

Medico-Legal Issues in Accident and Emergency Care

6 March 2019

Fieldfisher, London

#AvMAAandE

CPD: **6 hours**
(APIL accredited)

SRA competencies: **B**

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Medico-Legal Issues in Accident and Emergency Care

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#AvMAandE

Dear Delegate

AvMA are delighted to welcome you to the Medico-Legal Issues in Accident and Emergency Care in event. We hope you find the evening informative and interesting. AvMA staff will be on hand to help make it so and we hope that the following information will help make the event more pleasant and productive. Contact Details at the Conference

The AvMA Registration Desk will be staffed from 09.00 – 16.00. If you have any queries or emergencies at any point during the conference, please go to the registration desk, or ask any member of the AvMA staff for assistance.

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QUESTIONS:

Speakers are happy to answer your questions at the end of their presentation. We would be grateful if you could identify yourself and your company before asking your questions.

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All documentation received at the time before the event is enclosed within the online documentation pack. Any missing papers will either be distributed during the event or be available for download soon after the event. Please be assured that AvMA always endeavours to offer a complete set of speaker papers included within the documentation pack. However, due to other commitments by our speakers this is not always possible.

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NO SMOKING:

There is strictly no smoking in the conference venue and we would kindly request that if you would like to smoke, you will have to go outside. Thank you in advance for your co-operation.

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Please be so kind as to complete and hand in the evaluation form before leaving the conference. All delegate packs should have an evaluation form in them, but if you cannot locate one then please collect one from the registration desk. We are constantly striving to improve our service to you and therefore value your feedback.

CPD CONFIRMATION:

CPD: 6 hours
(APIL accredited)

SRA competencies: B

Provider ID Number: 1051

The conference code is AC/AvMA 368

Finally, if there are any problems, please do not hesitate to contact me.

Yours sincerely

Karen Sara
Events Assistant, AvMA

Medico-Legal Issues in Accident and Emergency Care

Speaker Biographies

RICHARD BOOTH QC, has practised at 1 Crown Office Row since being called to the Bar by Middle Temple in 1993 and is our current Head of Chambers. He grew up in South Wales before taking degrees in Cambridge and Brussels. As a junior, he had a broad base of advocacy experience in a variety of courts and tribunals the length and breadth of the country.

He specialises in clinical negligence, disciplinary / regulatory law, personal injury (especially brain and sports injuries), costs, inquests and sports law.

Richard is recognised as a 'Leading Silk' in Clinical Negligence and Professional Discipline by Chambers & Partners and is nominated for their 2018 'Professional Discipline Silk of the Year' Award.

Having originally studied Modern Languages at Cambridge, Richard has a good working knowledge of Spanish and French.

MR MANOLIS GAVALAS, is the most senior ED consultant at UCH with hands on experience in all aspects of emergency medicine.

He is an established national and international

expert in Clin Neg and has provided an extensive number of reports mainly for claimants although he is frequently instructed to act for the MDU in defendant work.

His main interest is in education having identified a major problem with doctors in general failing to execute optimum 'decision making'.

CARON HEYES, is a solicitor in Fieldfisher Clinical Negligence team in London. She has pursued clinical negligence claims on behalf of patients across a broad spectrum of claim types, including obstetrics and gynaecology, neonatology, oncology, cardiology, Emergency, fertility and patient rights. Caron has a particular expertise in complex neonatal, obstetric, surgical mismanagement and accident claims and is experienced in providing advice and representation at inquests.

The Legal 500, and Chambers, UK, a Client's Guide to the Legal Profession, have repeatedly recognised Caron's expertise as a leader in the field of Clinical negligence, and recommended her as an "experienced, adept and supportive lawyer" and "a star associate".

DR PAUL KENNEDY, Qualifying in 1995 from St Georges Hospital Medical School and Imperial College Mr Kennedy has been working continually in Emergency medicine for almost 20 years and as a consultant for almost 10. He has worked in England, Wales and Northern Ireland in teaching hospitals to small district generals to see extremes of care given in ED. He is presently involved in the RCEM CESR as well as being involved in the development of the associate physician program. He was previous head of EM medicine for the Oxford Deanery and is Trauma lead for the European Trauma course for London as well as being medical advisor to a local innovation hub. He is also the inventor and developer for the De Novo vaginal speculum the first soft vaginal speculum due for release later this year. His hobbies include developing smart and sustainable housing and painting which his is pretty bad at.

Medico-Legal Issues in Accident and Emergency Care

Speaker Biographies

JO MOORE, was called to the Bar in 2015 and joined 1 Crown Office Row Chambers in September 2016.

She has a broad practice with a particular focus on clinical negligence and public law. Jo has completed an extended secondment with a claimant clinical negligence firm, working on birth injuries and other high value claims. She advises and represents both claimants and defendants in medical matters.

Jo has a particular interest in medical inquests. She has worked with AvMA pro bono in a complex neonatal inquest. She is also interested in sports injuries, doping, and the duty of care owed to athletes by their team medics.

MR NADEEM NAYEEM is a Consultant in the Emergency Department at the University Hospital Lewisham in London. He was the Clinical Director of Emergency Departments at University Hospital Lewisham and Queen Elizabeth Hospital, Woolwich in South East London from 2012 - 2016.

The University Hospital Lewisham Emergency Department is an inner city District General Hospital that sees in excess of 120,000 new patients per year.

DR TIM NUTBEAM, is a consultant in Emergency Medicine, lead consultant for the Devon Air Ambulance, Honorary Professor of Prehospital Critical Care and the Lead Clinical Advisor for the United Kingdom Sepsis Trust.

Tim was a member of the team that developed the "Sepsis Six"; this treatment bundle is used in 96% of acute hospital trusts in the UK and in 33 countries worldwide.

Tim edited the "ABC of Sepsis" for BMJ books and all versions of the UKST's manual. He has co-authored all versions of the sepsis 'toolkits' produced by the UKST to guide the early diagnosis and management of sepsis.

MR PETER RICHMOND FRCS (EDIN), FRCS (LOND), FRCER, is a Honorary Consultant in Emergency Medicine - Poole NHS FT.

Previously Consultant in Cardiff for twenty-five years, Clinical Director for fifteen years, Regional Representative for College of Emergency Medicine, Clinical Lead for Wales Emergency Care Access Collaborative and Course Director in Advanced Trauma Life Support for twenty-five years Consultant in Poole until June 2018

Twenty-five years experience in preparing reports in clinical negligence for Claimant and Defendant, acted as a professional and expert witness in Civil, Criminal and Coroner's cases and in Clinical Negligence trials.

Forthcoming Conferences and Events

Court of Protection conference

20 March 2019, Manchester Conference Centre

Since its inception in 2007, the Court of Protection has made crucial decisions to try to protect the wellbeing of vulnerable individuals. In a rapidly-evolving legal environment, AvMA's second annual Court of Protection conference will examine the current state of litigation and the challenges and responsibilities facing those who work in this important area. Programme available and booking will open in December.

Cerebral Palsy and Brain Injury Cases - Ensuring you do the best for your client

22 May 2019, America Square Conference Centre, London

Emergency Care Services are facing intense pressures to sustain its urgent and emergency care system. With the changing NHS climate there is a vital need to continually monitor these services and ensure high quality care remains consistent throughout the NHS. AvMA's conference on 'Medico-Legal Issues in Accident and Emergency Care' will examine the current standards, issues, roles and responsibilities, investigations and management of key areas in accident and emergency care.

31st Annual Clinical Negligence Conference

28-29 June 2019, Royal Armouries Museum, Leeds

Join us in Leeds for the 31st ACNC! This is the annual event that brings the clinical negligence community together to learn and discuss the latest developments, policies and strategies in clinical negligence and medical law. Early bird booking deadline is 22 March 2019 and the conference programme will be available by the end of March. Sponsorship and exhibition packages are now available.

For further details of our events:

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Lighten the load of organising bookings for your event by letting AvMA manage ticket sales for you. We can provide secure online booking on a dedicated webpage, handle payments and provide a complete guest list for you.

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Medico-Legal Issues in Accident and Emergency Care

6 March 2019
Fieldfisher, London

09.45 Chair's Opening Remarks

RICHARD BOOTH QC, Barrister, 1 Crown Office Row

09.50 Sepsis – A Medical Emergency

DR TIM NUTBEAM, Consultant in Emergency Medicine, University Hospitals Plymouth; Lead Doctor, Devon Air Ambulance & Clinical Advisor, United Kingdom Sepsis Trust

10.35 Medico-Legal Issues in Diagnosing and Treating Acute Abdominal Pain

MR NADEEM NAYEEM, Consultant Emergency Department, University Hospital Lewisham, London

11.25 Refreshments

11.40 Common Orthopaedic Injuries – Diagnosis & Management in the Emergency Department

MR PAUL KENNEDY, Consultant in Emergency Medicine, Poole General Hospital

12.30 Lunch

13.15 Emergency Care and Who Provides It

MR PETER RICHMOND, Honorary Consultant Emergency Medicine, Poole NHS Foundation Trust

14.00 Current Standards for Cardiac Care in Accident and Emergency

MR MANOLIS GAVALAS, Consultant in Accidents and Emergency, University College Hospital, London

14.45 Refreshments

15:00 Current Standards for Stroke Care in Accident and Emergency

MR PETER RICHMOND, Honorary Consultant Emergency Medicine, Poole NHS Foundation Trust

15.45 Representing Clients with an A&E Claim

CARON HEYES, Senior Associate, Fieldfisher;

JO MOORE, Barrister, 1 Crown Office Row

16.25 Chair's Closing Remarks

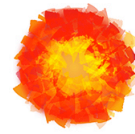
Medico-Legal Issues in Accident and Emergency Care

6 March 2019
Fieldfisher, London

DELEGATE LIST

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Emma	Broomfield	Lanyon Bowdler	Solicitor
Tara	Byrne	Boyes Turner	
Elliot	Clarke	Gadsby Wicks	
Nick	Fairweather	Fairweathers Solicitors LLP	Chief Executive (Senior Solicitor)
Mr Manolis	Gavalas	University College London	Consultant in Accident and Emergency Medicine
Emma	Green	Medical Protection Society	Medical Claims Adviser
Shannon	Hartin	PIC	Negotiations Manager
Caron	Heyes	Fieldfisher	Senior Associate
Lindsay	Holt	Fieldfisher	Partner
Russell	Kaunz	YES Personal Injury Lawyers (trading name of Eaton Smith LLP)	
Mr Paul	Kennedy	Poole NHS Foundation Trust	Consultant in Emergency medicine
Jenny	Kennedy	Anthony Gold	Partner
Dr Freya	Levy	NHS Resolution	Clinical Fellow Emergency Medicine
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Mr Nadeem	Nayeem	Lewisham Hospital	Consultant & Clinical Director of A&E
Dr Tim	Nutbeam	University Hospitals Plymouth	Lead Clinical Advisor / Consultant in Emergency Medicine
Maria	Repanos	Fletchers Solicitors	Associate Partner
Peter	Richmond	Poole NHS Foundation Trust	Honorary Consultant Emergency Medicine
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SEPSIS



THE UK
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SEPSIS: A Medical Emergency

Notes to accompany presentation: 6th March 2019 for AvMA

Timnutbeam@nhs.net

To cover the following areas:

- Key concepts in the diagnosis and treatment of sepsis
- Areas where sepsis care commonly 'goes wrong'
- Sepsis treatment and its evidence base

Section 1: Key concepts in the diagnosis and treatment of sepsis:

A) Sepsis and Anti-microbial resistance

There is a balance to strike between early and aggressive sepsis care and the preservation of life saving antimicrobials. Recent strategies that have increased the recognition and brought forward the treatment of sepsis in a patients journey (e.g. [the Sepsis CQUIN](#)) have resulted in a greater use of antibiotics in the emergency care setting but have reduced overall antibiotic consumption. Important strategies to reduce antibiotic use are mainly procedural (e.g. regular review of policies and prescriptions) as opposed to reducing access to individual patients with moderate or severe infection.

B) Sepsis isn't Sepsis

Sepsis is a syndrome associated with the body's dysregulated response to infection. The term "sepsis" is commonly used in government policy / NHS communications and other associated literature to describe all time-dependent and potentially lethal infections. The academic description of the syndrome v's operationalised usage can lead to conflict and confusion.

C) Sepsis and Outcomes

Infection is a common mode of death. William Osler (the father of modern medicine) described pneumonia as “the old man’s friend”. The most significant predictor of death in the context of infection (and sepsis) is age.

D) Testing for Sepsis

- Sepsis is a syndrome with no single ‘test’ for the disease.
- Blood cultures do not need to be positive (and are commonly negative). White cell counts, CRP’s and other tests (e.g. procalcitonin) can indicate infection.
- Interpreting the patients physiology (heart rate, blood pressure, oxygen saturations) can help indicate the severity of infection.
- Evidence of end organ damage e.g. damage to kidneys, lung or liver is an indicator of the sepsis syndrome.
- Need to understand why testing and the test characteristics of each test (rule in / rule out, sensitivity and specificity)

E) Diagnosing Sepsis

- Diagnostic criteria have changed over time, despite ‘international definitions’ no clear standard exists.
- Different trusts will use different diagnostic standards:
 - o The presence of SIRS (systemic inflammatory response syndrome) + infection
 - o A Q-SOFA score (Sepsis-3 definitions)
 - o Using NEWS (National Early Warning Score)
 - o Using a ‘screening tool’ (e.g. UKST)

F) Infection is progressive

- Patient's with or at risk of infection must be 'screened' regularly for the presence of sepsis
- Each patient will progress at different rates due to host and infection factors
- May continue to progress despite treatment – mandatory reassessment.

Section 2: Areas where sepsis care commonly 'goes wrong'

This section identifies common themes in route cause analysis' related to infection and sepsis.

A) Transitions Of Care

- Transfer of care is high risk for errors:
 - o Between organisations
 - o Areas within an organisation
 - o Teams or personnel
- Guidance recommends that when a patient is identified as having sepsis, that initial bundles of care (e.g. the Sepsis Six)

B) More than one diagnosis

- Especially when the diagnosis's are owned by more than one speciality

C) Failure to complete paperwork

D) Junior clinical staff

- a. ST4 + dictated within some guidelines for review
- b. Significant experience to “rule-out” outside of guidance
- c. Unfortunate effects on antibiotic use

E) Failure to Safety Net

- a. Written v’s verbal
- b. Triggers to return
- c. Documentation

Section 3: Sepsis Treatment:

The Sepsis Six, review and **escalate** care.

