

# Emergency Medicine

## Student Workbook



**Name:** .....

**Dates of attachment:** .....

**Grade:** .....**Signature of Supervisor**.....



The Emergency Department (ED) of the Royal Infirmary, Edinburgh, sees around 110,000 new patients every year and is the busiest adult department in the country.

The overall outcomes of the EM attachment are for you to:-

- acquire first hand experience of the initial assessment and management of a wide spectrum of acutely unwell and injured patients.
- Assess and make a management plan for a wide range of undifferentiated Emergency Department patients.
- improve your competency in a range of clinical skills.

This workbook is designed to help give structure and guidance during your Emergency Medicine attachment. The workbook **must be completed and handed in** to your supervising tutor at the feedback session on the final day. Your workbook will be graded and this will form part of your EM mark. After your attachment workbooks will be sent to Jennifer Hill from where you can collect them to keep as a record. The workbook identifies core EM topics, and should be used to record and reflect on your experiences during the EM attachment. This self-direction will be complimented by the tutorial programme which will also require your active participation.

## **ASSESSMENT**

Your assessment will be based on a Consultant-led discussion on your overall performance with your tutors and the staff within the ED. Your workbook contains lists of activities to guide you during the attachment, a reflective case history, a record of resus cases as well as practical and resuscitation skills for you to see and do. The quality and content of your workbook will contribute towards your overall mark.

## **BOOKS AND OTHER REFERENCE MATERIALS**

There is a well stocked library in the Teaching Room which you are encouraged to use. Power point tutorials and cases are available through EMIBANK and EEMeC and are referred to throughout this workbook. There is a University computer that you can log onto in the teaching room.

The recommended textbook book, covering all aspects of adult and paediatric Emergency Medicine with major sections on resuscitation, medical emergencies, trauma, orthopaedics, psychiatry, ENT etc is:

The Oxford Handbook of Emergency Medicine 3rd edition  
ed. J Wyatt et al. Oxford University Press

The best large reference textbooks are:

Emergency Medicine concepts & clinical practice  
6th ed. Ed. P Rosen. Mosby

Emergency Medicine a comprehensive study guide  
6<sup>th</sup> ed. Ed. J Tintinalli. McGraw Hill

(these are available in the library RIE)

## SHIFTS IN THE ED

The majority of your experience will be gained on the 'shop floor' of the department. In the resuscitation room you will be supervised by a senior doctor. To allow one-to-one instruction and tuition you will be attached to a tem and work with them on their shift system.

The shifts that your team work are:

Day	07.45-18.00
Back	12.00-22.00
Late	17.30-02.00
Night	22.00-08:00

The medical staff works in teams of 4-6 (FY2, GPVST, ST1-6). Their shift pattern is shown below. You will be allocated to a team for the attachment and you will work the same shifts as the team, this will include nights and weekends. If you need to change the shift pattern that you have been allocated then you must arrange a swap yourself and let Maria know on [Maria.Grant@LUHT.scot.nhs.uk](mailto:Maria.Grant@LUHT.scot.nhs.uk).

	M	T	W	Th	F	S	S
Team 1	off	off	off	off	D	D	D
Team 2	L	L	L	N	N	N	N
Team 3	off	off	D	D	off	off	off
Team 4	D	D	B	B	B	B	B
Team 5	N	N	N	N	off	off	off
Team 6	B	B	off	off	L	L	L

Day 0730-1800hrs Back 1200-2200 hrs, late 1730-0200 hrs, night 2200-0800 hrs.

Clinical / teaching handovers are held in the Teaching room at 0745 hrs, 1730 hrs and 2200 hrs. Students on shift should always attend these handovers.

## TUTORIALS

Tutorials are structured to allow students to actively participate. All tutorials will take place in the ED teaching room. If you miss the tutorials because of the shifts you are working then they are available on EEMeC for you to catch up. Although only a small number of core EM topics can be covered in the tutorials there are a number of additional cases and presentations on EMIBANK/EEMeC that cover the learning outcomes of the attachment.

