale for continuing CPR agreed

DEBRIEFING

POINTS FOR FURTHER DISCUSSION:

- Recognition of patients at risk of VTE / PE
- Recognition of symptoms / signs → differential diagnosis and appropriate investigations
- How to discuss probable diagnosis with acutely unwell patient
- Guidelines for management of PE

DEBRIEFING RESOURCES

1. NICE guidelines for VTE / PE available at:
http://www.nice.org.uk/nicemedia/live/13767/59720/59720.pdf

INFORMATION FOR PARTICIPANTS

KEY POINTS:

- Initial signs not pathognomonic of PE: start with ABCDE approach and refine as response to treatment and results of investigations become available
- Recognise signs of deterioration and involve seniors early
- Guidelines for investigation / management of PE

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DEBRIEFING RESOURCES

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PARTICIPANT REFLECTION:

What have you learnt from this experience? (Please try to list 3 things)

How will your practice now change?

What other actions will you now take to meet any identified learning needs?

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PARTICIPANT FEEDBACK

Date of training session:.....

Profession and grade:.....

What role(s) did you play in the scenario? (Please tick)

Primary/Initial Participant	
Secondary Participant (e.g. 'Call for Help' responder)	
Other health care professional (e.g. nurse/ODP)	
Other role (please specify):	
Observer	

	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
I found this scenario useful					
I understand more about the scenario subject					
I have more confidence to deal with this scenario					
The material covered was relevant to me					

Please write down one thing you have learned today, and that you will use in your clinical practice.

How could this scenario be improved for future participants?
(This is especially important if you have ticked anything in the disagree/strongly disagree box)

FACULTY DEBRIEF – TO BE COMPLETED BY FACULTY TEAM

What went particularly well during this scenario?

What did not go well, or as well as planned?

Why didn't it go well?

How could the scenario be improved for future participants?