- Oxygen
- Blood Cultures
- **Intravenous antibiotics**
- Intravenous fluids
- Measure lactate
- Measure urine output



Medico Legal aspects of diagnosing & treating abdominal pain 6 March 2019

Nadeem Nayeem FRCS, FRCER

Consultant

Emergency Department

University Hospital Lewisham, London

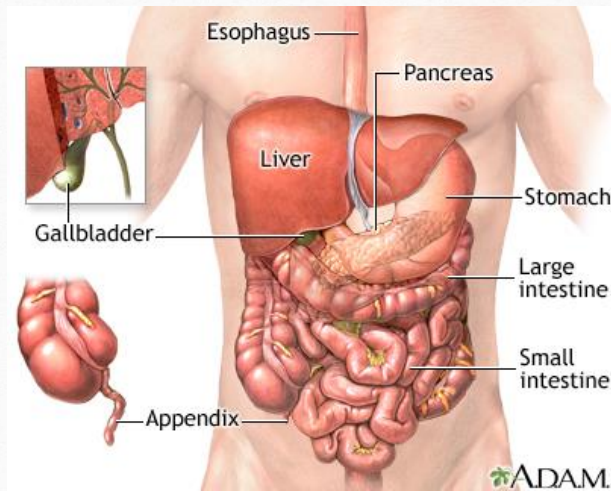


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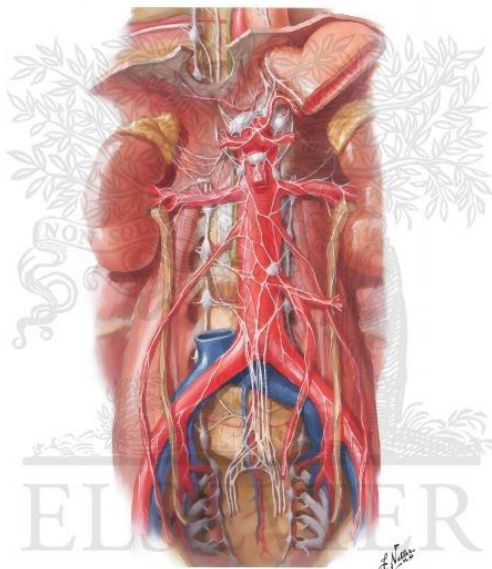
Abdominal cases – 20 cases in the past 5 years

• Perforated Duodenal Ulcer	3	• Torsion testis	1
• Appendicitis	3	• Intestinal perforation	1
• Urinary sepsis	2	• Intestinal obstruction	1
• Oesophageal perforation	2	• GI bleed	1
• Abscesses – perineum, buttock	2	• Gall stones	1
• Ectopic pregnancy	2	• Liver laceration	1

2



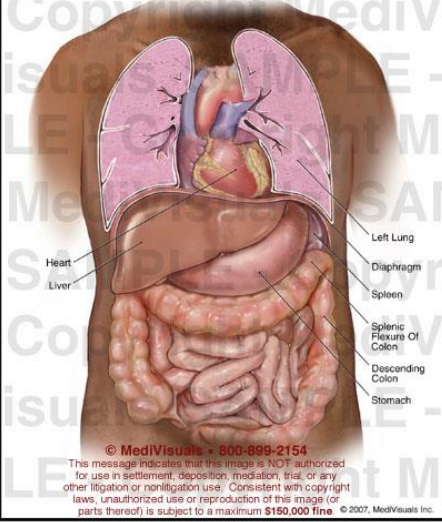
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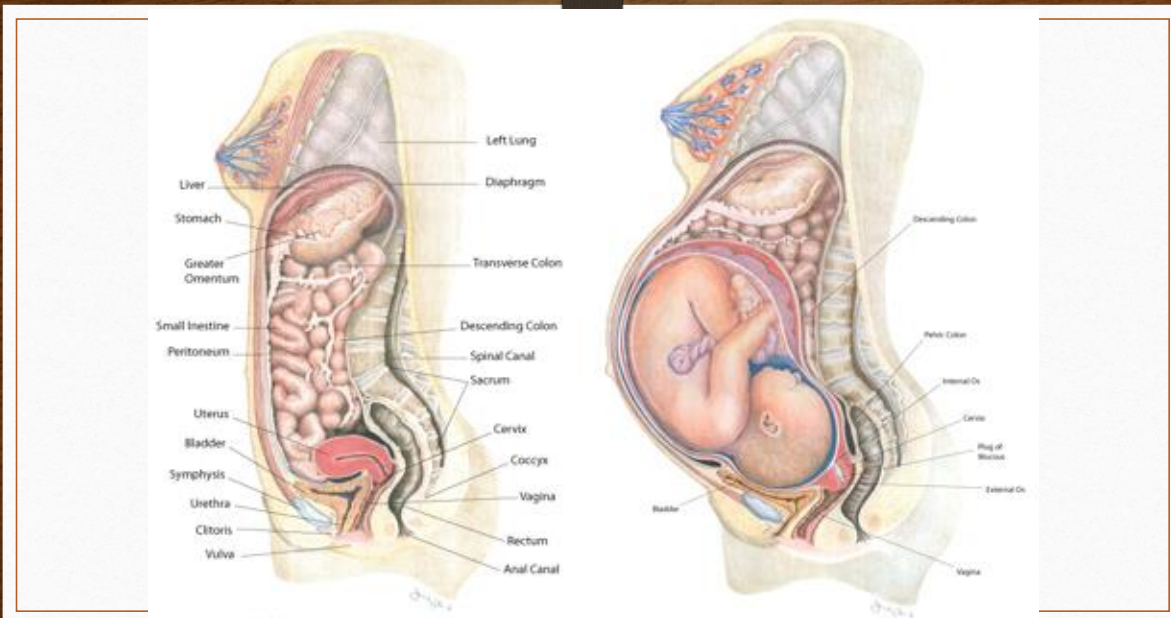
Normal Chest & Abdomen Organs



5



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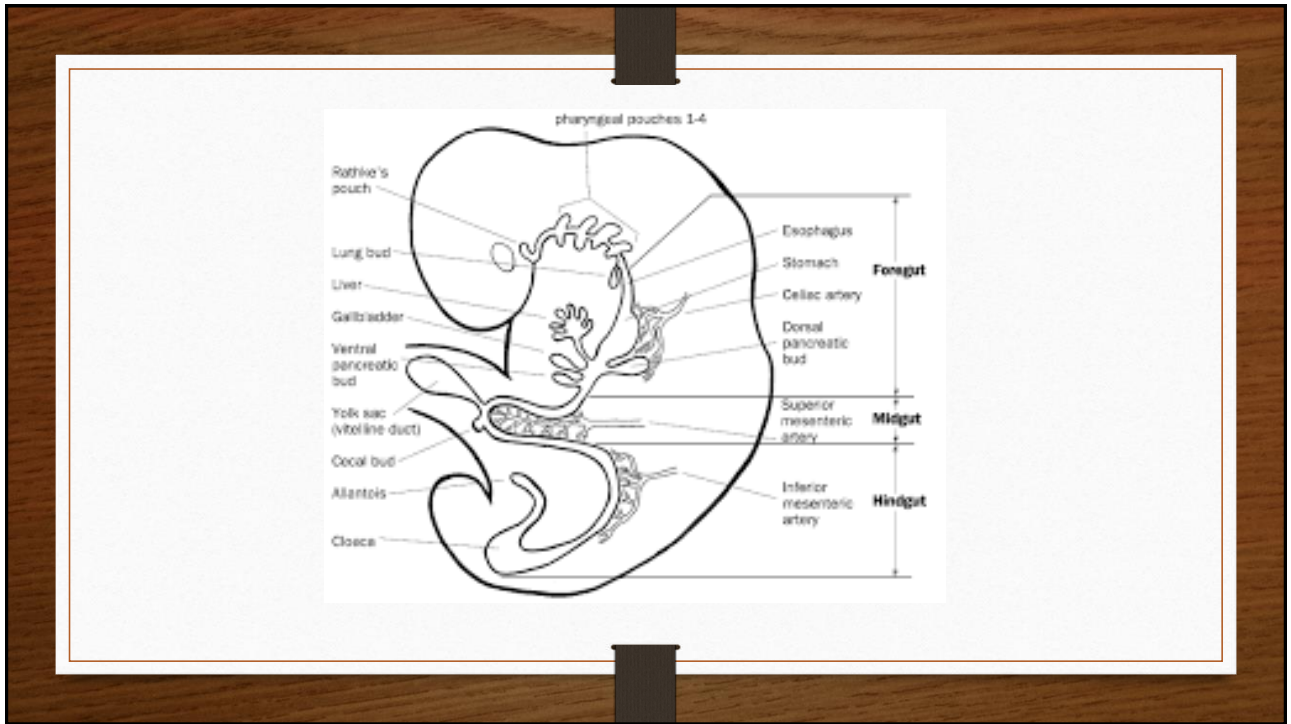


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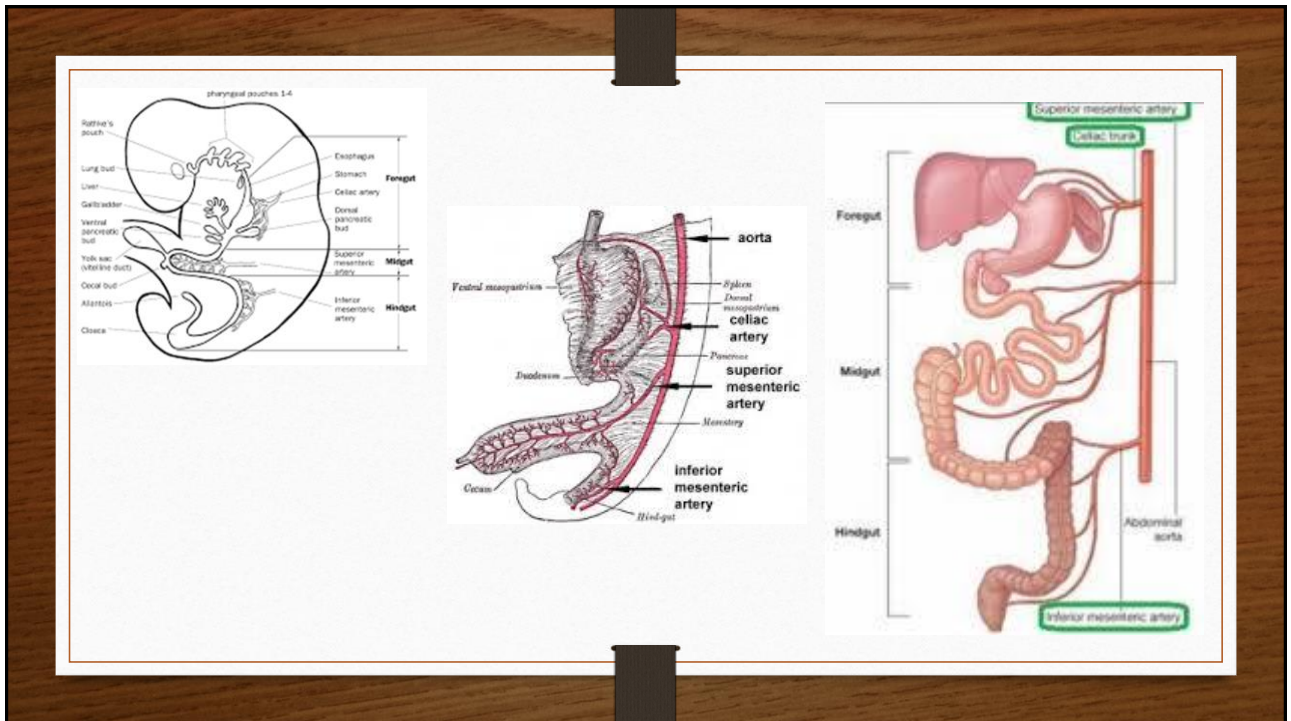
Conditions Associated with Abdominal Pain

Right	Center	Left
<ul style="list-style-type: none"> Gallstones Cholecystitis Stomach ulcer Duodenal ulcer Hepatitis 	<ul style="list-style-type: none"> Heartburn/indigestion Hiatal hernia Epigastric hernia Stomach ulcer Duodenal ulcer Hepatitis 	<ul style="list-style-type: none"> Functional dyspepsia Gastritis Stomach ulcer Pancreatitis
<ul style="list-style-type: none"> Kidney stones Kidney infection Inflammatory bowel disease Constipation 	<ul style="list-style-type: none"> Umbilical hernia Early appendicitis Stomach ulcer Inflammatory bowel disease Pancreatitis 	<ul style="list-style-type: none"> Kidney stones Kidney infection Inflammatory bowel disease Constipation
<ul style="list-style-type: none"> Appendicitis Inflammatory bowel disease Constipation Pelvic pain (Gyne) 	<ul style="list-style-type: none"> Bladder infection Prostatitis Diverticulitis Inflammatory bowel disease Inguinal hernia (groin pain) Pelvic pain (Gyne) 	<ul style="list-style-type: none"> Constipation Irritable bowel syndrome Inflammatory bowel disease Pelvic pain (Gyne) Inguinal hernia (groin pain)

8



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ACUTE ABDOMINAL PAIN

- Is a common complaint in the Emergency Department (5 - 10% of total ED attendances)
- Outcome of patients presenting with abdominal pain – Admission 18%
- Undifferentiated (non specific abdominal pain)
25% ED discharges and 35 – 41% hospital discharges – no cause identified

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ABDOMINAL EMERGENCIES PRESENTATION

- Abdominal Pain
- Vomiting
- Constipation
- Diarrhoea
- Bleeding – upper or lower GI

12

Other symptoms

- Syncope – ruptured ectopic, aortic aneurysm, pulmonary embolism, dissection
- Loss of appetite
- Altered bowel habits
- Weight loss

13

PHYSICAL EXAMINATION

- Vital signs
- Abdominal examination – Inspection, palpation- tenderness (localised, generalised), rigidity
- Tests for peritoneal irritation - ? Rebound, cough test
- Rectal and/or vaginal examination
- Examine the whole abdomen, including pelvis, back testicles and hernial orifices

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ACUTE ABDOMEN (SURGICAL)

- Acute appendicitis
- Perforated peptic ulcer
- Renal Colic
- Intestinal Obstruction
- Ectopic pregnancy
- Abdominal Aortic Aneurysm
- Acute Diverticulitis
- Cholecystitis / biliary colic
- Acute Pancreatitis
- Mesenteric ischemia
- Internal / External hernias
- Crohn's disease
- Ulcerative Colitis – toxic megacolon

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Medical Conditions causing abdominal pain

- Diabetic ketoacidosis
- Addisons disease
- Hypercalcemia
- Sickle cell crisis
- Rare – uraemia, lead poisoning, methol intoxication etc

17

REFERRED PAIN

- Acute Myocardial infarction
- Chest Infection / Pneumonia
- Spinal Pathology - infection, Herpes Zoster (Shingles)

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Investigations



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INVESTIGATIONS



- Full blood count – WCC – normal or high ?
- Urea & electrolytes. Liver Function Tests, Amylase
- C-Reactive Protein – CRP, raised
- Erect Chest - intestinal perforation
- Abdominal x-ray – intestinal obstruction
- Urine analysis
- Pregnancy test
- ECG, ABG, VBG
- CT and MRI

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ABDOMINAL PAIN assessment & diagnosis

- Immediate assessment should focus on **distinguishing those cases of true acute abdomen that require urgent surgical intervention from those that do not**, which can initially be managed conservatively
- **An acute abdomen is diagnosed by a combination of history, physical examination, radiography, and laboratory results.**
- When symptoms do not necessitate immediate surgery, and when imaging has not led to a definitive diagnosis, further abdominal examinations by an experienced physician may help determine the underlying cause.

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Case studies

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CASE 1

50 yr old male presented 8am

Severe abdominal pain 7-10/10

Central abd pain radiating to right flank, sharp, fluctuates, unable to sit

? Colicky pain. No vomiting. Bowels \surd , urine \surd , WCC – 15.1, CRP 12, amylase – 44

? Renal Colic – ref Surgeons.

AAA scan – normal. Plain abdominal x-ray (KUB) performed.

Kept overnight observation, review next morning very unwell.

Laparotomy, acute perforated appendicitis with extensive peritonitis.

Required Colostomy

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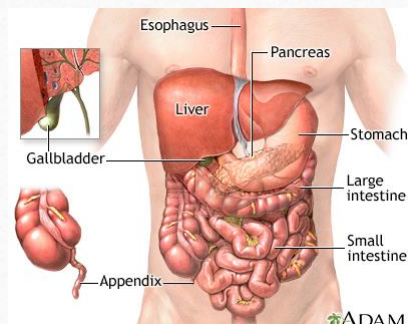
ISSUES CASE 1

- diagnosis of renal colic – not confirmed, via CT KUB, USS or IVU
- Patient examination not repeated

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ACUTE APPENDICITIS

- Abdominal pain is the main presenting complaint. Pain typically starts at the mid-abdominal region and later (1 to 12 hours) shifts to the right lower quadrant. Pain is usually constant in nature and with intermittent abdominal cramps and is usually worse on movement and coughing.
- Location of the pain may vary depending upon the position of the appendix:
- Retrocaecal appendix may cause flank or back pain
- Retroileal appendix may cause testicular pain due to irritation of the spermatic artery or ureter
- Pelvic appendix may cause suprapubic pain
- A long appendix with tip inflammation in the left lower quadrant may cause pain to that region.



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CASE STUDY 2

- 19 years old female, 6 weeks pregnant
- 4/7 bleeding PV, no abdominal pain. Haemodynamically – normal.
- Abdomen – soft, non tender.
- Repeat obs – normal.
- No risk factors for ectopic pregnancy –e.g. PID, tubal surgery etc.
- Discharge home, to be seen next day Early Pregnancy Assessment Unit (EPAU) clinic.

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CASE 2 (Cont.)

- Next day EPAU, abdomen soft, non tender.
- USS – ectopic pregnancy
- Laparoscopy – 400ml blood inside the abdomen, left Salpingectomy

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Issues in Case 2

- Was it appropriate to discharge from ED ?
- Should an Ultrasound scan be done when in ED ?

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ECTOPIC PREGNANCY

- The classic clinical triad of ectopic pregnancy is pain, amenorrhea, and vaginal bleeding;
- Only about 50% of patients present with all 3 symptoms.
- 40-50% present with vaginal bleeding
- 50% have a palpable adnexal mass
- 75% may have abdominal tenderness.
- These symptoms overlap with those of spontaneous abortion; a prospective, consecutive case series found no statistically significant differences in the presenting symptoms of patients with unruptured ectopic pregnancies versus those with intrauterine pregnancies.