Attendance is expected unless you are on nights. Please indicate your attendance and initials of tutor delivering session

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### Week 1

Monday	08.15	Introduction (all to attend)		
Tuesday	15.45	Wound management and suturing		
Wednesday		No tutorial		
Thursday	15.45	Major Trauma and cases		
Friday	15.45	Medical Emergency cases		

### Week 2

Monday	15.45	Head injury		
Tuesday	15.45	Hand & wrist problems		
Wednesday		No tutorial		
Thursday	15.45	ABGs and oxygen therapy		
Friday	08.15	Feedback session and quiz (all to attend)		

\* NB there is an ED clinical teaching session every 4<sup>th</sup> Wednesday at 0800 – 1200 hrs; all students are welcome to attend these sessions. The topics will be advertised the week before around the ED.

## EMERGENCY MEDICINE CORE TOPICS

### WOUND MANAGEMENT

Wounds and burns account for 25% of ED attendances. Most are easily treated, but proper assessment and treatment is essential even for the most minor wound. Disabling injuries may be overlooked and life-threatening infections may follow inappropriate treatment. Serious wounds that are an immediate threat to life are comparatively rare but it is essential that proper management takes place or life or limb may be lost.

Although most wound care is routine, every wound is different. Remember the patient's point of view: "The most important wound is the one I've got".

### Learning Outcomes

By the end of the attachment you should have addressed the following aspects of wound management

Describe the principles of wound healing and factors which affect this	
Perform simple wound closure with interrupted sutures and staples under supervision.	
Discuss the concept of asepsis when performing procedures.	
Safely infiltrate local anaesthetic prior to wound closure and discuss the diagnosis and management of local anaesthetic toxicity	
Describe the prevention, immunisation and treatment of Tetanus.	
Choose and apply a simple dressing appropriately to a wound.	
Recognise the common types of wound infection and discuss their management.	
Discuss the management of special types of wound: puncture, foreign body, flap and bite.	
Describe the causes, estimation of depth & size, and treatment of burns.	

### Resources

1. Tutorial 1 –wound management and simulated skills practice session
2. Supervised clinical practice

### Recommended reading

J. Wyatt. Oxford Handbook of Emergency Medicine 3<sup>rd</sup> ed pp 400-417  
Tutorials 3333

## Wound closure log

You should be personally *involved* in the performance of wound closure in at least three patients. Insert details below.

Date	ED No.	Type of closure or dressing *	Signature and comments by supervisor

\*Description of wound, site, size, suture material used, LA technique used, dressing, advice given to patient

## MAJOR TRAUMA

Major trauma accounts for less than 1% of total ED attendances. Despite this, trauma is the single commonest cause of death in the first four decades of life. Around 25,000 people per annum in the UK die following injury. Appropriate and timely investigation and treatment of such patients can reduce mortality. The ED is central in the chain of care for the multiply traumatised patient.

### Outcomes

By the end of the attachment, you should have seen the management of trauma patients and, where possible, followed them through to investigations and admission.

Discuss the common causes of major trauma in the UK.	
Explain the importance of mechanism in trauma.	
Understand the aspects of public health and prevention that are in place or could be in place to reduce the incidence and the severity of trauma.	
Describe the early responses to hypoxia and hypovolaemia; including at a cellular level.	
List early treatments for airway, breathing and circulation that are required pre-hospital and in the ED.	
Apply the ABCDE principal of assessment to a trauma patient	
List the investigations that are commonly required in a trauma patient .	
Discuss the issues around transport and transfer of trauma patients.	
Describe the role of permissive hypotension in the management of trauma patients.	
Understand the role of triage in the early management of multiple casualties.	

### Resources

1. Tutorial 2 – Major Trauma and cases
2. Additional ppt presentations – injury patterns and blood replacement
3. Observing management of Resuscitation room patients

### Recommended reading:

J Wyatt. Oxford Handbook of Emergency Medicine 3<sup>rd</sup> ed. pp 317-396



## Trauma Cases

You should try and see some trauma cases over the 2 weeks. Insert details below.

Date	ED No.	Aetiology of trauma	Injuries sustained and comments on care*

\* includes systems in place to ensure patients managed in safe and timely fashion, team working, speciality involvement, transfer, communication etc

## HEAD INJURIES

Head injuries are a common presentation to the ED. In Scotland, about 100,000 head injured patients attend hospital each year: 1 in 50 of the population. Overall, 10-20% of patients attending with a head injury will be admitted but, of these, only 5% need transfer to a neurosurgical unit. The vast majority are managed entirely by specialities other than Neurosurgery. This demands a good working knowledge of the pattern of presentation and guidelines for initial management to ensure that mortality and morbidity are minimised.