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CASE 3

- 51 years old female
- Abdominal pain D&V
- Abdomen tender. On arrival BP – 140/80, pulse 82.
- Diagnosis - Gastroenteritis
- 2 hr 20 min later - BP 95/52, rechecked 95/50. Given IV fluids 1L.
- Repeat BP – 101/50
- Discharged , diagnosis Gastroenteritis

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CASE 3 (Contd.)

- Return to ED next day
- Increase pain, unwell
- Laparotomy – perforated Duodenal Ulcer (Peptic Ulcer)
- ITU stay 5 days, total hospital stay 12 days

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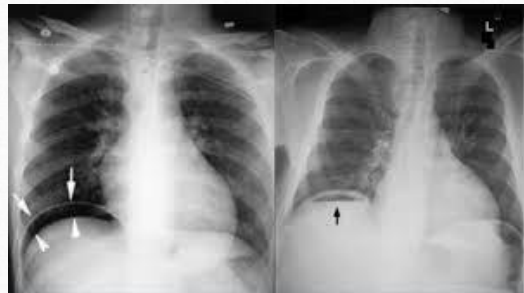
CASE 3 (Issues)

- Was patient well enough to be discharged home (BP 101/50).
- Given IV fluids which may have improved the BP (temporarily)
- No re-assessment of abdomen done or recorded.

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PERFORATED PEPTIC ULCER

- Perforated Peptic ulcer usually present with a sudden onset of severe, sharp abdominal pain. Most patients describe generalized pain; a few present with severe epigastric pain. As even slight movement can tremendously worsen their pain.
- Abdominal examination usually discloses generalized tenderness, rebound tenderness, guarding, and rigidity.



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CASE 4

- 39 years old female (previously has had a benign Ovarian cyst removed 6 months earlier) presents with severe cramping abdominal pain and vomiting. Pain settles by the time she was seen by the ED doctor, discharged home with diagnosis of Peptic Ulcer, advised to see her GP.
- 2 days later re-presents with similar pain and vomiting. Required morphine for pain relief. Admitted to the ward (CDU), diagnosis constipation, given enemas. Next day further severe pain. Abdominal X-Ray shows dilated loops of bowel.
- Laparotomy – adhesions - gangrenous loops of small bowel.

36

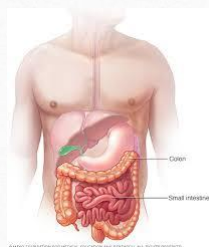
ISSUES

- Delayed diagnosis
- Should intestinal obstruction be considered on the 1st visit to ED
- Was it appropriate to administer enemas and diagnose constipation when patient has had such severe pain
- Delay in doing Abdominal X-Ray

37

INTESTINAL OBSTRUCTION

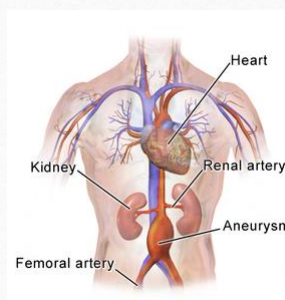
- Intestinal obstruction is a blockage that keeps food or liquid from passing through the small intestine or large intestine.
- Causes of intestinal obstruction may include fibrous bands of tissue (adhesions) in the abdomen that form after surgery, an inflamed intestine (Crohn's disease), infected pouches in the intestine (diverticulitis), hernias and colon cancer.
- Signs and symptoms of intestinal obstruction include:
 - Crampy abdominal pain that comes and goes
 - Constipation - absolute
 - Vomiting
 - Inability to have a bowel movement or pass gas
 - Swelling of the abdomen - distention



38

ABDOMINAL AORTIC ANEURYSM

- Abdominal pain (49 – 70%), back or flank pain (17 - 30%), can also present with pelvic pain, or pain radiating to the groin or thigh (? renal colic)
- Limb ischemia – due to embolism of thrombus or atherosclerotic debris from the aneurysm
- On examination – tender pulsatile mass
- Leading cause of death in the elderly, missed diagnosis (30%)



39

ACUTE ABDOMINAL PAIN

- **Cholecystitis/Biliary Colic / Pancreatitis** – upper abdominal pain, tender, amylase, LFT - gall stones, alcohol, mumps, measles, surgery, drugs etc
- **Renal Colic** – Important not to miss other life threatening conditions like acute appendicitis, ruptured aortic aneurysm, testicular/ovarian torsion

40

Natural history of frequent causes of an acute abdomen

Life-threatening



Self-limiting

Aortic aneurysm rupture
Pancreatitis
Bowel ischemia
Perforated peptic ulcer
Perforated diverticulitis

Appendicitis
Cholecystitis
Sigmoid diverticulitis
Salpingitis

Gastroenteritis
Lymphadenitis
Epiploic appendagitis
Omental infarction
Cecal diverticulitis

41

KEY MESSAGE

- ‘Despite diagnostic and therapeutic advances (CT, MRI, ultrasound scan, laparoscopy etc) the missed diagnosis rate of the most common surgical emergency – acute appendicitis has remained unchanged’.
- Most diagnosis are made by the history (information gained by the physician by asking specific questions) and physical examination.

42



43

CONCLUSIONS

- Acute Abdominal pain is common (5 – 10 % of ED attendances)
- 18% admitted
- ≠ 50% confirmed diagnosis
- < 5% have a serious diagnosis
- Clinically challenging
- Diagnosis rely heavily on what information the doctor is able to obtain and the physical examination findings, low threshold for admission and repeat observations especially in high risk patients.
- Blood tests, x-ray investigations are of limited value

Common Orthopaedic Injuries

Diagnosis and Management in the Emergency Department

Paul Kennedy

1

Common Orthopaedic injuries

- Scaphoid injuries
- Hip fractures
- Spinal Injuries
- Cauda equina
- Knee Injuries
- Ankle sprains and fractures
- Achilles tendon injuries



2

Just because they are not life threatening does not mean they are not life changing

3

Diagnostic process

- History
- Examination
- Imaging
- Review

4

Safety netting

- Occurs clinically
 - Advice
 - Not GP
 - Follow up clinic
- Radiological review of images

5

Radiology safety net guidelines

- NICE 2016 - Hot reporting
- “A radiologist or other trained reporters should deliver the definitive written report of ED X-rays of suspected fractures before the patient is discharged from the ED”
 - Rare
- RCEM 2016
- “within 48 hours”
- “reviewed by a senior member of the team”
- “acted upon”
- This means 7/7
- Reasonable efforts

6

Rule in vs Rule out

- “have I broken something?”
- “*which bone have I broken?*”
- Patients want rule out
- Most investigations are rule in
 - Demonstrate what the abnormality is, not if there is an abnormality

7



A watched pot never boils
An unwatched pot boils instantly

8

So.....

- I can not see a fracture <> There is no fracture
- Just because a rule in test is negative, it does not rule out the pathology
 - Heart Attacks and ECG
- Diagnosis is made by a combination of history, examination and investigations
- Short cuts can result in lengthy problems

9

Time

- Time changes symptoms
- Delayed presentations can be difficult to diagnose
- Lower threshold of suspicion
- Very hard to teach to juniors
- Senior opinions



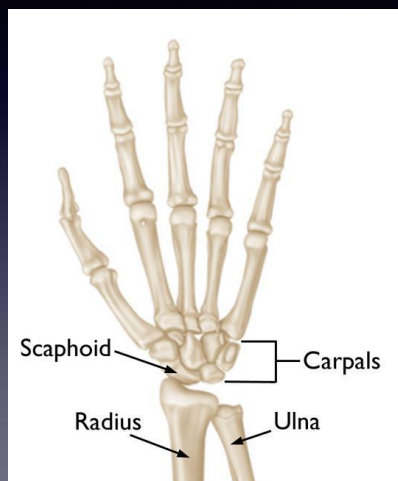
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Imaging

- Plain x-rays
- CT scan
- USS
- MRI

11

Scaphoid injuries



12

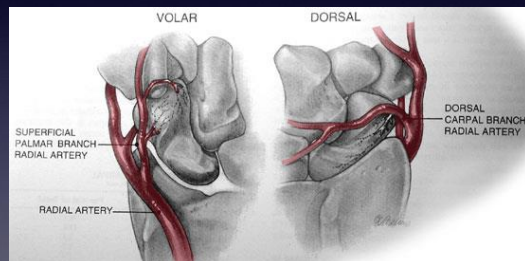
Scaphoid injuries

- Scaphoid is one of the carpal bones
- Between the thumb and the wrist
- Commonly injured by a fall on an outstretched hand
- Normal reflex on falling to prevent facial injuries
- Vital for the maintenance of the pincer grip

13

Scaphoid injuries

- Problems:-
 - It doesn't always show up on initial x-ray despite specialist views
 - Its blood supply comes from one end
 - Failure to diagnose and treat produces avascular necrosis and potential permanent disability



14

Scaphoid injuries

- Management
 - High index suspicion
 - Clinical fractures with normal x-rays need immobilisation
 - Imaging of choice MRI
 - NICE 2017

15

Hip fractures



16

Hip fractures

- Very common injury associated with ageing, osteoporosis and arthritis
- Normally associated with a trip, fall or collapse producing rapid movement of the hip
- In the young it reflects a higher energy injury and more commonly results in dislocation or fractures of the acetabulum
- Produce pain on straight leg raising and mobilisation

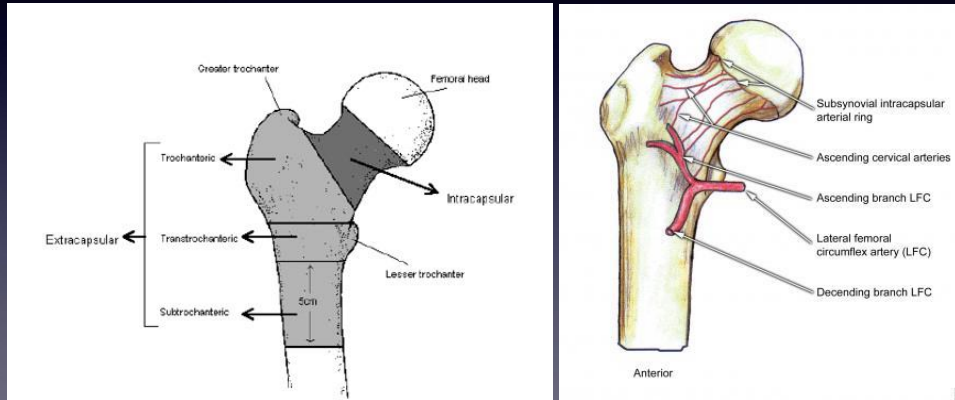
17

Hip fractures

- Can be associated with significant blood loss
 - Problematic in the elderly
- Pain produces spasm of the muscles surrounding the hip worsening the pain
- Can require significant pain relief
- RCEM targets

18

Hip fractures



19

Hip fractures



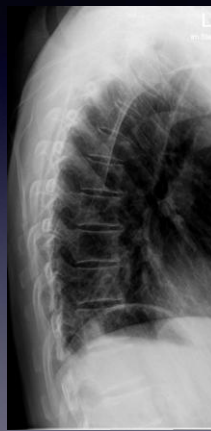
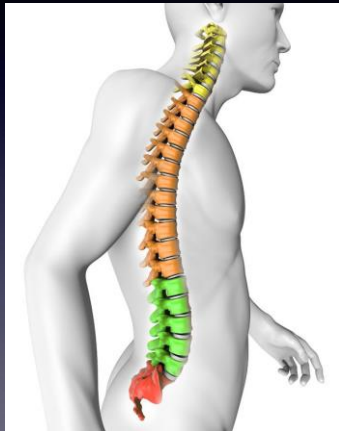
20

Hip fractures

- High level of suspicion in anyone who falls, fails to get up again and complains of hip pain
- An apparently normal x-ray with a failure to mobilise post imaging should reignite suspicion
- CT scan or MRI scan as an inpatient as early diagnosis of intra-capsular fractures results in a smaller less invasive operation
- Pain relief should include a fascia iliac block post diagnosis (NICE 2017)
- Post block observation (RCEM 2017)

21

Spinal fractures



22

Spinal fractures

- Need to separate fractures of the vertebrae and spinal cord injuries
- Vertebrae are like cans on drink
- Very strong but if forces exceed strength crumple
- Stable vs Unstable
 - Retropulse fragment
- All patients who have a mechanism suggestive of spinal fracture or post traumatic back pain should be managed as if they have an unstable fracture
 - Especially in the intoxicated or altered level of consciousness

23

Spinal fractures

- Log roll and palpate for pain
- Very poor correlation between tenderness and fractures
- Canadian C-spine rules
- Any suspicion should raise the concern of spinal cord injury
- Examined accordingly

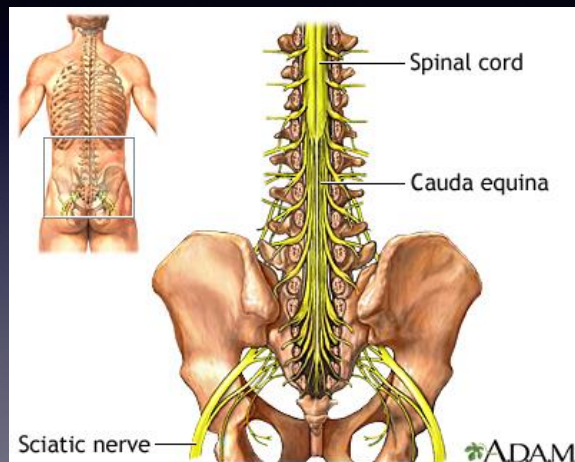
24

Spinal fractures

- Mechanism and pain is a much better indicator
- Low threshold for imaging
- Plain x-rays are good for lumbar and cervical fractures except in elderly
- With increasing age and with thoracic injuries lower threshold for CT scanning
 - NICE head injury guidelines
- Finding cord threatening injuries also requires a full neurological exam and MRI

25

Cauda Equina Syndrome



26

Cauda Equina Syndrome

- The spinal cord in humans ends at about the level of the bottom of the chest
- The mass of fine nerves that come out are known as the cauda equina
- In cauda equina syndrome the mass of fine nerves is compressed
- This includes the nerves that supply the bladder, pelvic sphincter and genitals
- Failure to diagnose results in permanent incontinence and impotence

27

Cauda Equina Syndrome

- High level of suspicion
- Bilateral leg symptoms
- Loss of sensation in perianal area
- Loss of sphincter tone
- Incontinence
- MRI

28

Cauda Equina Syndrome

- Treatment is urgent decompression
- Vital differentiated from large number of back pains or sciatica seen in ED
- Requires easy rapid access to MRI
- Low incidence in the number of scanned patients
 - 0.5%
- Failure to diagnose is life changing
- Future

29

Knee injuries



30

Knee injuries

- Largest synovial joint in the body at the end of the two longest levers, acted on by some of the biggest muscles in the body with the most degrees of freedom of any joint in the body
 - Not a just a hinge joint
- Knee is flexed 0.5-2.5 million times a year
- Huge forces go through the knee
- Ottawa rules for imaging for investigate of fractures
 - For fractures only
- Most knee injuries are not fractures but still need diagnosing and treating

31

Ottawa knee rules

- Age => 55
- Isolated tenderness over patella (no other bon tenderness) OR
- Tenderness of fibula head OR
- Unable to flex to knee 90 degrees OR
- Unable to weight bear immediately and in ED
 - (4 steps limping)
- If fracture diagnosed it needs treating accordingly

32

Knee injuries

- Intra articular injuries (within the capsule of the knee)
- Tend to result in effusions of the knee
- Rupture of the anterior cruciate ligament - bleeds rapidly
- Fractures ooze rapidly blood and fat
- Damage to articular cartilage or menisci result in slow accumulation of effusion with or without blood

33

Knee injuries

- Intra articular structures
 - Cruciate ligaments
 - Menisci
 - Articular cartilage
- Extra articular structure
 - Collateral ligaments
 - Tendons
 - Bursa

34

Knee injuries

- All require history to establish biomechanics of injury and symptoms
- Examination shows functional impairment and localisation of pain
- The need for further imaging depending on clinical suspicion
- In view importance of joint all significant injuries require some form of follow up

35

Ankle fractures and sprains



36

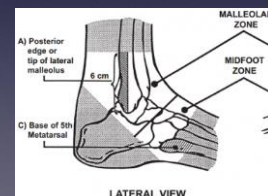
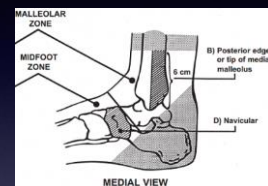
Ankle fractures and sprains

- Ankle injuries are extremely common
- Time is not a good differentiator of sprain or fracture
- “it’s just a sprain”
- Benefits from active treatment
 - Physiotherapy
 - Home exercises
 - Immobilisation and DVT risk assessment
- Impact work and driving

37

Ottawa ankle rules

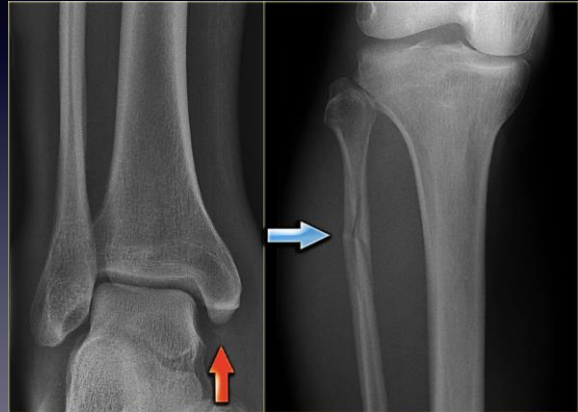
- Indications to x-ray
- Initially planned to reduce imaging rates
- Excludes fractures in these 4 locations only
- Not diagnostic of sprains
- Is not reliable in children, the intoxicated, the pregnant or delayed presentations



38

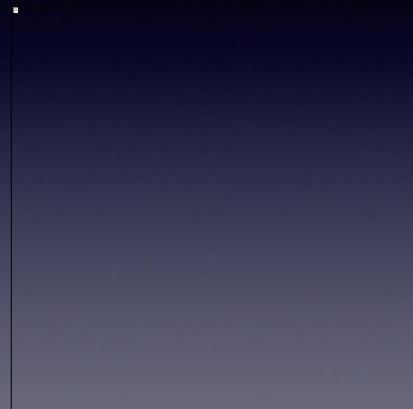
Ankle fractures and sprains

- Fractures spreading up
- Importance of 2 joints rule
- Clinical suspicion
- Compartment syndrome
- DVT assessment with immobilisation



39

Achilles tendon injuries



40

Achilles tendon injuries

- Classically fails under extreme load
- Often increased exertion after a period of not exercising
- Can just happen crossing the road
- Feels like has been kicked in back of ankle
- Simmonds test
 - What is positive ?
- Unable to stand on tip toes

41

Achilles tendon injuries

- USS make definite diagnosis
 - Partial or full rupture
 - Tendon, muscotendinous junction, muscle tear
- The decision to repair is complex
- All are managed in holding the ankle in equinus
 - DVT prophylaxis

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Questions?

43

“A minor injury is something that happens to someone else”

44

Common Orthopaedic injuries
Diagnosis and Management in the Emergency department
Dr Paul Kennedy
mrpgkennedy@me.com
07976 724815

Slide 1

Introduction

Slide 2

Covering:- Scaphoid injuries, Hip fractures, Spinal Injuries, Cauda Equina, Knee injuries, Ankle sprains and fractures and achilles tendon injuries

Slide 3

Although seen as non life threatening they can easily be life changing
Especially if undiagnosed or misdiagnosed

Slide 4

The diagnostic process has evolved over hundreds of years to be efficient and as accurate as possible.

Requires a detailed history and examination

Relevant investigations

Review putting them all together

They complement each other to improve the pick up hence removing one increases the failure rate

Slide 5 **Safety netting**

No system is perfect and so there needs to be some kind of safety net in ED this takes two forms

Clinical : The patient should be advised if things don't settle to return

Injuries should not be sent to GP, they will only forward them to ED costing time

Follow up clinics : ED, Physio etc

Radiological review of images

Care provision should only end when the best possible outcome of injury have been reached

Slide 6 **Radiological safety netting**

NICE in 2016 recommended hot reporting before the patient leaves ED

Within the 4 hour window

Definitive report this is not the red dot system

Reality we are a long way away from this

RCEM within 48 hours and must be acted upon and records kept

7/7 service (can't stop for weekends, easter or bank holidays)

Reasonable efforts to contact patient - requires data to have been collected on booking in

Slide 7 **Rule in vs Rule out**

Patients normally come for rule out this can be very difficult in EM especially definitively

Most investigations are designed to find a diagnosis so are rule in

This is about the sensitivity and specificity of tests

Slide 8 A watched pot never boils- you can not invert the test

Slide 9

Not seeing a fracture is not the same as saying there is no fracture, or even there is no fracture visible

Negative rule in tests does not rule out the problem- you can have a heart attack and a normal ECG

Diagnosis requires combination of history, examination and investigation

"The patients tell you whats; wrong with them, you prove it when you examine them and can show other people with the results of the investigations"

Short cuts can produce length problems

Bias can be introduced really easy into the process

Slide 10 **Time**

Patients present with different symptoms at different times post event

They also present differently at different times in their lives

Delayed presentations can be difficult to diagnose and too easy to disregard

If anything it should lower threshold of suspicion

With short duration of attachments and high turn over of junior doctors this is very hard to teach

Need senior shop floor presence

Slide 11 **Imaging**

Plain X-rays are not pictures but total x-ray absorption in that plain usually 2 views or planes are taken- maybe more
Cheap, quick and easy but subtle changes can be missed
Ideally require gap between fragments
Less effective in the young and the elderly

CT are now in effect with spiral 3D x-rays also show soft tissues and allow contrast
Much bigger radiation dose although decreasing
More expensive and time consuming
Increasingly being used in EM

USS pick up differences in density using sound
cheap but very user dependant and hard to produce useful static images
Very useful for soft tissues- air and bone block it

MRI work by showing the water content on tissues
slow expensive, claustrophobic
Less good with bone but will show the bone bruising around fractures

Slide 12 **Scaphoid injuries**

Slide 13

One of the carpal bones of the wrist
Its position between the thumb and wrist makes it vital for pincer grip
hence injury is always significant
Commonly injured being put out to save oneself when falling
Result is, common mechanism and common injury

Slide 14

Fracture does not always show up on x-ray despite specialist views due to being held together by capsule of wrist, surrounding bones and compression effect of tendons
Blood supply comes from one end hence fracture can cut off blood to other end
Failure to diagnose and treat produces avascular necrosis with potential permanent disability
So is common injury which is hard to diagnose and a disaster if missed especially in tasks putting pincer grip under load

Slide 15

Should always suspect scaphoid fracture in adults with FOOSH
If clinically broken but with normal imaging still needs immobilisation
MRI is imaging of choice and should be first line NICE 2017

Slide 16 **Hip fractures**

Slide 17

Very Common injury associated with age, osteoporosis, arthritis
Normally associated with trip, fall or collapse producing rapid movement of the hip
Rapid movement causes neck of femur to hit acetabulum or proximal femur to fail
In the young this reflects high energy injury more commonly results in dislocations or fractures of the acetabulum
The patient complains of pain on straight leg raising and mobilisation- due to loading the fracture

Slide 18

Fractured hip is a fractured femur and can be associated with significant blood loss
Problematic in the elderly due to heart disease and antihypertensive medication
Pain produces spasm of the muscles surrounding the hip causing more pain
Pain is not from the bone but the membrane covering bone- crushed on movement of fracture
Patients may require significant pain relief balanced by increased sensitivity to opiates with age
RCEM has target of time analgesia is given

Slide 19

Blood supply to the femoral head is limited
Ligamentum teres, capsule and through the bone
Intra capsular fractures cut off blood supply and even reduction of fracture usually results in avascular necrosis

Slide 20

Intra capsular vs extra capsular fractures
Different management due to risk of avascular necrosis
intra capsular are easier to miss
In young, may try to save femoral head

Slide 21

Need to have high level of suspicion in anyone who falls and fails to get up and complains of hip pain

Those who appear to have normal x-rays but can't mobilise need review and maybe more imaging- need to ask, why there has been a change in mobility

If x-rays normal then it's worth getting CT or ideally MRI as an inpatient as early diagnosis of undisplaced intra capsular fracture (the ones most commonly missed) result in smaller less invasive operation

Pain relief should be by fascia iliac block post diagnosis - all ED and Ortho should be competent to do it

If successful can produce such relief pre block opiates can almost cause overdose so need post block observation (RCEM 2017)

Slide 22 **Spinal fractures**

Slide 23

Need to separate fractures of the vertebrae and spinal cord injuries

Vertebra are like drink cans, thin bone as cylinder

Very strong, but when over loaded tend to crumple

Post fracture import to establish if the fracture is stable or unstable, ie if structural integrity has been maintained and if there is risk of movement threatening the spinal cord

As it collapses a fragment maybe pushed back into the cord- retropulse fragment

All patients who have a mechanism suggestive of spinal fracture or post traumatic back pain should be managed as if they have an unstable fracture

Especially in the intoxicated or altered level of consciousness

Slide 24

Patients are log rolled to prevent movement of the spine and palpated for pain

very poor correlation between tenderness and fractures

Canadian C-spine rules involve mobilisation tests post examination of neck

Any suspicion of fracture should raise the possibility of cord injury and should be examined accordingly with a full neurological exam

Slide 25

Mechanism and extent of pain is much better indicator

Low threshold for imaging - especially in those at risk or history of high energy injury

Plain X-rays are good for lumbar and cervical fractures except in the elderly

With increasing age and with thoracic injuries consider CT for imaging

Under the NICE head injury over 65 also do c-spine on CT also decreased GCS

Cord threatening or cord injuries require MRI scan

Slide 26 **Cauda equina syndrome**

Slide 27

Spinal cord in humans ends about the level of bottom of the chest
The cord then produces a mass of fine nerves called the caudal equina
In cauda equina syndrome this mass of fine nerves is compressed - it poorly resists compression and compressing nerves causes them to stop working
These nerves include those that supply the bladder, pelvic sphincter and genitals
Failure or delay in diagnosis can result in permanent incontinence and impotence

Slide 28

It is the rule out diagnosis of anyone with back pain- Need to have high level of suspicion
Look for bilateral leg symptoms , loss of sensation in perianal region, loss of sphincter tone, incontinence, urinary retention
Need MRI

Slide 29

Treatment is urgent decompression
Vital to differentiate it from the large number of back and sciatic pains seen in ED
Requires easy rapid access to MRI
Low incidence in number of scanned patients - about 0.5%
But failure to diagnose is life changing
Presently being discussed have caudal equina calls similar to stroke calls where all patients are seen by orthopaedics and have an MRI within 4 hours 24/7

Slide 30 **Knee injuries**

Slide 31

The knee is the largest synovial joint in the body, between the two longest lever arms acted upon by some of the biggest muscles in the body and has the most degrees of movement of any joint in the body
Not just a hinge joint, closer to two ball and socket joints joined together
Flexed 0.5-2.5 million times a year
Huge forces go through the knee and is well designed for these normal movement but susceptible to outside forces where its position and movement work against it
Ottawa rules for imaging for the investigation of fractures
Looking for fractures only
Most knee injuries are not fractures but need diagnosing and treating appropriately

Slide 32 **Ottawa knee rules**

Age => 55 OR

Isolated tenderness over patella (with no other bony tenderness) OR

Tenderness of the fibula head OR

Unable to flex knee to 90 degrees OP

Unable to weight bear immediately and in the ED (4+ steps limping is mobile)

Then they need an x-ray

But other injuries may also need imaging

Diagnosed fractures need treating accordingly

Slide 33

Intra articular injuries (within the knee capsule) tend to result in effusions (fluid) within the knee

Rupture of the anterior cruciate ligament bleeds rapidly- instant effusion

Fractures ooze blood and fat into joint - form layers which are visible on x-ray

Damage to articular cartilage or menisci result in slow accumulation of effusion with or without blood

Slide 34

Cruciate ligaments- prevent glide backwards and forwards

anterior cruciate is thick with its own artery, rupture is associated with twisting

symptomatic knee feels unstable especially on stairs

Some resolved with physio - but at prolonged risk of arthritis

Active people usually need repair

Can avulse the bone- easy repair for full function - need to do x-ray

Menisci are crescent wedge shaped spacers that spread the load

Mobile and easily torn, produce clicking in the knee and potentially locking

some heal, may need surgery but removal increases arthritis risk long term

Articular cartilage become worn with time, worn surfaces can grind with rapid movement

produce pain and effusion of knee

Collateral ligaments limit side to side movement and are damaged by side impacts

or forced movement of the leg in side deflection they usually resolve with physio

Tendons are how the muscles attach to the bones, the patella/quadriceps tendon can rupture and need repairing

produce a loss of the ability to extend the knee or straight leg raise

Bursae are fluid filled sacs that prevent tendons and muscles rubbing against bones

can become inflamed or infected

Knee has 11 bursae

Slide 35

All require history to establish the biomechanics as this helps to work out what maybe damaged

Examination shows functional impairment and localisation of pain

The need for further imaging is dependant on clinical suspicion

In view of the importance of the knee, all significant injuries require treatment and some form of follow up

Slide 36 **Ankle fractures and sprains**

Slide 37

Ankle injuries are extremely common

Differentiating sprains and fractures can be difficult even time doesn't help

Sprains are significant injuries and should be taken seriously - torn ligament- proprioception

They benefit from active treatment including physio, home exercises

May also benefit from immobilisation and crutches depending on severity

Impact on work and driving

Failure to treat properly results in "weak ankles"

Slide 38 **Ottawa ankle rules**

Indication of who definitely needed x-ray

Initially planned to reduce imaging rates- studies shows it increases

Sensitive but rapidly decreases with time post injury

4 places to check for pain

It does not diagnose a sprain

Not reliable in children, the intoxicated and uncooperative, pregnancy

Delayed presentation

Slide 39 **Ankle fractures**

Important to grasp the biomechanics and fully examine patient

Normal ankle x-rays do not follow 2 joint rule

Clinical suspicion to get more imaging- need for senior cover

Run the risk of compartment syndrome- huge painful, results in muscle death

Immobilisation requires risk assessment for dvt and maybe anticoagulation

Slide 40 **Achilles tendon injury**

Slide 41

Tendon is thick and strong and classically fails under load
Shock loading can be significantly higher
Often happens after period of sudden increase in regimen - first day of season
Due to shock loading event may be trivial - crossing road
Feel sudden pain in back of ankle, classically if they've been kicked
Patients are unable to stand on tip toes
Simmonds test consists of squeezing calf to look for movement if ankle
Difficulty in recording result as confusion if positive or negative result
Also unable to stand on tip toes on injured side

Slide 42

USS is best used to make diagnosis even if delayed (ie seen when department open)
Can show if partial or full rupture
If the tear is in tendon, tendon muscle junction or muscle
All treated in equinus immobilisation but may need DVT prophylaxis
Some amenable to repair- reduces re-rupture rate
Failure to diagnose produces devastating loss of function
Delayed diagnosis impacts healing rate and re rupture rate

Slide 43 **Questions**

Slide 44 **“a minor injury is something that happens to someone else”**

Common Orthopaedic injuries
Diagnosis and Management in the Emergency department
Dr Paul Kennedy
mrpgkennedy@me.com
07976 724815

Emergency care - who provides it? + Initial Assessment in EM



AVMA Conference March 2019

Peter W Richmond

1

EM Attendances 2018

24.45 million

67,000/ day

Some departments 50-60/hour

Four Hour Target – Jan 2019

84.4% - All

76.1% - Type 1



NHS England

2



3

Acute versus Community Trust

- Minor injuries Unit
- Walk-in Unit
- Urgent Care Centre
- Out of Hours Centres
- Re-designated A&E to MIU/UCC
- MIU – in Community Hospital



Clinical governance by major A&E, or shared governance



4

Primary Care

- located alongside or next to ED
- at the front of ED screening attendees and either treating or diverting to other places – effectively acting as a filter
- integrated into a joint operation covering the whole range of primary care and emergency services

5

Health Professionals in EM

- **ENP** – Usually minor injuries and illness in ED and MIUs
- **ANP/ Advanced Clinical Practitioners**
Usually Primary care, but increasingly “majors” part of ED
- **Physios** – supportive of ED clinicians, minors and majors
- **ESPs** – Invariably assessing and managing in “minors”
- **Paramedic Practitioners** – ED or Primary Care - Streaming
- **Physician Associates**

6

Waiting Times

- Assaulted, head injury
- Receptionist advised waiting time 4-5 hours
- Self discharged 19 minutes after arrival
- Supreme Court found Hospital liable for inaccurate waiting time information given in A&E

Darnley v Croydon Health Services NHS Trust [2018]

7

Handover from Ambulance to ED

Target 15 minutes

39,426 >30mins – Dec 2018

“Acute Trusts must always accept handover of patients within 15 minutes of an ambulance arriving at the ED or other urgent admission facility”

“The patient is the responsibility of the ED from the moment that the ambulance arrives outside the ED department, regardless of the exact location of the patient”.