### Outcomes

By the end of the attachment, you should have seen the management of head injured patients.

Understand the epidemiology and pathophysiology of head injury.	
Apply the Glasgow Coma Score to assess conscious level.	
Describe the importance of primary and secondary brain insults and how to prevent them.	
Appreciate the importance of the clinical history in managing a patient with a head injury	
List the steps in resuscitation and early management of a head injured patient.	
Understand the indications for CT scan in a patient with a head injury.	
Describe the indications for admission in a patient with a head injury.	
Discuss the types of patients that are likely to require transfer to neurosurgical care.	

### Resources

1. Tutorials 4: Head injury
2. Additional ppt presentations – maxillofacial problems
2. Informal shop floor teaching
3. Abundant opportunity to examine and assess head injured patients

### Recommended reading

J Wyatt. Oxford Handbook of Emergency Medicine 3<sup>rd</sup> ed. pp 352-385

## Head Injury Cases

You should try and see some patients with a head injury over the 2 weeks. Insert details in the table.

Date	ED No.	Mechanism	Investigations and outcome

## FRACTURES & HAND INJURIES

Limb injuries are the commonest reason for patient attendance. Although rarely life-threatening, these injuries make a considerable impact upon the daily lives of those involved, including disruption of work and sporting activities. This is particularly true of hand injuries. The importance of meticulous initial assessment and carefully considered management cannot be over-emphasised, if long-term complications are to be avoided.

### Outcomes

By the end of the attachment, you should have seen the investigation and management of common limb and hand injuries.

Understand the mechanisms involved in commonly seen injuries.	
Become competent in the initial assessment of patients with limb injuries.	
Appreciate the impact of fractures and hand injuries on patients' daily activities and to relate the management of each injury to meet the particular requirements of each individual patient.	
Describe the principles of the initial management of dislocations and fractures.	
Discuss the importance of neurovascular assessment in fractures and limb injuries.	
List the steps in caring for a compound wound.	
Prescribe and use appropriate analgesia for fractures and limb injuries; including inhaled, oral and IV analgesia and local anaesthesia.	
Understand methods of immobilisation of limb injuries including: emergency splintage, traction, casts.	
Discuss the role of early mobilisation, physiotherapy & patient advice	

### Resources

1. Tutorial 5 - Hand and wrist injuries
2. Additional ppt presentations – Innocuous injuries, procedural sedation, shoulder injuries, soft tissue injuries, hip injuries, knee injuries
3. Bier's Block list every weekday 0900hrs
4. One-to-one teaching on patient examination and management, X-ray interpretation and application of plaster of Paris

### Recommended reading

Macleod's Clinical Examination 11<sup>th</sup> ed. pp 301-348

Oxford Handbook of Emergency Medicine 3<sup>rd</sup> ed. pp 418-500

## Fracture Cases

You should try and see one wrist fracture manipulation under Bier's Block, several cases of fracture and joint manipulation under sedation and help apply at least one Plaster of Paris. Insert details into the table below and get them 'signed off'.

Date	Mechanism	Signature by supervisor
	Procedural sedation	
	Bier's Block	
	Plaster of Paris application	

## MEDICAL EMERGENCIES

During your attachment it is important to see acutely unwell medical patients when they are first brought into the department. Observe and get involved in their initial assessment and management. Apply your ABCDE structured assessment and try to recognise a sick patient. Also see first hand important clinical findings such as, respiratory distress and poor peripheral perfusion.

### Outcomes

By the end of the attachment, you should have observed, discussed and become involved in the initial assessment and resuscitation of medical patients

Demonstrate the ABCDE approach to the assessment and management of acutely unwell patients and discuss the role of oxygen and fluids	
Discuss the role of oxygen and fluids	
Discuss the importance of the effective functioning of the resuscitation team in the management of emergency patients	
Describe the differential diagnosis , investigation and initial management of common ED presentations including	
-Acute severe asthma, pneumonia, PE	
-MI, arrhythmias, LVF	
-GI bleeding	
-Toxicology	
-DKA and hypoglycaemia	
-Seizures	
-Stroke and TIA	
-Syncope and collapse	
-Confusion and falls in the elderly	
-Headache	

### Resources

1. Tutorial 3 – medical emergency cases and Tutorial 6 ABGs and oxygen therapy
2. Additional ppt presentations – anaphylaxis, arrhythmias, electrolytes, stroke and TIA, the acute patient, problem cases
3. Shop floor teaching and seeing patients in the Resuscitation room.