Addressing ambulance handover delays, November 2017
Willett K, Bengner J, Philip P NHS Improvement, NHS England

8

Initial Assessment - Emergency Department



9

Triage

Triaging patients is appropriate where demand outstrips the resources required to make a detailed assessment in a timely fashion (usually within 15 minutes or less)



Initial assessment of Emergency Department Patients, Service Design and Delivery, RCEM, 2017

10

Triage

- Stroke
- Head Injury
- Major trauma
- Sepsis
- Chest pain
- Manchester Triage System

11

Stroke

People who are admitted to accident and emergency (A&E) with a suspected stroke or TIA should have the diagnosis established **rapidly** using a validated tool, such as ROSIER (Recognition of Stroke in the Emergency Room).

NICE CG68, Para 1.1.1.3, 2017

12

Head Injury

1.3.4 Patients presenting to the emergency department with impaired consciousness (GCS less than 15) should be assessed **immediately** by a trained member of staff. [2003]

1.3.6 A trained member of staff should assess **all** patients presenting to an emergency department with a head injury within a maximum of **15 minutes** of arrival at hospital. Part of this assessment should establish whether they are high risk or low risk for clinically important brain injury and/or cervical spine injury. [2003]

NICE CG176, 2014

13

Major Trauma

Trauma Units and Major Trauma Centres

- 1.3.1 Pre-alert procedures
- 1.4.1 Ensure that multispecialty trauma teams are activated **immediately** in trauma units to receive patients with major trauma.
- 1.4.2 Do not use a tiered team response in trauma units.
- 1.4.3 Have a paediatric trauma team available **immediately** for children (under 16s) with major trauma

NICE NG40, 2016

14

Chest Pain

1.2.4 Assessment in hospital for people with a suspected acute coronary syndrome

- 1.2.4.1 Take a resting 12-lead ECG and a blood sample for high-sensitivity troponin I or T measurement **on arrival** in hospital. [2010, amended 2016]

NICE CG95, last updated 2016

15

Sepsis

1.3 Assess for possible sepsis, observations

1.4 Risk stratification

Speed of response based on risk category

Sepsis Screening Tools

Sepsis: recognition, diagnosis and early management
NICE NG40, 2016, last updated Sep 2017

16

Self-harm

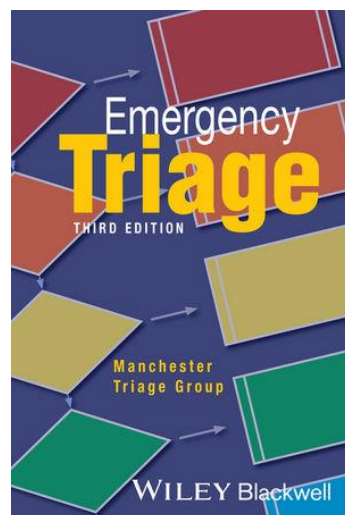
1.4.1.1 When an individual presents in the emergency department following an episode of self-harm, emergency department staff responsible for triage should urgently establish the likely physical risk, and the person's emotional and mental state, in an atmosphere of respect and understanding

Self-harm in over 8s: short-term management and prevention of recurrence, NICE CG16, 2004

17

Manchester Triage System

- Fundamental part of risk management
- Time from triage to assessment

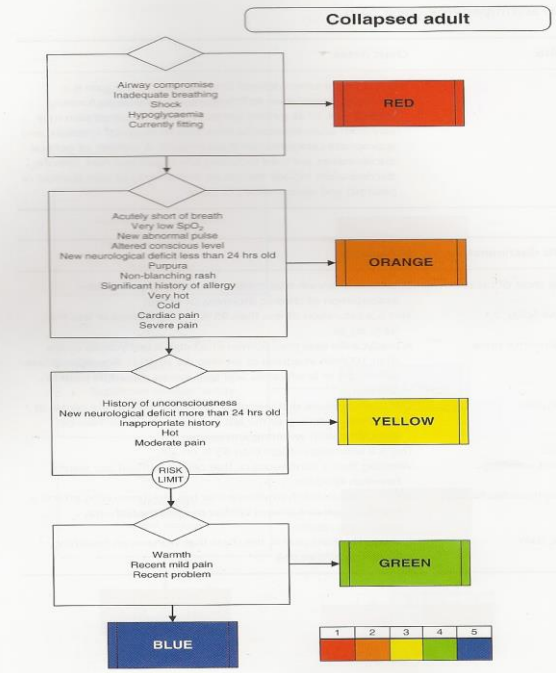


18

Manchester Triage System

Number	Name	Colour	Max Time
1	Immediate	Red	0
2	Very urgent	Orange	10
3	Urgent	Yellow	60
4	Standard	Green	120
5	Non-urgent	Blue	240

92 Presentational flow charts



19

Objectives of Initial Assessment

1. Improving safety
2. Identifying acuity to ensure that the most time-critical patients are treated by the right service within appropriate time frames, and that appropriate prioritisation occurs for the remainder
3. Improving efficiency in the system to ensure that patients do not wait unnecessarily for investigations or diagnostic decision making

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Initial Assessment

- Navigation
- Streaming – Co-located Primary Care
 - Ophthalmological Services

Streaming should be performed as soon as possible and ideally be within 15 minutes of the patient's arrival in the ED

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Rapid Assessment

- See and Treat – Minor illness and injury
 - “Patients waiting to be seen in the See and Treat stream should not wait for longer than one hour to be seen”
- Rapid Assessment and Treatment – typically senior doctor
 - “enable time-critical conditions to be identified and interventions delivered rapidly”

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NEWS and PEWS

- Triage - Prioritises where demand exceeds capacity to fully assess within appropriate time frame

“Triage is a face-to-face encounter that should occur within 15 minutes of arrival or registration and should normally require less than 5 minutes contact”

- Early Warning Scores help identify the physiologically disrupted or deteriorating patient

“Should not be used in isolation for streaming, assessment or triage of the undifferentiated patient as this creates a risk of missing those with significant pathology that hasn’t disrupted physiological parameters”

Initial assessment of Emergency Department Patients, Service Design and Delivery, RCEM, 2017

23

NEWS

Physiological parameter	Score						
	3	2	1	0	1	2	3
Respiration rate (per minute)	≤8		9–11	12–20		21–24	≥25
SpO ₂ Scale 1 (%)	≤91	92–93	94–95	≥96			
SpO ₂ Scale 2 (%)	≤83	84–85	86–87	88–92 ≥93 on air	93–94 on oxygen	95–96 on oxygen	≥97 on oxygen
Air or oxygen?		Oxygen		Air			
Systolic blood pressure (mmHg)	≤90	91–100	101–110	111–219			≥220
Pulse (per minute)	≤40		41–50	51–90	91–110	111–130	≥131
Consciousness				Alert			CVPU
Temperature (°C)	≤35.0		35.1–36.0	36.1–38.0	38.1–39.0	≥39.1	

National Early Warning Score (NEWS) 2
Royal College of Physicians, 2017

Total 1–4	Minimum 4–6 hourly	<ul style="list-style-type: none"> • Inform registered nurse, who must assess the patient • Registered nurse decides whether increased frequency of monitoring and/or escalation of care is required
3 in single parameter	Minimum 1 hourly	<ul style="list-style-type: none"> • Registered nurse to inform medical team caring for the patient, who will review and decide whether escalation of care is necessary
Total 5 or more Urgent response threshold	Minimum 1 hourly	<ul style="list-style-type: none"> • Registered nurse to immediately inform the medical team caring for the patient • Registered nurse to request urgent assessment by a clinician or team with core competencies in the care of acutely ill patients • Provide clinical care in an environment with monitoring facilities
Total 7 or more Emergency response threshold	Continuous monitoring of vital signs	<ul style="list-style-type: none"> • Registered nurse to immediately inform the medical team caring for the patient – this should be at least at specialist registrar level • Emergency assessment by a team with critical care competencies, including practitioner(s) with advanced airway management skills • Consider transfer of care to a level 2 or 3 clinical care facility, ie higher-dependency unit or ICU • Clinical care in an environment with monitoring facilities

24

Emergency care - who provides it? + Initial Assessment in EM - Standards

Summary

Initial assessment in ED

- Various systems
- Guidelines and standards
- Practicalities

Clinical Governance

- Increasing variety health care personnel in emergency care
- Same personnel may provide differing roles
- Difficulties in identifying CG lead



AVMA Conference March 2019

Peter W Richmond

Current standards for cardiac care in Accident and Emergency

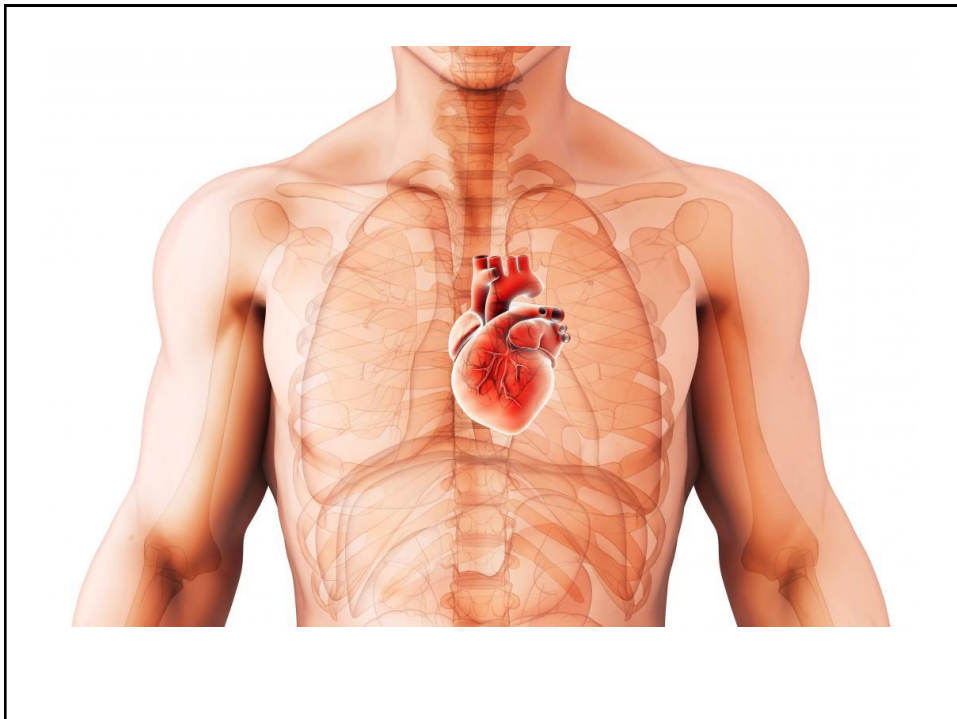
Mr Manolis Gavalas Consultant in Accident and
Emergency, UCLH

Dr Fatmir Maloku, Specialty Doctor in Emergency
Medicine, UCLH

March 2019



1



2

Cardiac conditions

- Large spectrum
- Some deadly
- Sometimes difficult to diagnose
- Easy to be missed

3

Presentation of cardiac conditions in emergency department

- Most commonly as chest pain & arrhythmias
- Chest pain can be cardiac or non cardiac
- Extensive list of differential diagnosis of chest pain

4

Differential Diagnoses of chest pain

- [Acute Aortic Dissection](#)
- [Acute Cholecystitis and Biliary Colic](#)
- [Acute Coronary Syndrome](#)
- [Acute Gastritis](#)
- [Acute Mitral Regurgitation](#)
- [Acute Pericarditis](#)
- [Angina Pectoris](#)
- [Anxiety Disorders](#)
- [Aortic Dissection](#)
- [Aortic Regurgitation](#)
- [Aortic Stenosis Imaging](#)
- [Cardiogenic Shock](#)
- [Contusions](#)
- [Depression](#)

WHAT USE without Optimum Decision Making!

5

- [Emergent Management of Pancreatitis](#)
- [Emergent Treatment of Gastroenteritis](#)
- [Esophageal Spasm](#)
- [Esophagitis](#)
- [Gastroesophageal Reflux Disease](#)
- [Herpes Zoster](#)
- [Infective Endocarditis](#)
- [Mitral Valve Prolapse in Emergency Medicine](#)
- [Myocarditis](#)
- [Pediatric Pneumonia](#)
- [Pleurodynia](#)
- [Pneumothorax](#)
- [Pneumothorax Imaging](#)
- [Primary Pulmonary Hypertension](#)
- [Pulmonary Embolism](#)
- [Stroke Imaging](#)
- [Unstable Angina](#)
- [Ventricular Septal Defect Surgery in the Pediatric Patient](#)

6

Acute Coronary Syndrome

- Most emergent common cardiac condition in emergency department
- heart attack
- acute cardiac ischemic event
- compromised blood supply to heart
- which can lead to **death of heart muscle**
- affecting function of the heart as a pump

7

Acute Coronary Syndrome

- STEMI
- NSTEMI
- Unstable angina

Almost always associated with ruptured of an atherosclerotic plaque and partial or complete thrombosis of the infarct related artery.

Other mechanism coronary artery vasospasm including cocaine

8

STEMI

- ST-segment-elevation myocardial infarction (STEMI) occurs when a coronary artery becomes blocked by a blood clot, causing the heart muscle supplied by the artery to die.

9

STEMI

- Nearly half of potentially salvageable myocardium is lost within **1 hour** of the coronary artery being occluded,
- and two-thirds are lost within **3 hours**.
- Apart from resuscitation from any cardiac arrest, the highest priority in managing STEMI is to restore an adequate coronary blood flow as quickly as possible. **Time Equals muscle**

10

NICE guideleines

- The incidence of STEMI has been declining over the past 20 years. It varies between regions and averages around 500 hospitalised episodes per million people each year in the UK
- overall population prevalence of STEMI is likely to be in the region of 750–1250 per million people.

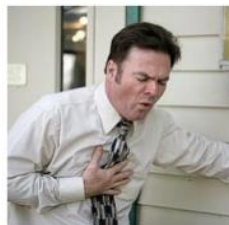
11

ACS > NSTEMI > Pathophysiology > Clinical > Physical > ECG > Cardiac Markers > Emergency > Thrombolysis > PCI > CABG > Hospital > Late MGMT > Secondary Prevention

CLINICAL PRESENTATION

○ SYMPTOMS:

- chest discomfort
- epigastric discomfort
- shortness of breath
- nausea and vomiting
- excessive sweating
- palpitation, anxiety, sense of impending doom, and feeling of being acutely ill



12

Monitor people with acute chest pain

- Exacerbation of pain /or other symptoms
- Pulse/blood pressure
- Heart rhythm
- Oxygen saturation /pulse oximetry
- Respiratory rate
- Temperature
- Repeated resting ECG
- Checking pain relief is effective

13

Cardiovascular risk factors

- History of smoking
- Diabetes
- Hypertension
- Dyslipidemia (total cholesterol 6.47)
- Family history of premature CAD
- Other cardiovascular disease
- History of established CAD, previous MI, coronary revascularisation
- Don't forget **race**

14

Diagnosis

- ECG
- Chest pain
- Troponin

15

The diagnosis of acute myocardial infarction requires a finding of the typical rise and fall of biochemical markers of myocardial necrosis in addition to at least 1 of:

- Ischemic symptoms
- Development of pathologic Q waves on electrocardiogram (ECG)
- Significant ST-segment-T wave (ST-T) changes or new left bundle branch block (LBBB)
- Imaging evidence of new loss of viable myocardium or new regional wall motion abnormality
- Intracoronary thrombus identified by angiography or autopsy

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ST and T waves

- Transient ST segment elevation
- Dynamic T-wave changes inversions, normalizations or hyperacute changes
- ST depressions

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Clinical classification of MI

- Type 1 –primary coronary event , plaque erosion and/or rupture , fissuring or dissection
- Type 2- secondary to ischaemia due to increased oxygen demand or decreased supply :
 - coronary spasm,
 - coronary embolism,
 - anaemia,
 - arrhythmias,
 - hypertension
 - hypotension

18

Treatment

- Deliver coronary reperfusion therapy (either primary PCI or fibrinolysis) as quickly as possible for eligible people with acute STEMI.
- primary PCI can be delivered within 120 minutes of the time when fibrinolysis could have been given.

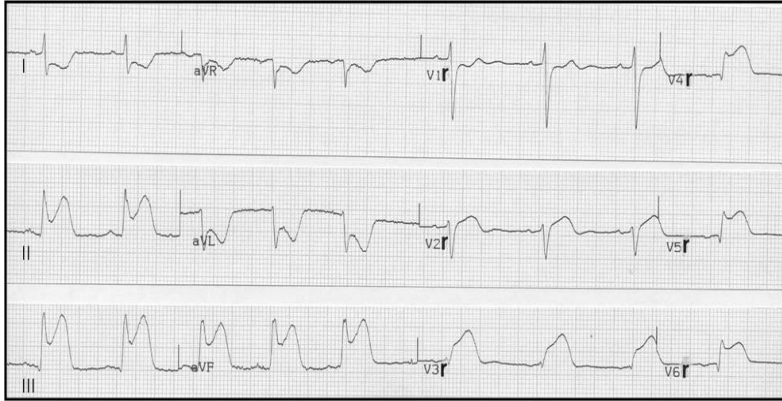
19

NICE guidelines

- Over the past 30 years, in-hospital mortality after acute coronary syndromes has fallen from around 20% to nearer 5%. **Why?**
- This has been attributed to various factors, including improved drug therapy and speed of access to effective treatments

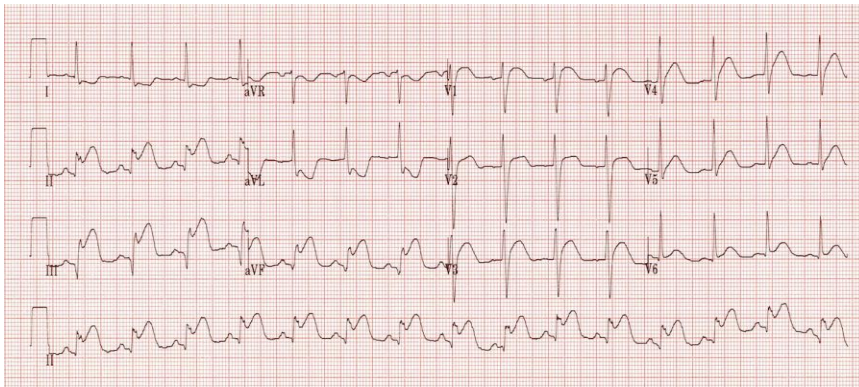
20

STEMI



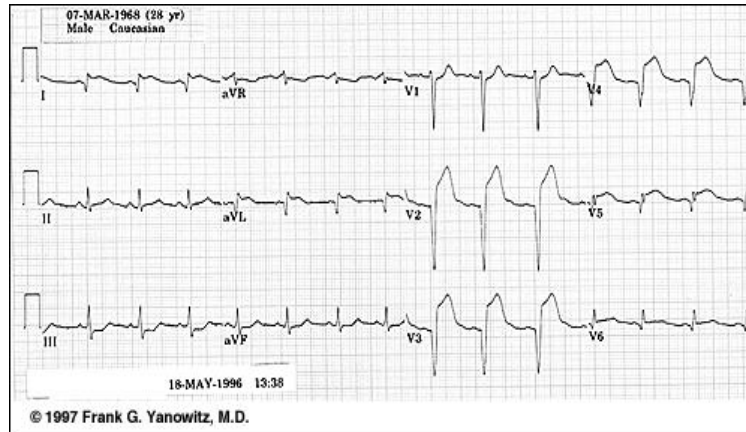
21

STEMI



22

STEMI



23

ECG

- The ECG is the most important tool in the initial evaluation and triage of patients in whom an acute coronary syndrome (ACS), such as myocardial infarction, is suspected. It is confirmatory of the diagnosis in approximately 80% of cases
- However easily missed!

24

Conditions other than acute coronary syndrome that lead to Troponin elevations

- Cardiac :
 - Heart failure
 - Cardiomyopathies
 - Arrhythmia
 - Endocarditis
 - Cardiac tumours
 - Aortic dissection
 - Post cardiac transplantation
 - Post cardiac surgery
- Pulmonary :
 - Pulmonary embolism
 - COPD exacerbation

25

Imaging

- Chest X ray
- Echocardiography
- Myocardial perfusion scan
- Cardiac angiography
- CT, Ct coronary angiography and CT coronary calcium scoring?

26

BMJ 2008, Emergency management of cardiac chest pain: a review

- MI mortality 45 %
- 1:8 patients infarct within 2 weeks without appropriate treatment
- UK 30% of patients with chest pain are admitted/ 70 % are discharged
- US 40 % admitted/60% discharged
- US /3-4% MI are missed /discharged from A&E
- **UK/6% MI are missed/discharged from A&E******
WHY,,,,,,,,,

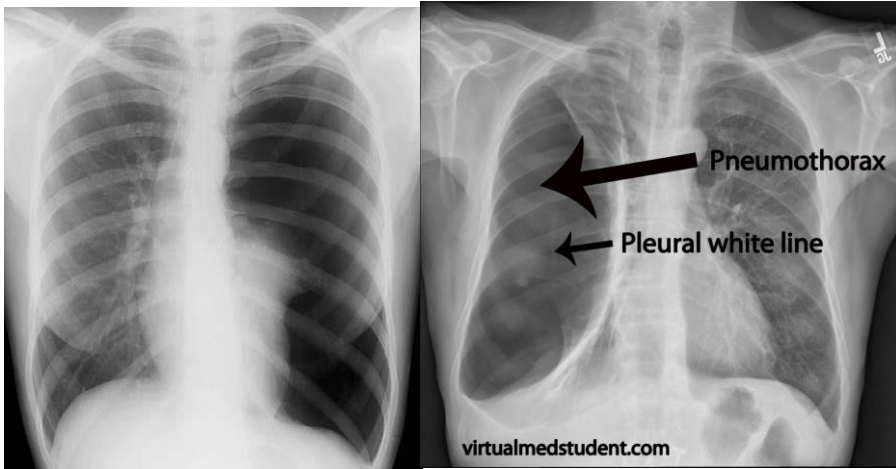
27

Wiley Online Library

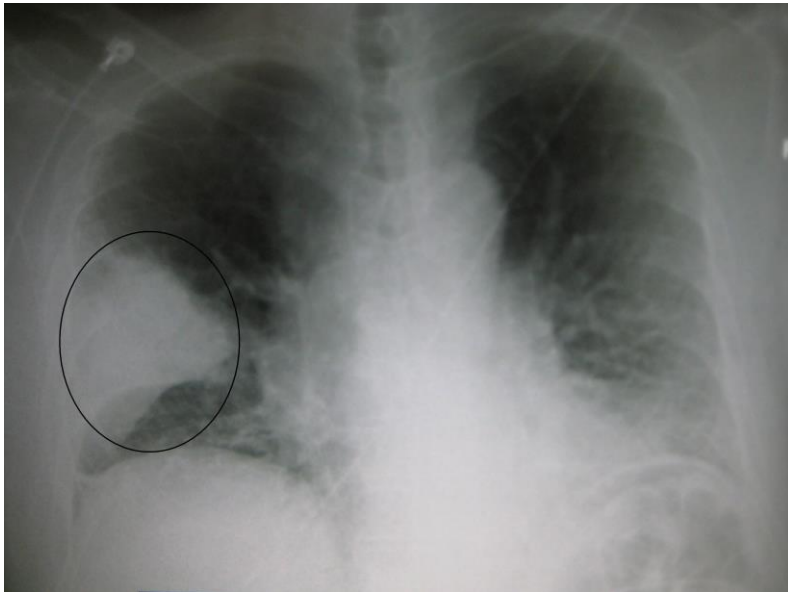
- Of 230,624 closed claims from 1985 through 2007, some 1.8% (4248) involved cardiologists.
- Eighteen percent of these cardiovascular claims resulted in indemnity payments, averaging close to \$250,000.
- **The most common allegation was diagnostic error especially regarding coronary artery disease.**

28

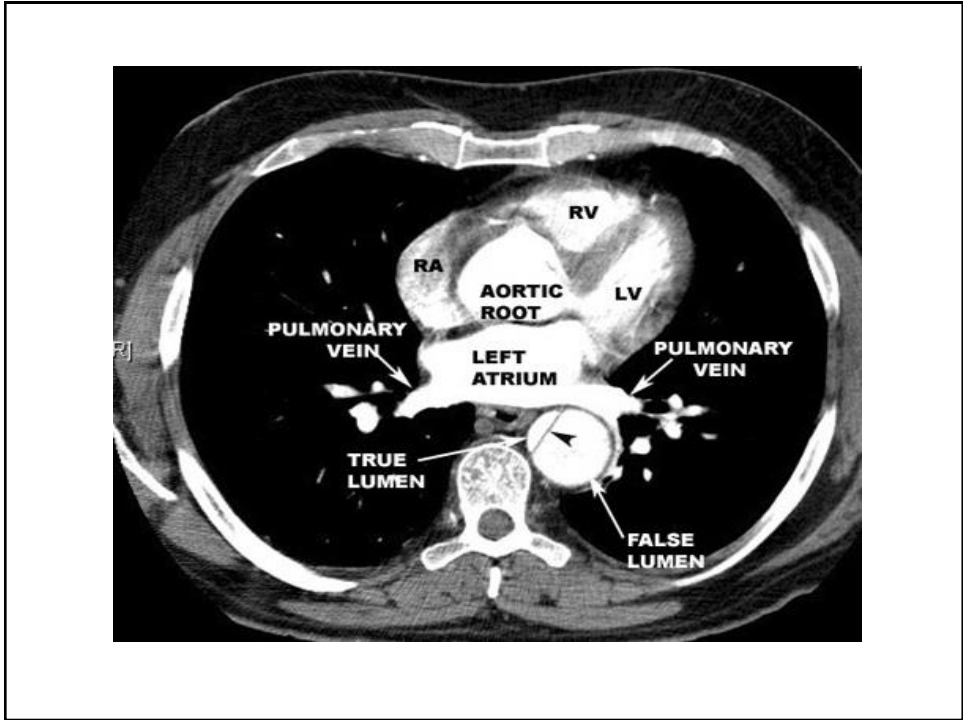
PNEUMOTHORAX



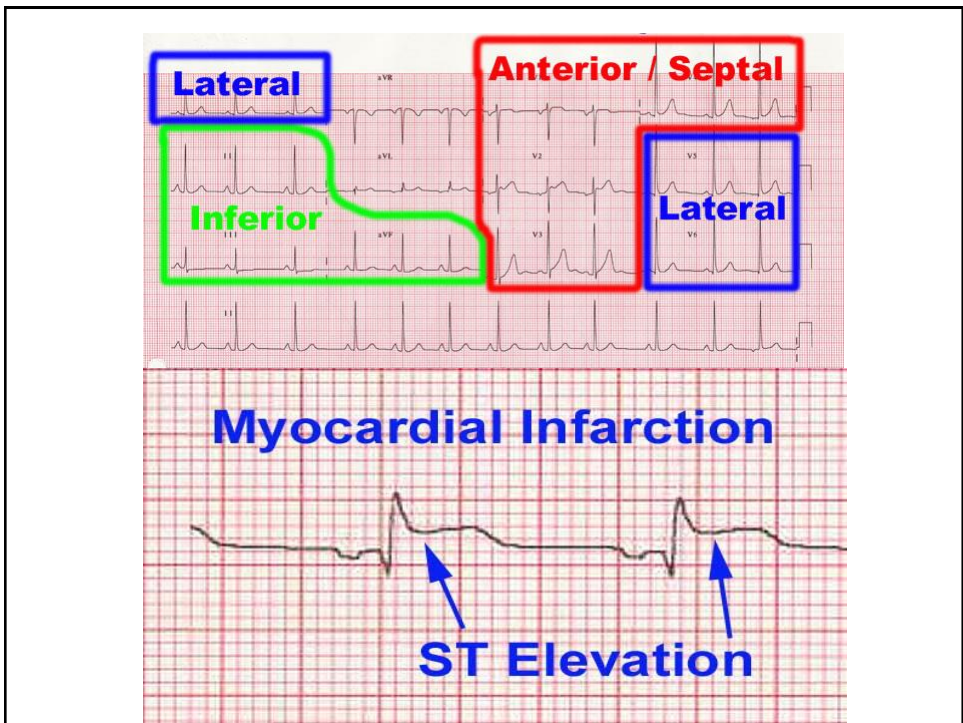
29



30



31



32

Other signs/symptoms which make a dg of stable angina unlikely when chest pain is:

- Continuous or very prolonged and/or
- Unrelated to activity and/or
- Brought on by breathing in and /or
- Associated with symptoms such as dizziness, palpitations, tingling or difficulty swallowing

History is important!

33

The following mnemonic may be useful in educating patients with CAD regarding treatments and lifestyle changes necessitated by their condition:

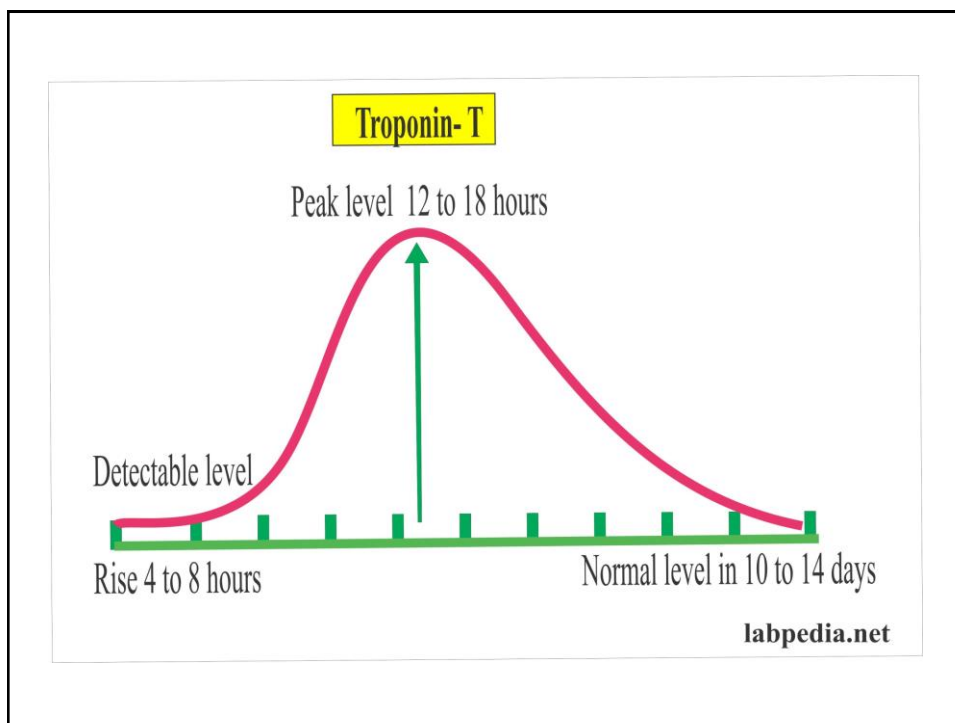
- A = Aspirin and anti-angina
- B = Beta blockers and blood pressure (BP)
- C = Cholesterol and cigarettes
- D = Diet and diabetes
- E = Exercise and education

34

Troponin kinetics

- Following a myocardial infarction, standard troponin tests become positive within 4-9 hours,
- peaks at 12-24 hours
- Back to normal in 14 days

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Cardiac troponin elevation is caused by a wide range of cardiac and non cardiac conditions, not just ischaemia.

- Only a minority of patients presenting with chest pain will have a final diagnosis of acute coronary syndrome.
- Approximately a third will have no evidence of any serious underlying cause of pain.
- **Troponin should only be requested when acute coronary syndrome is suspected.**
- **CAUTION**

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CAUTION

- Acute coronary syndrome should never be diagnosed on the basis of an elevated troponin alone.
- Conversely, don't exclude a cardiac cause just because of a negative troponin.
- There are novel biomarkers that may be used in the future to assess prognosis after acute coronary syndrome.

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**Conditions other than
acute coronary syndrome that lead
to troponin elevations**

- Cardiac :
- Heart failure
- **Cardiomyopathies**
- Arrhythmia
- Endocarditis
- Cardiac tumours
- **Aortic dissection**
- Post cardiac transplantation
- Post cardiac surgery including ablation

39

Non cardiac causes

- -Pulmonary :
- Pulmonary embolism
- COPD exacerbation
- -Haematological :
- Primary amyloid
- Primary haematological conditions
- -Other :
- Sepsis
- Severe metabolic conditions e.g DKA
- Chronic kidney disease

40

- Rhabdomyolysis
- Autoimmune and connective tissue disease
- Subarachnoid haemorrhage
- Post non-cardiac surgery
- Thermal injury
- Toxin induced
- Strenuous exertion e.g.