### Recommended reading

Oxford Handbook of Emergency Medicine 3<sup>rd</sup> ed. pp 64-175

## Resuscitation Room Log

Keep a log of cases that you see in the Resus room below

Date	ED no.	Details

Write a more detailed reflective description of one such resuscitation case that you have seen during the attachment. Try and follow this patient on their patient journey after the ED, e.g. to CT, ITU or PCI lab and to observe discussions and interactions with the family.

Think about the following areas in relation to the management of the patient in the resuscitation room

**Reception:** What was the composition of the resuscitation team and what were their roles?

**History:** How was the history pieced together and from what sources?

**Resuscitation:** What resuscitation did the patient receive? What initial investigations were carried out and what did they show?

**Referral:** What other specialities were involved?

**Disposition:** Where was the patient transferred to?

**Outcome:** What happened to the patient after the ED?

**Relatives:** What was discussion with the relatives like, were there any issues?

**Overall team working:** How effectively did the team function – think leadership, communication, decision making, task management, situational awareness?



**Resuscitation Case**

Resuscitation Case
Date and ED no.
Clinical Course

Discussion and points of interest

### **PRACTICAL PROCEDURES AND SKILLS**

The attachment in the ED is a really good opportunity to get practise at some of they key procedures and skills that you will need to be able to do as junior doctors. There are ample opportunities for ABGs and cannulation and you should try and insert a urinary catheter under supervision while you are on attachment.

You should record the details of precedures that you see and do in your online log book at

[https://www.eemec.med.ed.ac.uk/log\\_book/index.asp](https://www.eemec.med.ed.ac.uk/log_book/index.asp)

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## Outcomes

By the end of the attachment, you should have practised key clinical procedures that you require to function safely and effectively as a junior doctor.

To practise and become competent in key clinical procedures that you require to function safely and effectively as a junior doctor.	
To demonstrate appropriate infection control techniques when performing these procedures.	
<b>Diagnostic procedures to do (under supervision if necessary)</b>	
Set up bed-side monitoring	
Venepuncture	
Measure BM	
Record a 12-lead ECG	
Measure peak flow	
Arterial blood gas sampling	
<b>Therapeutic procedures to do (under supervision if necessary)</b>	
IV cannulation	
Making up IV drugs	
Running through and setting up IV fluids	
Maintain airway using simple manouevres	
Give O2 therapy ny mask	
Administer SC and IM injections	
Urethral catheterisation	
Use of simple wound dressings	
Infiltrate local anaesthesia into wound	
Wound closure with suturing and staples	
Chest compressions as part of CPR	

Limb splintage	
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<b>Procedures to try and see</b>	
Chest drain insertion	
Rapid sequence intubation	
Insertion of arterial line	
Procedural sedation	
Bier's block	

## THE ED ENVIRONMENT

### Outcomes

By the end of the attachment you should have considered the following aspects of Emergency Medicine

Function effectively as part of a multi-disciplinary team in which other healthcare practitioners may have advance roles  
Exhibit good communication skills with patients, relatives and the ED team  
Describe the aspects of team working displayed in the resuscitation room  
Be aware of the role of good communication and empathy in breaking bad news and dealing with sudden death  
Be aware of the role of alcohol and drugs in a significant number of ED presentations  
Discuss the problem of violence and aggression in the ED

Take a psychiatric history from a patient with acute mental health problems in the ED  
Appreciate the importance of good end of life care in patients within the ED who require withdrawal of treatment and palliative care  
Be able to identify vulnerable adults in the ED e.g. the elderly


### FINALLY

We hope you enjoyed the attachment and got a lot from it! Thank you for all your hard work and please at least consider a career in emergency Medicine.

### **DISCLAIMER**

*Every effort has been made to ensure that the information contained in the workbook is correct. It does not form part of any contract between the University and the student, and it must be read in conjunction with the Terms and Conditions of Admission set out in the current edition of the University Calendar.*