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Management/pitfalls

- **Critical time transfer for PCI**
- Failure to diagnose and treat myocardial infarction forms the basis of many lawsuits, including **delay** in or forgoing emergency heart catheterization in patients with acute chest pain

Delay equals claim

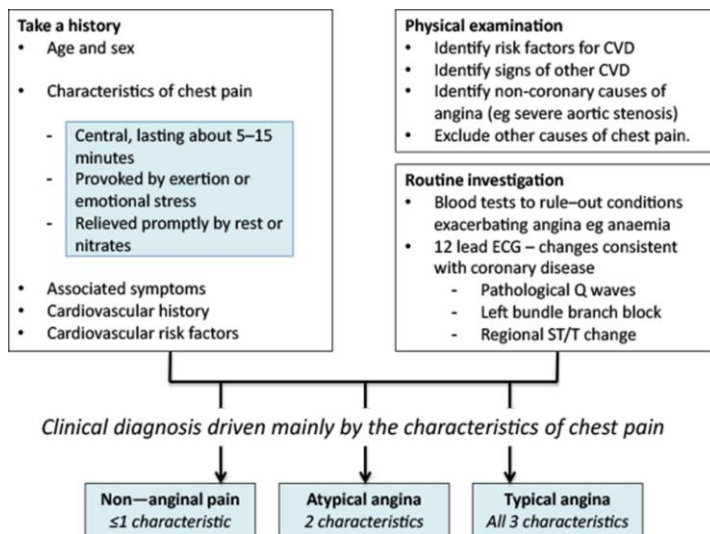
What about Corporate delays?

42

NICE National Institute for Health and Care Excellence

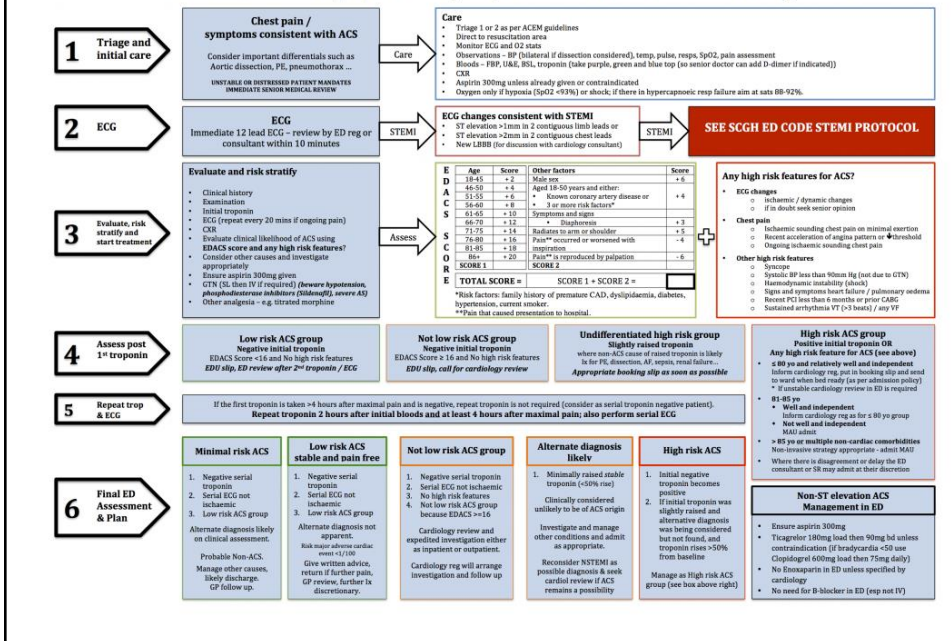
Improving health and social care through evidence-based guidance

43



44

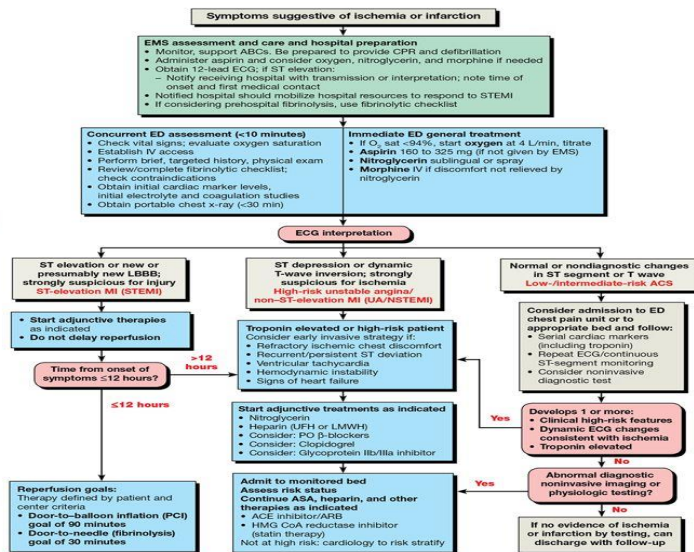
SCGH Acute Coronary Syndrome (ACS) Assessment and Treatment Algorithm



45

Acute Coronary Syndromes Algorithm

Adult Advanced Cardiovascular Life Support



46

Coronary artery disease risk stratification :

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The screenshot shows the GRACE ACS Risk Model calculator interface. The window title is "Macromedia Flash Player 7". The interface includes a menu bar (File, View, Control, Help) and a logo for GRACE (Global Registry of Acute Coronary Events) ACS Risk Model. There are two tabs: "At Admission (In-hospital/to 6 months)" and "At Discharge (to 6 months)". The "At Admission" tab is active. It contains several input fields: Age (50-59), HR (70-89), SBP (120-139), Creat. (1.6-1.99), and CHF (III (pulmonary edema)). There are also checkboxes for "Cardiac arrest at admission", "ST-segment deviation", and "Elevated cardiac enzymes/markers". A table shows the probability of Death and Death or MI for In-hospital and To 6 months. A "Reset" button is present. At the bottom, there are links for Calculator, Instructions, GRACE Info, References, and Disclaimer.

Probability of	Death	Death or MI
In-hospital	27%	50%
To 6 months	30%	70%

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The HEART Score for Chest Pain Patients in the ED		
History	<ul style="list-style-type: none"> Highly Suspicious Moderately Suspicious Slightly or Non-Suspicious 	<ul style="list-style-type: none"> 2 points 1 point 0 points
ECG	<ul style="list-style-type: none"> Significant ST-Depression Nonspecific Repolarization Normal 	<ul style="list-style-type: none"> 2 points 1 point 0 points
Age	<ul style="list-style-type: none"> ≥ 65 years > 45 - < 65 years ≤ 45 years 	<ul style="list-style-type: none"> 2 points 1 point 0 points
Risk Factors	<ul style="list-style-type: none"> ≥ 3 Risk Factors or History of CAD 1 or 2 Risk Factors No Risk Factors 	<ul style="list-style-type: none"> 2 points 1 point 0 points
Troponin	<ul style="list-style-type: none"> ≥ 3 x Normal Limit > 1 - < 3 x Normal Limit ≤ Normal Limit 	<ul style="list-style-type: none"> 2 points 1 point 0 points
Risk Factors: DM, current or recent (<one month) smoker, HTN, HLP, family history of CAD, & obesity		
Score 0 – 3: 2.5% MACE over next 6 weeks → Discharge Home		
Score 4 – 6: 20.3% MACE over next 6 weeks → Admit for Clinical Observation		
Score 7 – 10: 72.7% MACE over next 6 weeks → Early Invasive Strategies		

49

<p>Other cardiac conditions</p> <p>Heart arrhythmias :</p> <ul style="list-style-type: none"> Tachycardia's <ul style="list-style-type: none"> -narrow complex tachycardia's: <ul style="list-style-type: none"> SVT(Supraventricular tachycardia) AF(Atrial fibrillation, Atrial flutter) AVRNT(Atrioventricular node re -entry tachycardia) AVNT(Atrioventricular nodal tachycardia) -broad complex tachycardia's : <ul style="list-style-type: none"> Ventricular Tachycardia with or without pulse), Ventricular Fibrillation

50

Sinus Bradycardia
Heart blocks
Brugada Sy,
Long QT Syndrome
WPW(Wolf-Parkinson-White)
Cardiomyopathy
Pericarditis
Thoracic aortic dissection

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Medical error

- Whether medical error rises to the threshold of medical negligence depends on the nature of the error or misjudgement.
- If it is one that a reasonably **competent** professional would not commit, then there is a breach of the duty to satisfy the applicable standard of care.
- On the other hand, if reasonably skilled practitioners could commit such an honest error or misjudgement, then it would not amount to medical negligence

52

Cardiac misdiagnosis

- Misdiagnosis of an underlying cardiac condition such as an **aortic dissecting aneurysm in the setting of chest pain is a recurring allegation**
- Another area of diagnosis-related liability is in exercise-induced sudden death, especially in professional athletes. **AF Caution**
- Although many of the causes of sudden death in this young, healthy population (e.g., cardiomyopathy, valvular heart disease, coronary artery disease, and Marfan's syndrome) may not be detectable by the usual screening tests(**SADS**)

53

- Failure to treat risk factors may constitute negligence for example:
 - Diabetes
 - Hypercholesterolemia
 - High blood pressure

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Challenges

- Cardiac conditions such as MI are directly conveyed by ambulance services to Cardiology Hospitals and **juniors see less and less heart attacks**
- Not always easy to diagnose and differentiate
- Expected reasonable practice
- To provide the best possible care to our patients and avoid adverse outcomes

55

WHY ERRORS OCCUR

Too Junior out of depth

Lack Clinical Acumen

No exercise Common Sense

Experienced Clinicians

Lack of Common Sense

Clinical acumen not so good

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WHY ERRORS OCCUR

- The dreaded DISCUSS WITH
- Best Case scenario
- Rule out/rule in

Stroke and TIA Management in Emergency Medicine Current Standards

AVMA Conference March 2019

Peter W Richmond

1

Stroke and TIA Management in Emergency Medicine

- TIA
- Types of stroke
- Imaging
- The importance of being referred to a stroke unit
- Treatment and the timeliness of these procedures

2

Stroke and transient ischaemic attack in over 16s: diagnosis and initial management

Clinical guideline [CG68] Published date: July 2008 Last updated: March 2017

110,000/ year England

Risks recurrent stroke - 2-3% 1 month

- 26% within 5 years



3

Stroke and TIA

Symptoms include:

Numbness, weakness or paralysis, slurred speech, blurred or loss of vision, confusion and severe headache

TIA - Sudden, focal neurologic deficit that lasts <24 hours and is thought to be vascular in origin

<24 hours = TIA (“stroke” assumed if not resolved at time of assessment)

>24 hours = stroke

4

Stroke

- Stroke network
- Pre-alert
- Time from arrival to assessment
- FAST, ROSIER
- Time from arrival to CT
- Time to thrombolysis
- Admission to stroke unit

5

Prompt Recognition of Stroke and TIA

- FAST – pre-hospital
- Exclude hypoglycaemia
- Transfer to right hospital
- Pre-alert hospital



6

Assessment Date Time

Symptom onset Date Time

GCS E= M= V= BP *BM

**if BM < 3.5 mmol/L treat urgently and reassess once blood glucose normal*

Has there been loss of consciousness or syncope? Y (-1) N (0)

Has there been seizure activity? Y (-1) N (0)

Is there a **NEW ACUTE** onset (or on awakening from sleep)

I. Asymmetric facial weakness Y (+1) N (0)

II. Asymmetric arm weakness Y (+1) N (0)

III. Asymmetric leg weakness Y (+1) N (0)

IV. Speech disturbance Y (+1) N (0)

V. Visual field defect Y (+1) N (0)

*Total Score _____ (-2 to +5)

Provisional diagnosis

Stroke Non-Stroke (specify) _____

**Stroke is unlikely but not completely excluded if total scores are equal to or less than 0*

ROSIER

1.1.1.3 People who are admitted to accident and emergency (A&E) with a suspected stroke or TIA should have the diagnosis established rapidly using a validated tool, such as ROSIER (Recognition of Stroke in the Emergency Room)

NICE CG 68

7

Neurological Examination

- Cranial nerves, fundi, visual fields
- Peripheral nervous system
 - Tone
 - Power
 - Sensation
 - Reflexes
 - Co-ordination
- NIHSS
- Gait (if exam otherwise normal)

Previously ambulant patients with acute focal neurological symptoms leading to acute loss of balance should never be discharged without ensuring they can walk if stroke is possibility

8

TIA - ABCD²

- Age >60 1
- BP = or >140/90 1
- Clinical features Speech 1, unilateral weakness 2
- Duration <60 m 1, otherwise 2
- Diabetes 1

7/7 stroke risk

0-3 1.2%

4-5 5.9%

6-7 12%

9

ABCD² 4 or higher

- Aspirin 300mgs
- Specialist assessment and Ix <24 hrs (3 or less - one week)
- 2y preventative measures as soon as diagnosis confirmed

(Includes 2 or more TIAs in week)

NICE CG68

3.2.1A Patients with acute neurological symptoms that resolve completely within 24 hours (i.e. suspected TIA) should be given aspirin 300 mg immediately and assessed urgently within 24 hours by a specialist physician in a neurovascular clinic or an acute stroke unit

(NCG for Stroke, 2016)

10

Types of Stroke

85% - cerebral infarction

- anterior circulation
- posterior circulation

10% - primary haemorrhage

5% - subarachnoid haemorrhage

<1% - cerebral venous stroke

11

Ischaemic Stroke

Anterior circulation (~75%) Speech, weakness limb and facial, inco-ordination, altered sensation, loss of vision in one eye/ visual field

Posterior circulation (~25%) Dizziness, diplopia, dysarthria, dysphagia, disequilibrium, ataxia, and visual field deficits. Acute onset “crossed” deficits (cranial nerve territory symptoms on one side and sensory or motor deficits of the opposite arm and leg)

12

Acute venous stroke

Headache, papilloedema, seizures and focal (sometimes bilateral) neurological deficits

Young women, inflammatory disease, inherited thrombophilia, O.C.

1.4.2.5 Full-dose anticoagulation treatment

Stroke associated with arterial dissection

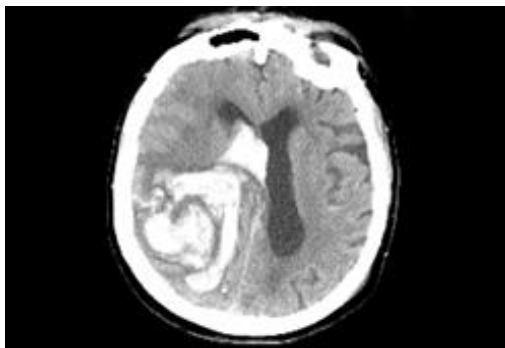
Spontaneous, or post-trauma

Headache, facial and neck pain, Horner's syndrome, tinnitus

1.4.2.6 Anticoagulants or antiplatelet agents, preferably randomised trial

13

Intracerebral Haemorrhage



- **Urgent reversal of anticoagulants**

- Warfarin – PPC and IV Vit K

- Dabigatran - Idarucizumab

- Factor Xa inhibitor – 4-factor PCC

- **Blood pressure control** – Maintain systolic <140 (if <6hrs onset)

- unless GCS 5 or less

- haematoma very large and death expected

- structural cause for haematoma identified

- immediate surgery to evacuate the haematoma planned

NCG for Stroke, 2016, 3.6.1

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Neurosurgical Referral

- Haemorrhage
 - if hydrocephalus
- Selected no of MCA infarcts, within 24 hours of onset
 - decompressive hemicraniectomy

Referral usually by stroke specialist

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Brain Imaging

- Immediately
 - indications for thrombolysis (within 4.5 hours)
 - on anticoagulant/ bleeding tendency
 - GCS <13
 - progressive or fluctuating symptoms
 - signs meningism (papilloedema, neck stiffness, fever)
 - severe headache at onset
- As soon as possible all others

NICE CG 68, 1.3.2

(2016/7 - SSNAP 51%<1 hour)

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Stroke Thrombolysis

- <4.5 hours from clear onset
- BP reduction to 185/110 mmHg or lower should be considered in people who are candidates for thrombolysis.

NICE CG68

- *3.5.1G Patients with acute ischaemic stroke should be considered for combination intravenous thrombolysis and intra-arterial clot extraction (using stent retriever and/or aspiration techniques) if they have a proximal intracranial large vessel occlusion causing a disabling neurological deficit (National Institutes of Health Stroke Scale [NIHSS] score of 6 or more) and the procedure can begin (arterial puncture) within 5 hours of known onset.*

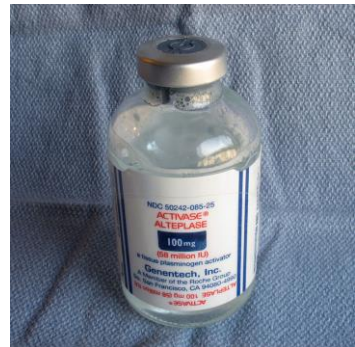
NCG for Stroke, 2016

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Stroke Thrombolysis

- ~14% attending ED eligible for thrombolysis
- Good outcome NNT 10 (<3hr) 19 (3-4.5hr)
- The earlier the better
- Benefit <3 hours 32%, 3-4.5hr 16%
- Harm ~3%

(2016/7 - SSNAP 12%, 62%<1 hour, 87% of those eligible)



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Swallowing

- Screen as soon as possible on admission
- If problem – specialist assessment ideally <24hrs

NICE CG68 Para 1.6.1.1-2

Patients with acute stroke should have their swallowing screened, using a validated screening tool, by a trained healthcare professional within four hours of arrival at hospital and before being given any oral food, fluid or medication.

NCG for Stroke, 2016. 3.10.1E

(2016/7 - SSNAP 74% swallow screen <4 hours)

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Aspirin

- 300mg as soon as possible after haemorrhage excluded
- Aspirin¹ -

At 2 weeks, disabling or fatal stroke

23/5726 – No aspirin

2/6691 – Aspirin



1 Rothwell et al, Lancet 2016; 388: 365-375

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Admission to a Stroke Unit

Reduction in

- Mortality at one year
- Institutionalised care
- Dependency

Organised inpatient (stroke unit) care for stroke
Cochrane Review, 2017

(2016/7 - SSNAP 57% <4 hours)

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Stroke – Delayed Diagnosis

- Young age
- Misdiagnosed as TIA
- Inadequate neurological examination – failure to observe gait
- Posterior circulation stroke –dizziness, nausea, collapse, visual problems
- Delay in assessment
- Diagnosed as syncope, sepsis
- Existing neurological problems
- Bell's palsy



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NICE GUIDELINE UPDATE (expected May 2019)

Suspected TIA

- Removal of scoring systems (poor in discriminating early risk)
- Immediate Aspirin
- All to be seen within 24 hours of onset (30-50% mimic)
- MRI at the time of assessment in clinic

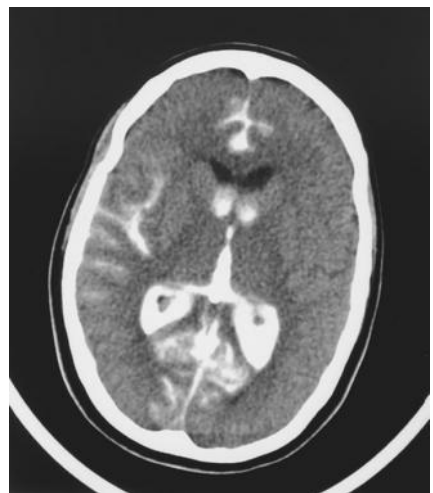
Selected cases

- Thrombectomy extended to 24 hours

23

Subarachnoid Haemorrhage

- 5% strokes
- GP 1 every 7 years
- 20-50% missed at 1st presentation



24

SAH - Clinical Features

- Sudden onset, severe, diffuse headache
- Peaks in minutes
- May be associated with exertion
- Vomiting (75%), ↓ LOC(67%), focal dysfunction(15%), subhyaloid haem (14%), convulsions (7%), delirium (1%), radicular pain (1%), BP↑↑, ECG ischaemia
- Preceding bouts severe headache (20%)
- Neck stiffness after 3 -12 hrs possible

25

Diagnosis

- Hx ↑ BP (2.5), smoking (2.2), alcohol+ (2.1)
Personal or FH - polycystic kidney disease, neurofibromatosis type 1, hereditary connective tissue disorder
- CT <6 hours >99%
24 hours 93%
7 days 50%
- If normal → LP after 12hrs (<10 days) 40-50% UK - not performed

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Missed SAH - Why?

- Sudden severe headache - not present in 25%
- “Worst ever” – often used in migraine
- Characteristic sudden onset not recognised
- Aversion to light (photophobia) can occur with any severe headache
- Neck pain may predominate
- Attributed to more common cause – migraine, neck pain
- Late presentation
- Symptoms improve/ resolve with + without analgesia
- Absence of signs
- Failure to understand limits of CT

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Does it matter?

- Failure to diag → re-bleeding up to 15% 1st day
40% 1st day survivors over next 4/52
- 50% die <3/52, 1/3 survivors dependent
- Early diagnosis and referral can improve outcome
- Nimodipine 60mg 4 hourly
- Neuro-surgical/ neuro-radiological intervention

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Stroke Management in Emergency Medicine Current Standards

- Timely assessment
- Neurological examination
- Timely investigation
- Timely management and referral

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Stroke and TIA Management in Emergency Medicine Current Standards



AVMA Conference March 2019

Peter W Richmond

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REPRESENTING CLIENTS WITH AN A&E CLAIM

Jo Moore – Counsel
Caron Heyes – Senior Associate

1

Caron Heyes

Senior Associate, Fieldfisher

caron.heyес@fieldfisher.com

Working with counsel pre-issue

- Risk assessment
- Taking client instructions
- Investigation
- Testing evidence - expert and factual
- Conference with counsel

My ideal Counsel

- Collaborator
- Empathetic to client aspirations and concerns
- Detailed in their examination of the issues
- Forward thinking
- Realistic in their expectations of what can be achieved by solicitors
- Costs awareness

2

Jo Moore

Barrister, 1 Crown Office Row

jo.moore@1cor.com

Working with solicitor to prepare a claim

- Receive instructions following review by solicitor
- Review records and early expert reports
- Conference - meet the client, and test the evidence
- Fine-tune pleadings in conjunction with solicitor

My ideal solicitor:

- Collaborator
- Broad consideration of possible defendants.
- Chronology
- Clients' expectations managed
- Heads up about clients' particular aims and concerns

3

Case Studies

Case Study 1: TG - vascular

- Understanding triage system
- Referral routes
- Duty to investigate symptoms
- Limits of A&E

Case Study 2: FB - meningitis

- Paediatric A&E
- Standard of care in triage
- Requirement to elicit certain information
- Nature and progression of illness

Case Study 3: Brock - toxicology

- Discharged by A&E
- Out of hours care
- Duty of care - when does A&E adopt the duty of care?

Case Study 4: XY - neurological

- Discharge with advice
- Mapping the symptoms
- Proving your case on breach and causation
- Avoiding evidential contamination

4

Case Study 1: TG

Background

- Attends GP with painful toe and discolouration of foot.
- Referred to Orthopaedic surgeon who discounts orthopaedic issues but concerned it may be a DVT - sends her for Doppler.
- Doppler discounts a DVT, but problem persists.
- TG ends up at A&E:
 - *unable to weight bear on the foot,*
 - *spread of discolouration,*
 - *pain now travelling up into the thigh.*
- A&E discount a DVT but in case it is one put her on aspirin and give her a two week referral to Vascular.
- Two days later, TG admitted by ambulance to a different hospital for urgent vascular care.
- Her circulation is compromised and they attempt a bypass but it fails and she loses her foot.

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Case Study 1: TG

Key features on the A&E evidence

- Failure to note that a) pain now in thigh b) pain levels are so severe patient cannot weight bear - both features inconsistent with DVT.
- Failure also to investigate other sources of pain in absence of a DVT finding.
- Had they investigated - would have led to vascular review by next day (Trust had vascular clinics for urgent referrals on Tuesdays and Fridays and she was seen in A&E on a Monday).
- Would have saved foot.

Evidential issues

- Ruling out orthopaedic involvement.
- Understanding triage system and referral routes out of A&E.
- Knowing realistic time when would have been seen by vascular.
- Limits of A&E care.

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Case Study 2: FB

FB v Dr. Sohail Rana, Princess Alexandra Hospital NHS Trust [2015] EWHC 1536

- 1 year old, staring into space, was unresponsive, then rolling eyes. Temp 40°C.
- Ambulance called, took to A&E. Triage within 3 minutes.
- 45 m later, SHO reviewed the baby.
 - *She did not know about the eye-rolling incident, and did not ask about it.*
 - *She did not ascertain that the baby was brought in by ambulance.*
 - *She found baby to be looking well, alert and active, responsive and aware, pink and well hydrated, 36°C, 150 bpm, resp 36 bpm, and generally normal examinations.*
 - *Impression was one of an upper respiratory tract infection - Baby discharged.*
- Baby back to A&E same evening. Treated for pneumococcal meningitis but too late to save her from bilateral, profound hearing loss and learning difficulties.
- Judge found that the A&E SHO was not negligent in failing to elicit information; although a more senior doctor would have done - it was not negligent for a SHO to fail to do so.

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Case Study 2: FB

FB v Princess Alexandra Hospital NHS Trust [2017] EWCA Civ 334

On appeal

- Appeal regarding SHO allowed
- Judge had applied the wrong test to the standard of care of the SHO in A&E.
- History taking was a basic task not a specialist task where a different standard of care is required of more experienced consultant.
- SHO with competent care should have elicited the history of eye-rolling and arrival by ambulance.
- Parents may not know which symptoms are important or concerning

8

Case Study 2: FB

Key features on A&E evidence

- What is required of a SHO in this position?
- What information can be sought and what must be volunteered?

Expert evidence

- Development of the illness - peaks and troughs.
- Need to 'map out' the progression using both expert evidence, parental memory, and contemporaneous medical (and other) records.
- Causation requires ascertaining when blood/brain barrier breached and when symptomatic meningitis onset occurred.
- Be mindful of the **standard of care issue** – spend the time considering how to define the parameters of what standard is required of the particular discipline.

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Case Study 3: Brock and another v Northampton General Hospital NHS Trust and another [2014] EWHC 4244 (QB)

Background

- R takes overdose of paracetamol.
- Attends A&E and bloods show paracetamol levels below a low risk treatment line (by reference to a chart) so not given antidote.
- Advice to return if feels unwell.
- Feels unwell so mum calls A&E and told to go to GP.
- Out of hours - so attends on out of hours GP which happens to be located at the same hospital next to the A&E department.
- The GP goes to A&E department and speaks to a doctor to check on Blood results. He ascertains that the results showed paracetamol levels fell below the low risk treatment line and goes back to see R and advises that she should go home and keep warm, drink fluids etc. and records "generalised aching after overdose of paracetamol in morning – no systemic findings"

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Case Study 3: Brock and another v Northampton General Hospital NHS Trust and another [2014] EWHC 4244 (QB)

Background

- The case against the A&E team hinged on being able to establish that the A&E team should have re-examined R on being notified that she had returned complaining of feeling unwell and that they had a continuing duty of care in respect of R
- The A&E experts agreed that if the court found that the GP told the A & E team about the circumstances of Rachel's attendance (i.e. her condition and his findings) and sought advice on management there would have been a duty of care on the A & E team. If however the GP simply requested information about Rachel's blood levels during the night ... the A & E team would not have had a duty of care.
- The Judge held that contemporaneous notes of interaction between the GP and the A&E team were not consistent with the GP seeking and receiving advice from the A&E team and the claim failed on that point.

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Case Study 3: Brock

Key issues

- Line between out of hours care and A&E
- The GP who went to A&E department to speak to a doctor and check on blood results - did he seek their advice or simply the results?
 - *If sought their advice, and they gave it they would have adopted a duty of care.*
 - *However if not, they had no duty of care.*
- Would this be decided differently in light of *Darnley*?

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Case Study 4: XY

Background

- Mr X attends A&E late one evening.
 - *History of various symptoms of low back pain.*
 - *Back and leg and pain increasingly worse over last few days.*
 - *Very concerned.*
- His recollection: told it was likely musculoskeletal, to go home, follow up with GP if pain persisted.
- Inadequate contemporaneous notes made at A&E, but Trust evidence is:
 - *if he presented with the pain described, he would have been given advice that if he experienced any numbness around the anus/buttocks he should seek medical attention asap*
 - *only if his pain was not as serious or localised as he describes would he have been discharged with general advice to go to GP.*
- Pain in XY's legs and back continues and he begins to experience some numbness in his legs along with buttocks. Tries to treat with analgesics for one day until he can get a GP appointment.
- Following day, calls 111 and is specifically asked about numbness and saddle pain. Ambulance is called and in due course he is diagnosed with Cauda Equina Syndrome ('CES').

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Case Study 4: XY

Evidential difficulties

- XY must prove that he was given inadequate advice, and with appropriate advice he would have received decompression surgery earlier.
- Many A&E cases involve patients discharged with advice.

Issues

- What was his condition when he first went to A&E? How to establish:
 - *Contemporaneous documents from C*
 - *Text messages to/from family*
 - *Expert evidence on the trajectory of the illness and level to be expected at various times*
 - *NB - in other cases (e.g. bilirubinaemia, meningitis, where illness is 'visible', there may well be photos. Check phones, check cloud)*

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Case Study 4: XY

Issues

- What advice was given? Whether negligent will depend on establishing the actual condition (expertise)
- Able to say that if he had been properly advised he would have called an ambulance sooner?
 - *His statement will say he would have called sooner, but more persuasive are objective records.*
 - *Did he record anything about the consultation?*
 - *Go through previous medical records is he a diligent attender or does he “wait and see”?*
- Relevant both to factual question of what advice was given, and to causation.

Practical concern

- His memory of his pain and condition at different stages may become inadvertently contaminated by:
 - *Passage of time – memory fades and timelines get mixed up*
 - *Litigation*
 - *Doing his own research*

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Learning from the case studies

- Importance of mapping out the progression of the illness – for both breach and causation
- Understand A&E – who triages? What are the possible referral routes?
- Careful consideration of the basics!
 - *Who has a duty of care?*
 - *When could the duty shift from a potential defendant to another?*
 - *What is the standard of care expected?*
- Where possible, obtain and rely on Trust’s documents and contemporaneous notes and photographs, client’s memory can fade.
- Test the expert evidence on alternative scenarios – *“what if the symptoms at x o’clock were in fact ...”* – avoid surprise in the courtroom!

16

Questions?

Caron Heyes | Fieldfisher
Jo Moore | 1 Crown Office Row



Please complete your details:	
Name:	_____
Job Title:	_____
Company:	_____
E-mail:	_____

Medico-Legal Issues in Accident and Emergency Care

6 March 2019, Fieldfisher, London

DELEGATE EVALUATION FORM

Dear Delegate

We value your opinion on all aspects of this conference and use this information to improve the quality and content of our forthcoming events. We would be grateful if you would spare a few moments to complete the following and either return it to the registration desk before you leave or send it to AvMA at your earliest convenience.

1. What was the major factor in the decision to attend this conference?

Interesting programme	<input type="checkbox"/>	Networking Opportunities	<input type="checkbox"/>	Cost	<input type="checkbox"/>
Location of conference	<input type="checkbox"/>	AvMA's reputation	<input type="checkbox"/>	Other	<input type="checkbox"/>

If other, please specify: _____

2. Please rate our speakers using the following scoring system.

	Excellent	Good	Satisfactory	Poor	Comments
Chair: Richard Booth QC					
Time-Keeping:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Contribution:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____

1) Dr Tim Nutbeam	Excellent	Good	Satisfactory	Poor	Comments
Overall Presentation:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Subject Matter:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Documentation:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____

2) Mr Nadeem Nayeem	Excellent	Good	Satisfactory	Poor	Comments
Overall Presentation:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Subject Matter:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Documentation:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____

3) Mr Paul Kennedy	Excellent	Good	Satisfactory	Poor	Comments
Overall Presentation:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Subject Matter:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Documentation:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____

4) Mr Peter Richmond	Excellent	Good	Satisfactory	Poor	Comments
Overall Presentation:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Subject Matter:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Documentation:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____

5) Mr Manolis Gavalas	Excellent	Good	Satisfactory	Poor	Comments
Overall Presentation:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Subject Matter:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Documentation:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____

6) Mr Peter Richmond	Excellent	Good	Satisfactory	Poor	Comments
Overall Presentation:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Subject Matter:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Documentation:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____

Excellent Good Satisfactory Poor Comments

7) Caron Heyes

Overall Presentation: _____

Subject Matter: _____

Documentation: _____

8) Jo Moore

Overall Presentation: _____

Subject Matter: _____

Documentation: _____

3. How clear were the course aims and objectives? Very clear Quite clear Not very clear Not at all clear

4. How well did the course meet the objectives? Completely Quite well Fairly well Not that well Not at all

5. What did you find MOST useful about the Conference and why?

6. What did you find LEAST useful about the Conference, and why?

7. What could AvMA have done to make this conference a better event?

8. What topics were omitted from the programme that you feel should have been included in the course?

9. Please give your opinion of the following:

	Excellent	Good	Satisfactory	Poor	Comments
Conference Rooms:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
Meals & Refreshments:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
Audio-visual facilities:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
AvMA Administration:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____

10. FINALLY - How did you rate the conference overall?

Excellent Good Fair Disappointing

Comments: _____

11. On what topics would you like AvMA to organise conferences?

1. _____ 2. _____

3. _____ 4. _____

12. Do you expect that you will use the learning from this event in your work? YES NO

If YES, please say how you think you will use the learning in your work:
