The Shrewsbury and Telford Hospital NHS
NHS Trust

Emergency Department.

Royal Shrewsbury Hospital.

Doctor's Guidelines.

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This document gives a brief introduction and some background information about the Emergency Department. It is reviewed and updated regularly.

However, the department intranet site contains the most up-to-date guidelines, policies and timetables. Information on the department's intranet site takes precedence over the information contained in this document. The ED intranet site should be the first point of reference for clinical problems.

CONTENTS:

General information.

Introduction:

This handbook must be used in conjunction with the guidelines available on the hospital intranet. These include:

- **Medical guidelines**
- **Paediatric guidelines**
- **Antibiotic guidelines**

Other useful information can be found at: www.ncemi.org/cse/contents.htm

Conduct:

- All Doctors should wear name badges.
- Do not wear jackets when undertaking any clinical care (sleeve contamination).
- Do not wear long sleeves when doing procedures. (NAKED FROM THE ELBOWS DOWN)
- Do not wear ties during practical work.
- Remain as smartly dressed as possible. After all, doctors are still professionals.
- No T-shirts with slogans, visible body art, excessive jewellery, revealing clothing.
- Long hair should be tied back.
- Use hand wash/rub before and after seeing each patient.
- Wear gloves when handling any body fluids, inserting a cannula, taking blood, or undertaking any invasive procedures (unless there is a specific indication why you should not).

The public, and your patients, are very aware of the recommendations to reduce cross-contamination and will be observing your practice. It is for you to set a good example.

Your practice should be based on GMC principles:
- Clearly identify yourselves on the case record: Name & GMC number.
- Communicate with general practitioners: code the ED card as soon as you have finished with each patient. Coding should include all investigations (tick box), a diagnosis and treatment given, along with any further information for the patient's GP.

The national average work rate for SHO-equivalent staff is 1.6 patients/hr. This is the CEM guideline for the minimum number of patients you should see to get full educational value from your EM post. You should all aim to gradually increase your work rates to give you as varied a caseload as possible. Confidence comes from seeing good numbers of patients.

Ambulance Telephone:

The following staff should NOT take messages from the ambulance phones unless they are very familiar with procedure:
- New junior doctors (SHO or FY2/FY1).
- New junior nursing staff unless suitably trained.
- Non-emergency staff of any background.

There have been communication difficulties with the air ambulance where subsequently the ground portering team has not been mobilised via switchboard. This is a potential risk to the public on the ground and the air ambulance crew. We have also had incidents where trauma or cardiac arrest teams have been requested, but have not been called by department staff.

- All messages from the air ambulance crew or requests for resus teams must be relayed to the nurse and senior medical staff on duty in the department.
- Air ambulance calls MUST be relayed to switchboard to mobilise the portering staff.

Emergency Numbers:

The following numbers should be used in emergencies:

- Cardiac Arrest: 2222
- All Other Emergencies: 3333

A recent audit has shown that calls from our department are extremely variable, with the cardiac arrest number being used to fast bleep surgeons and anaesthetists, with '3333' being used for cardiac arrest, and a lot of use of '0' to urgently summons individual doctors and teams. Please use the right number.

The Department:

This Emergency Department treats approximately 37,000 new patients per year and has fully computerised records that generate a GP letter for every attendance.
Staff:

- 2 Consultants, 2 Associate Specialists, 1 Speciality Doctor, 1 Specialist Registrar, 4 other Clinical Assistant sessions, and 7 SHO's (including 3 Foundation year 2 doctors).
- Emergency Nurse Practitioner and a Physiotherapy Practitioner
- 30 WTE nurses.
- The SHO rota is based on a variety of shifts matched to the times when patients arrive. Shifts are longer overnight when it is quieter, with a longer shift at the weekends to enable more time away then. Holidays are built into the rota, and these can only be altered by a mutually agreed swap. All requests for alterations must be made in advance to the senior medical staff and the department secretary. Any changes to the rota must leave the department with a safe level of cover.

Aim: to manage appropriately all patients who attend; either treating and discharging them, or admitting where appropriate, as safely and efficiently as possible. Where possible investigation and treatment is evidence-based.

Triage And See & Treat:

- "Triage" means 'to sort'.
- Nurses use the Manchester Triage system to sort patients.
- Sometimes Minor cases are seen directly by doctors – a system known as "See & Treat", designed to allow patients to be seen as rapidly as possible. This should only happen when the doctor's can get to the patients within 20 minutes, i.e. quicker than the triage nurse.

Targets:

- The department must see, treat, and discharge all patients within 4 hrs of their booking in time. Only exceptionally would this target be breached – and only for a clinical exception – e.g. continuing resuscitation. You must make every effort to enable this to happen. It is important that you see patients in the order presented to you, seeing the most needy first. Do not select patients out of order.
- G.P.s must be informed of their patient's attendance at the ED within 48hrs. You must complete the coding section of the record as soon as you have finished with the patient. NEVER leave this for the next day.
- Patients should not wait on trolleys more than 12 hrs – the target is a maximum of 4.

Support:

There is a senior doctor in the department from 9am to 11pm and always a senior ED doctor on-call outside those hours. In-patient teams are always available too, however you should always discuss clinical problems with the ED seniors when they are present BEFORE making a referral out of the department.
When working in the Resuscitation area, even at night, you will be working with experienced nurses who will advise you what to do. There are special arrangements for patients suffering major injury, cardiac arrest or resuscitation in children, with hospital teams available to help. The 'hospital at night' project should strengthen this response.
At night some patients will be identified who can be referred directly to the in-patient Medical team, Paeds team, maxfax team, and sometimes gynaecology. These will need a cannula inserted and blood taken first when appropriate.

The Patients:

Every patient who attends perceives they have a need, which must be respected. However some may need to be re-directed to other services, and the nurses may do this when the patient first presents.
Research has shown that some of these patients will continue to re-attend no matter how they are handled. It is destructive, time wasting, and leads to complaints being made if you are confrontational or rude, so it is our philosophy to remain courteous.

Note-Keeping:

This is an art, as ED notes must contain sufficient detail yet be succinct - most patients do not require a full 'clerking' but all relevant information should be documented. Important points to remember are:

1. Record your name and GMC number on the front of the card. Use your name-stamp if provided.
2. Record the time you first see a patient, and the time of any subsequent review you make.
3. ALWAYS record Drug history and Allergies.
4. Record essential history, and in particular remember tetanus status and PMH if relevant.
5. Note any investigations requested and their results
6. Record treatment given, including advice.
7. Record your final diagnosis.
8. Every patient must also be entered on computer in order to generate a discharge letter to the GP. This is done by the reception staff who enter your codes and free text. To do this - you must complete the coding for each patient before finishing your shift.

Self-Discharge:

A mentally fit adult has the right to refuse treatment or admission. If they do, record this in the notes and request that they sign the appropriate form on the back of the notes. If you are concerned for the safety of a patient who self discharges, discuss with a senior.
If parents refuse treatment for their child it must always be discussed with a senior colleague.

Emergency Department Clinic:

- ED clinic is consultant-led on Monday and Friday and by the Associate Specialist doctors on Wednesday. Use the **guideline** displayed on the wall in the department to choose the appropriate clinic.
- Discuss which patients to send with seniors if necessary. There is a poster to guide follow up in the ED.
- Clinic should not be used for patients who present a diagnostic problem, as there will always be a senior to ask whilst they are in the department.
- No fractures should be sent to the ED clinic. The type of patients suitable for referral to the ED clinic might include clinical scaphoid fractures (X-ray normal), finger-tip injuries being treated conservatively, and burns.
- Knee injuries are NOT seen in ED Clinic – They should be referred to the Soft tissue knee clinic.
- This clinic is not for chronic complaints, Rheumatology problems or back pain.

Other Clinics:

Fracture Clinic:
All Fractures except little toes, and knee injuries are referred to the next day Fracture Clinic.
Do NOT send chronic conditions, back pain or Rheumatology problems there.

Asthma Clinic:
If an asthmatic patient can be discharged then a follow-up Asthma Clinic appointment is to be made. This clinic is currently not available. Follow up for adult patients should be arranged with their GP's.

Nasal Injury:
Patients with clinical signs of a fractured nasal skeleton are booked into the "Nose" Clinic at 4-5 days.

Facial Injury:
Patients with significant facial injuries can be followed up in the weekly Facial Trauma clinic. Discuss with the maxfax surgeons beforehand if unsure.

Physiotherapy Clinic:

All Shrewsbury patients may be referred to RSH physiotherapy via the ED physiotherapy clinics. These run alongside the usual ED clinics on Monday, Wednesday and Friday. Patients can be booked into these physiotherapy clinics at the ED reception desk. Patients outside of the RSH area can be referred to their local physiotherapy department via the yellow referral cards. Discuss with the Physiotherapy Practitioner if unsure.

Teaching.

Education in the ED:

In-house:

When you start you will be shown the layout of the department and will participate in an induction programme of training. Teaching will continue weekly throughout your post.
Educational goals will be discussed with your consultants and your progress will be monitored through a system of appraisal. This will include 360^0 appraisal.
We welcome all staff to our monthly audit meeting (1^{st} or 2^{nd} Tuesday of each month, 4pm). We suggest that all junior staff should aim to attend at least one or two audit meetings during their attachments to the emergency department. You should undertake one audit project in your ED job.
There is a Journal Club on various Tuesday afternoons. All welcome.

You are paid to attend teaching; attendance is compulsory unless you are on annual leave or night duty.
If you do not attend regularly you will be asked to work extra shifts in the department.

Weekly teaching occurs at 1.00pm on Tuesdays.
- The teaching is led by senior ED staff and may involve speakers from other specialities.
- It is interactive, and you will be asked to participate in audit projects and case presentations. In return we will try to make the teaching interesting and relevant to your time in ED and your future careers.
- We welcome suggestions on the content and its 'usefulness'.
- Check the intranet for each Tuesday's teaching sessions.

Other teaching:

- VTS, and Foundation Year training programmes. The doctors on these programmes will be expected to attend extra half-day speciality training sessions. Your rotas will accommodate this.
- All SHO's will be able to take study-leave for relevant courses although the extra half-day training above is part of study leave allowance. However you must decide at the beginning of the job what to do and when - and apply early. It must be staggered amongst your colleagues. Normally at least 6 weeks notice is required and the course will have to be approved by both your consultant and the postgraduate tutor.
- Specialist Registrars have weekly regional training session every Wednesday afternoon.
- Local life support courses depending on availability and study leave include:
  ATLS ALS APLS PILS
- There may also be a course in chemical de-contamination, and Major Incident desktop exercises.

FY doctors in the ED.

Attending your generic foundation teaching is compulsory. You will not be called into the department because of workload pressures during education sessions. There will be some locum provision for foundation training cover. If you are down on the rota to work during an educational session, you must inform the ED consultants or secretary ASAP.
Record any swaps made on the rota in the doctors' area and let the ED secretary know about them too.

Specific ED problems and Pitfalls.

Violence:

Much of the ED workload arises because of violence. Always document injuries carefully with diagrams and measurements of wounds - this will help you later with police statements.
Many patients are psychologically upset by the attack and may need practical support and counselling. The nurses can provide telephone numbers for various support groups.
The trust will not tolerate and verbal or physical aggression towards a member of staff. Notices to this effect are displayed throughout the department. Prosecution will be supported in EVERY case. Any instance of abusive behaviour should be documented. Forms are available from the nurse in charge. The police will be routinely involved.
Most aggressive patients can be talked down. Resist all temptation to return the aggression. Some patients have to be restrained or removed from the department.
If you feel the situation is getting out of hand leave the patient and seek help.

Complaints:

We aim to support and teach you as much as possible during your time in the department. We expect loyalty in return. If you have a complaint or suggestion about the department please discuss it with us first. We value your opinions and input into the team.
Unfortunately complaints against the department and individuals occur. If a complaint is made against you the ED department will support you provided you have been polite and caring and you have made good clinical records.
The majority of complaints are about staff attitude or communication rather than competence. If you see a complaint coming it pays to involve senior staff at the time.
Good note keeping is vital. Do not take complaints personally; no one is always right.

Communication:

Communication with GP's through appropriate coding is important.
Urgent matters should be discussed with patients' G.P.'s by telephone.

Local GP's have requested that the cause of death be included on the Notification of Death letters sent to them when patients die in hospital. If GP's don't know the cause of death it can make discussions with bereaved relatives difficult. If a cause of death is obvious when a patient dies in the ED, please can you include it in the diagnostic text that you enter on the coding page.

Clinical Pitfalls In The Emergency Department:

The apparently intoxicated patient.

- Do not write 'drunk'.
- Write 'smells of alcohol', 'slurred speech', 'unsteady gait', 'admits to drinking' etc.
- This should be extended to those intoxicated by drugs.
- Never assume an impaired level of consciousness is due to alcohol or drugs.
- Alcohol can mask head injuries, even in the fully conscious patient. You must be certain that the patient has not had a head injury in the last 24hrs. If so then consider whether a CT scan is required – ASK an ED senior.
- Patients who are not fully conscious and orientated, or are ataxic, should be discussed with a senior, and observed, not discharged.

Head injuries.

- Never attribute the head-injured patient's state to alcohol.
- Remember that a drunken patient may also have a head injury.
- Record a full CNS examination and the Glasgow Coma Scale.
- 'No abnormal neurology' must at least be accompanied by further statements such as gait normal, good power in all 4 limbs.
- Record the social circumstances and do not discharge head-injured patients home alone.
- See later guidelines for investigation.

Chest pain.

- Is it ischaemia? How do you know it is not?
- Have a low threshold for admission. Refer patients who have experienced more than 20 minutes of continuous suspicious pain for admission. Remember the ECG may he normal early on.
- In clear cases of acute myocardial infarction early thrombolysis is essential (aim is door to needle time 20 minute maximum). Thrombolysis is delivered in the ED Department ASAP when indicated.
- See **Guidelines** link on the Intranet for formal chest pain guideline.

Wounds.

- Foreign bodies: Beware of all retained foreign bodies- especially after accidents with broken china and glass. X-ray all radio-opaque f.b's, especially glass. Glass should always show up. Wood rarely shows up on X-ray.
- Teeth: Remove fragments from lips to prevent sepsis. Beware the missing tooth – it may have been inhaled! Be prepared to X-ray the chest to spot the tooth that has been inhaled.
- Injuries to nerves and tendons must be excluded even in apparently minor or superficial wounds. Examine all wounds carefully. Remember anatomy.
- Learn to examine the hand. Also examine the hand in the position it lay in when the injury occurred.
- Puncture wounds may appear superficial but can be far deeper and heavily contaminated. Some need exploration under GA.
- Antibiotics do not prevent infection. Adequate wound toilet and debridement does.
- Do not forget tetanus cover.

Bites.

- Thorough cleaning and antibiotics are essential. Think of tetanus cover. Use augmentin for animal bites. Consider rabies in bites sustained abroad, or from bats.
- Think before suturing bite wounds. Some are better cleaned and dressed with delayed primary closure 24 – 48hrs later after antibiotic prophylaxis.
- Penetrating Human bite-wounds should be treated surgically with wound toilet and the antibiotic of choice is co-amoxiclav (Augmentin). Consider blood-borne viruses in penetrating human bite wounds.
- Wounds overlying the knuckles are human bites until proven otherwise.

Blood test results.

- Wait for the results of any blood tests you request and, even more importantly, act on the results if they are abnormal. Do not ignore abnormal blood results. If you make a treatment decision that ignores an abnormal result, then you will need to justify this decision later.

The Elderly who fall.

- All elderly patients (>65, but use discretion) who fall should be referred to the DAART service to be included in the FALLS PROGRAMME, unless admission at the time is required. There is a proforma for these patients.

Missed fractures.

X-rays are reported within 24 hrs by a radiologist. ED consultants review any missed injuries and patients are recalled if necessary. Everyone misses fractures sometimes. How to avoid this:

- Attend X-ray teaching.
- Careful examination. Do not x-ray instead of examination.
- When seeing a hand-over patient always assess the patient then the x-ray.
- Follow appropriate guidelines.
- Enter full clinical details on the request card and make sure the right patient label is on the card.
- Ensure the correct side is x-rayed.
- Ensure the film is technically adequate e.g. Lateral C-spine shows C7-T1.
- Treat the patient not the x-ray.

Fractures that are classically missed are scaphoid, calcaneum, radial head, greenstick fractures of wrist, impacted fractures of the femoral neck, facial fractures, pubic ramus fracture and carpal dislocation.

Sudden Death And Bereavement.

If a patient is being resuscitated and the outlook is poor, the nurses inform the relatives early so that they can be prepared for the worst.
If a patient dies tell the relatives as soon as possible. If relatives are not in the department, the nurses will telephone them and ask them to come in. It is better to break the news in person than by telephone.

Method:
- Go with a nurse.
- Identify yourself and the nurse.
- Identify the relative to whom you are speaking and ensure the relatives match the victim.
- Break the news clearly and explicitly with “he is dead” not “he’s gone” or “he didn’t make it”.
- Give the relative time to absorb the news and repeat it.
- Ask the relative if they have any questions and answer them truthfully, without speculation.
- Encourage relatives to see the body.
- Explain the role of the Coroner and that the Coroner’s decision on a post mortem will not be made until the next day. Relatives will need to phone the certificate office in the hospital the afternoon following the death.
- If necessary revisit relatives after a while and repeat the information.

Relatives will be given written information on what to do following a death. Ensure they have the nurse and doctor’s names.
It is important that the GP and the Coroner’s officer are informed as soon as possible. If possible the doctor should do this. Out of hours the police service (telephone 232888) will relay the message to the coroner’s officer.
The name of the doctor and the time death is pronounced must be clearly stated in the notes.
ET tubes are usually removed to enable the relatives to view the body. The position of the tube is checked and recorded in the records by the most senior doctor present.

Driving With Medical Conditions:

The following conditions may lead to discharge, but should prompt you to check the current **DVLA guidance** before doing so. This list is not exhaustive – there may be other conditions affecting ability to drive. Please use common sense for those cases. Guidance may be found on the appropriate intranet page.

Epileptic Seizure Severe	Anxiety or depression
New seizure, ?cause	Psychosis
Loss of consciousness – Any cause	Alcohol or drug misuse
TIA	Visual disorders
Angina	Injured limbs
Frequent hypoglycaemia	Hypoglycaemia with reduced awareness

In any of these conditions, check and give appropriate guidance about driving to the patient.

Medicolegal Aspects Of Emergency Medicine.

Police Statements:

The police often request statements of fact. The patient must give written consent.
When you get the first request speak to the ED secretary and also your consultant.

Completing a statement:

1. Identify yourself, your position, and your qualifications
2. Identify the patient and give the date(s) and time seen.
3. Give a brief history. It is better to say “seen following an alleged assault”. If you say “following an argument with a boyfriend” this is hearsay and not admissible evidence.
4. State injuries. Include size, site and type of wound.
5. Note abnormal x-ray results checking that the radiology report corresponds to your finding.
6. State treatment given - include number of sutures.
7. State disposal e.g. “discharged to care of GP for removal of sutures”.
8. Only state facts - do not say ‘patient was drunk’ as this cannot be proved.
9. Do not speculate on prognosis.
10. Write the statement in layman’s terms e.g. ‘Black eye’ rather than ‘peri-orbital haematoma’.
11. Make sure your statement is legible, initial any corrections and sign every page. Senior staff will be happy to check it before sending off your first few.
12. Give your statement to the ED secretary who will ensure that it is typed and a copy kept for reference.
13. Fill in the expenses form. Remember to keep a record of fees received for the Inland Revenue.

Medicolegal Reports for Solicitors:

Senior staff normally deal with these reports, as they are requests for an expert opinion. Any request from a solicitor should be directed to a consultant. Part of these reports is based on your notes and therefore it is essential the notes are legible and thorough.

Confidentiality:

Usually patient confidentiality can only be breached with the patient’s consent. Two exceptions exist:

- Police may be given the name and address of a patient involved in an RTC under provisions of the Road Traffic Act.
- Confidentiality may be breached where ‘a serious crime” has been committed. The decision to release information is made between the Consultants and senior police officers involved in the case. For example, if continued threat to the public or a known person exists.

Consent:

For all procedures carried out in the ED we must have the consent of the patient. Sometimes this is implied (e.g. the patient allows you to take blood etc.). It is vital that you explain fully what is about to be done and ask for permission to do it. No minor (a child considered not to be Gillick-competent) may be treated without parental consent.
In drink-driving cases, blood and urine specimens for alcohol estimation can only be taken with patient's consent. The police will ask the doctor for assurance that taking a sample will not compromise the care of the patient. Only rarely will permission not be given. In all cases, the police surgeon must take specimens, not the ED doctor.
Occasionally, police may request a blood specimen for blood grouping be taken from a seriously injured patient prior to transfusion to compare with blood found at the scene. Blood should be taken for this after obtaining the patient's consent.

The Press:

Any requests for information concerning individuals or incidents must be referred to the consultant on-call or the duty manager.

Investigations: Imaging.

X-Rays:

All x-rays are reported within 24 hours. All positive x-rays plus notes are reviewed by the ED consultant the following day. Any missed x-rays result in patient recall and review by a senior doctor.
Any missed x-rays will be given back to you to look at again, along with the report. This is an educational exercise. We all miss abnormal x-ray findings occasionally.

The department follows recommendations of the Royal College of Radiologists. The radiographers will query requests that do not conform. Please keep an open mind and be prepared to change your request. If in doubt, ask a senior. If you insist on an x-ray it will be done.

- If you find it difficult to interpret an x-ray ask a senior.
- Remember treat the patient not the x-ray.
- Special tests e.g. Ultrasound, CT, bone scan usually will need to be requested by a senior ED Doctor.
- Please follow our ED guidelines.

Acute trauma:

- Screen: chest, pelvis and consider neck x-rays (CT C-spine may be more appropriate – discuss with senior)

Cervical Spine X-Ray:

- All patients who have significant head trauma.
- All patients who have severe limitation of movement or midline pain following a whiplash injury.
- All patients with neurological symptoms or signs following head or neck trauma.
- All patients who are unable to confirm that their neck is asymptomatic. Remember that a painful injury elsewhere may mask the symptoms of neck injury.

Lumbar Spine:

X-rays of the lumbar spine deliver a very large dose of radiation to the patient and their use diagnostically Is limited. X-ray if:

- Significant trauma:
- Local signs of a fracture.
- Neurology following trauma.
- Sudden severe unexplained pain suggesting a pathological fracture at the extremes of age.

Do not x-ray:

- For chronic back pain.
- Acute strains.
- Sciatica.
- If pregnant — Decision at senior doctor level only.
- Non-traumatic pain of less than 6 weeks duration in patients under 50yrs.

Chest X-Ray after Trauma:

X-ray if:

- High velocity injury, especially deceleration injury.
- Signs of haemo/pneumothorax.
- Flail segment clinically.
- Clinically multiple rib fractures.
- Multiple-injuries are found.

Do not x-ray:

- “rib views”. These are unhelpful in chest injuries and should not be taken.
- Patients who present with musculoskeletal chest wall pain and have normal respiratory function.

Abdominal X-Rays:

2007: A recent audit demonstrated that we are ordering 33% too many abdominal x-rays for patients with abdominal pain compared with national radiological guidelines.

- Most abdominal conditions do not require an x-ray as an investigation.
- Think carefully about your indication for abdominal x-rays and record your indication in the notes before making the request.

Nasal Views:

These are not diagnostic and should not be ordered. The diagnosis of a nasal fracture is clinical.

Ankle X-Rays:

X-ray according to the Ottawa ankle rules. These are sensitive for identifying significant bony injury and reduce unnecessary x-rays. X-ray if:

- Bony tenderness of posterior tip or edge of lateral malleolus or
- Bony tenderness of posterior edge or tip of medial malleolus or
- Inability to bear weight both immediately and in Emergency Department.

In an inversion/eversion injury to the ankle it is not normally necessary to x-ray the foot unless the following Ottawa rules apply. X-ray foot if:

- Bony tenderness of base of fifth metatarsal.
- Bony tenderness of navicular bone.
- Inability to bear weight both immediately and in Emergency Department.

If you see a displaced fracture and treat it with a backslab +/- manipulation, please re-xray the joint after application of the slab to check position is satisfactory.

If there is talar shift, it should be referred directly to the orthopaedic in-patient team.

Special Radiology Investigations.

Discuss all specialist investigations with senior Emergency staff.

CT Scan After Head Injury:
(Condensed from NICE guidelines,CG56, Oct. 2007) **See local guidance.**

CT scan is indicated with the following clinical findings after head injury:

ADULTS	CHILDREN
Depressed conscious level.	Depressed conscious level.
Any other neurological sign.	Any other neurological sign.
Convulsion.	Convulsion.
Signs of skull fracture.	Signs of skull fracture.
Persistent vomiting.	Persistent vomiting.
LOC + age >/= 65yrs.	LOC > 5mins.
LOC + bleeding disorder/warfarin	Age < 1yr + scalp wound/swelling > 5cm.
LOC + dangerous mechanism of injury.	Dangerous mechanism of injury.

Notes:

- **All patients who suffer a loss of consciousness following head injury should be discussed with a senior doctor, no matter brief.**
- A CT scan involves a large dose of radiation and should be carefully considered especially in children.
- Requests for CT scans will usually be made at registrar level and above.
- Dangerous mechanism of injury includes high-speed road accident, fall from a height etc.
- Signs of skull fracture include signs of basal fracture (blood / CSF from nose or ears, Panda eyes etc).
- A CT scan should be considered in all head-injured patients who re-attend A&E with persistent symptoms.
- Skull X-rays and/or a period of observation may still have a role in managing patients with borderline indications for CT scans, or when CT scanning is not available.

See subsection on managing head injuries.

Wide mediastinum post acute trauma: ? "ruptured aorta":

- First discuss with surgeons.
- Contrast-enhanced CT angiogram.
- May still need arch aortogram if surgeons request it.

Abdominal trauma:
- Consider ultrasound (FAST scanning) to look for free fluid.
- Provided adequate access and stability then enhanced CT scan.

? Dissection:

- Need urgent cardiology opinion.
- If investigation is needed then request CT angiogram – Discuss with senior.

Aortic aneurysm:

- In chest:
  - Discuss with surgeons before imaging.
  - Un-enhanced and enhanced spiral CT. If leaking, may still need arch study (angiography).
- In abdomen:
  - Emergency Department senior doctor to see patient first, or discuss with senior surgeon.
  - If further investigation required, ultrasound to show if present or not.
  - Known aneurysm, or possibly leaking, request dynamic spiral post-contrast CT.

Acute CNS collapse:

- Depends on neurological/surgical opinion and prioritisation.
- ? CVA: un-enhanced CT – see 'CVA guidelines'.
- ? Subarachnoid: un-enhanced CT
- History of previous trauma ?subdural: un-enhanced CT
- Discuss need for urgent CT imaging with ED senior doctor.

Investigations: Using Laboratory Services.

A Laboratory Technician is on-site 24hrs each day for emergency work. Specimens are sent via a vacuum tube: do not send glass containers (blood cultures).

- Label All Specimens With Urgent Label
- Results are accessed from the Departmental Computers via a results reporter.
- See: **Chart of Common Investigations**:

1. Laboratory investigations should only be carried out where they will assist in the resuscitation of patients, or where they will influence the decision to admit a patient. Do not do "routine" bloods unless this is part of a fast-tracking system (Definite Medical cases referred directly to Physicians and #NOF).

    - If you have already made the decision to admit a patient do not delay your referral until after the blood tests have come back.

2. Label samples and request forms fully and never omit the hospital number. This is especially important when ordering blood as an emergency.

3. Record the result of investigations in the notes before discharging the patient.

4. When requesting blood for a major trauma case, aortic aneurysm, or other shocked bleeding condition, ask for "four units of group specific blood". This type of cross match is available in a few minutes whereas a full cross match takes much longer (1 hour). "0 negative" blood is occasionally requested at the discretion of the senior doctor.

5. Blood tests should only be done on children when absolutely necessary. Wherever possible the paediatrician on call should take the blood as they will know what bloods they require avoiding a repeat stab. If possible, EMLA/Amitop cream should be applied to the skin prior to venepuncture. EMLA cream takes 1 hour to work. Amitop takes half hour to work but has more local reactions. An experienced nurse should be present when blood is taken from a child.

6. Rarely, blood is taken on patients who are subsequently sent home prior to the results being known. Examples would be uric acid or anti-convulsant levels. If these patients are discharged to their GP then it is vital that the results are sent out to the surgery, therefore enter full details of the GP on the request form and ask the lab to forward the result.

7. Wait for the results of any blood tests you request and, even more importantly, act on the results if they are abnormal. Do not ignore abnormal blood results. If you make a treatment decision that ignores an abnormal result, then you will need to justify this decision later.

8. When taking swabs for suspected Pelvic Inflammatory Disease (PID) please follow the guidelines outlined in the Gynaecology section. Never start treatment for PID without taking swabs.

9. The blood gas machine in Resus. is for use with patients in the Emergency Department only. No member of hospital staff has a given right to use it. It is funded from the ED budget, and is expensive to run. Trust policy is for ABG's from other areas to be analysed in the biochemistry laboratory, where they will be done urgently – while you wait. DO NOT be forced into giving your passwords to other staff. If you are harassed for your password, please feed back to me to take appropriate action.

Chart of Common Investigations:

Investigation Guide for all patients designated as "Major" cases
All patients MUST have HR, BP, RR, O2 Sat, & Temp recorded

Presenting Complaint	FBC	U&E Glucose	Liver Bone	Group & Save	Paracet Salicilate	Malaria	Amylase	INR	D - Dimer	BM	Clearview bhcg (urine)	MSU	ECG	PEFR
Bottle	Purple	Yellow	Yellow	Pink	Yellow	Purple	Yellow	Blue	Blue					
Abdo. Pain (male)	♦	♦	♦				♦			♦		♦	?♦	
Abdo. Pain (female)	♦	♦	♦				♦			♦	(fertile) ♦	♦	?♦	
Definite Medical Admit	♦	♦	♦							♦			♦	
Chest Pain	♦	♦								♦			♦	
? P. E.	♦	♦							♦	♦			♦	
Asthma, S.O.B.	♦	♦								♦			♦	♦
PV Bleed	♦			♦							♦			
Elderly Unwell	♦	♦	♦							♦		♦	♦	
Collapse ? Cause	♦	♦	♦							♦		♦	♦	
? DVT	♦	♦							♦					
"Unwell"	♦	♦	♦							♦		♦	♦	
Diabetic Crisis	♦	♦								♦		♦	♦	
Overdose	♦	♦			♦					♦			♦	
? Malaria	♦	♦	♦			♦				♦		♦		
GI Bleed	♦	♦		♦						♦		♦	♦	
# NOF	♦	♦		♦						♦		♦	♦	
Warfarin								♦						

Prescribing In The ED.

The most commonly prescribed drugs in the ED are analgesics and antibiotics.
A doctor must prescribe all medication given to patients, although a PGD exists for nurses to give stat dose paracetamol.
In the hours 9-5, the patient collects the prescription from Pharmacy. Out of hours a TTO pack may be dispensed from ED stock. The patient, when eligible pays for this. It is essential that if a non-stock drug is required this should be discussed with the on call pharmacist.

Pharmacy is open from 0900-1700 on weekdays and 0900 to 1300 on Saturday.

Remember:
- Note any known allergy or contraindication especially to non-steroidals and penicillin.
- Look up a drug dose in the BNF or paediatric BNFc if you don't know it.
- Co-amoxiclav is indicated in human and animal bites.
- Patients should be warned that antibiotics interfere with oral contraceptives.
- Ibuprofen and paracetamol are cheaper if bought from the chemist.

Analgesia:

As soon as you realise that a patient is in pain they should receive analgesia. Many patients are in pain. Measure pain using a pain-score.

MILD PAIN:

- Paracetamol 1g or paed. dose.
- Ibuprofen 400mg or paed. dose.

MODERATE PAIN (Going Home):

Adults:
- Codydramol 2 tablets 6 hourly or cocodamol 10/500 } 30/500 for significant pain.
- Dihydrocodeine 1 tablet 6 hrly.

Children:
- Paracetamol elixir:
  - <3 months 10 mg/kg.
  - 3m-1 year 60-120mg.
  - 1-5 years 120-250 mg.
  - 6-12 years 250-500 mg 4-6 hourly.

SEVERE PAIN (Staying)

Adults:
- IV opiates with an anti-emetic.
- Rectal non-steroidals should only be given in renal colic or back pain.

Children:
- INTRANASAL DIAMORPHINE: Dose by chart (in department)
- P0 Oromorph solution, 10mg/5ml.
  - Dose 0.2-0.4 mg/ kg.
  - Can be used even if child subsequently nil by mouth e.g. For MUA
- IV Morphine 0. 1mg/kg
- ASK FOR SENIOR HELP

Anti-emetics are not recommended under 12 yrs.

NB. Always titrate your dose against response and be prepared to give a top up if the patient is still in pain

Adverse Drug Reactions:

Patients may present to Emergency Department with a reaction to a drug they have been taking. Consider an ADR especially in GI bleed, liver, kidney and skin diseases and blood dyscrasias. If a new drug is suspected of causing a reaction (new drugs are denoted by a black triangle in the BNF) all reactions should be reported to the Committee on Safety of Medicines using a yellow card. Only severe or rare reactions should be reported if an established drug is implicated. Admission to hospital counts as a severe reaction. Send report to address in card for CSM West Midlands. Discuss with your Consultant.

Antibiotics.

The hospital antibiotic guidelines are updated frequently and are available on the intranet at all times.

- **PLEASE USE THEM:**

"Shropshire Hospitals Empirical Antibiotic Policy for Adults"

- If in doubt about antibiotic therapy, discuss with Consultant Microbiologist ext 1161 (RSH). Contact via switchboard out of hours.
- The guidelines are for adults only. Different antibiotics may be needed for children.
- Use of cefuroxime and quinolones has been reduced, reflecting the recent rise in E coli resistant to these antibiotics in Shropshire.
- 3rd generation cephalosporins should be avoided except when advised by a Consultant Microbiologist.

Tetanus

A rare but fatal disease. It is preventable.

Patients at most risk: over 65 years, particularly women, and those born overseas who may never have receive immunisation. Prevention depends on the wound itself and the patient's immune status. Wounds are considered either clean or tetanus prone.

Clean wounds:

- <6 hrs old
- Clean
- Superficial
- Cleanly abraded or incised

Tetanus prone wounds:

- 6 hrs old
- Deep, penetrating
- Involve significant crushing and devitalisation
- Clinical evidence sepsis, or delay in presentation >6hrs with no initial treatment.
- Contaminated with soil, manure, dirty water, car grease etc

Do not forget to consider tetanus status in corneal abrasions and burns.

Regime:

Children receive tetanus as part of the triple DTP, Hib and polio immunisation at age 2, 3, and 4 months. They are then considered to have been actively immunised. Boosters are then given at age 3-5 years and 13-18 years. If a patient has received a full immunisation course and 1 booster at 10 years, they are considered to be immune.

If a booster is required for adults in the ED, give **REVAXIS** – Tetanus, Diphtheria and Polio combined vaccine.

Human Anti-tetanus immunoglobulin:

Passive immunisation in the form of Human anti-tetanus immunoglobulin (HTIg) – 250iu can be given in patients without active immunity and when a tetanus prone wound exists. It should be given in a different site to tetanus vaccine.

If more than 24hrs elapsed since injury and /or there is a risk of heavy contamination or following burns – consider 500iu.

Summary of Tetanus Injections.

Immunisation status	**Clean wound**	**Tetanus prone wound**
Full course + booster	Nil	Nil, but if risk especially high - HTIg
Primary immunisation complete	Nil (unless next dose due)	Nil, but if risk especially high - HTIg
Primary immunisation incomplete or booster not up to date - adult	Revaxis Back to GP to complete	Revaxis dose + complete course + HTIg
Not immunised/ unknown - adult	Revaxis, back to GP to check course	Revaxis, plus HTIg
CHILD – Incomplete primary course	Check with Paeds ward	HTIg, and check with Paeds ward

Major Incident Plan.

A copy of the current **Major Incident Plan** is held in the ED and on the intranet site.

In the event of a major incident you should report to the senior doctor. If you are at home and hear that a major incident has happened do not phone in, as the lines will be jammed, but come to the department. Your role in a major incident will be much the same as it is for other emergency department cases. However it is important that you work in the area allocated to you. You will have a teaching session on this subject soon after joining the department.

Make sure that you give your home (and Mobile) telephone number to the Emergency Department secretaries as soon as you start your job.

Patients will be prioritised as follows:

- **Red** - Immediate - casualties requiring immediate life-saving procedures.
- **Orange** - Urgent - casualties who require surgical intervention within 6 hours.
- **Green** - Delayed - less serious cases, treatment can be delayed indefinitely.

Your actions:

You will be allocated an area in which to work.
Medical and nursing team leaders will supervise the department.
Work in your area.
It is important that you continue to work calmly as you normally do so in the department.
Make sure you only perform essential investigations.
It is vital to make good notes.

Actions on arrival:

1. Report to senior doctor.
2. Go to allocated area of department.
3. Only work in allocated area (unless instructed to change area by senior medical officer).
4. Assess casualties - resuscitation, investigation, treatment and disposal as required.
5. Priorities:
   - Airway
   - Breathing
   - Circulation
6. Ensure documentation is complete before going to next patient.
7. Inform the Area senior doctor and nurse if discharging or admitting a patient.

Special Major Incident Situations:

ED Evacuation:

Fire: Follow the hospital Fire Policy and ensure rapid evacuation, together with containment (Closure of Fire doors). In other circumstances you may be able to remove some essential equipment eg treatment trolleys. Evacuation may be to outside the department or, if safe, to a relocation of the ED elsewhere in the hospital. In all evacuations the Senior doctors must be informed.

CBRN Incident response (Chemical, Biological, Radiological, Nuclear):

Chemical contamination:

Certain chemicals must be safely removed from the patient's skin. Nursing staff have been trained in setting up a decontamination tent outside the department, and in the use of Personal Protective Equipment (PPE).

- Identify which patients may have been contaminated, try and find out what the chemical is.
- Decide whether decontamination is required – err on the side of decontamination if not sure.
- Keep patients out of the department until a decontamination route can be set up.
- If the patient has entered the department and contaminated it then establish a decontamination route out of the department.
- The decontamination route is: Hot (contaminated) zone → Decontamination unit (warm zone) → Cold (clean) zone.
- Staff working with the patients (including triage) must be in PPE
- Activate the Chemical incident plan.

Biological:

Notification may come from the community (via Public Health or in an acute incident of contamination from one of the emergency services). In an acute infection/contamination incident decide whether decontamination is required. If so then proceed by activating the Chemical Incident plan. If no decontamination is required then isolate the patients, consider whether the patients should wear face-masks, ensure that the air-conditioning is turned off to the ED rooms being used, staff should protect eyes, airway, and skin. Notify the Consultant Microbiologist for further direction.

Radiological:

Patients may be contaminated with radiological material capable of emitting alpha, beta or gamma radiation. This may result from accident or deliberate release. Consider contamination in terrorist incidents. If recognised the patients must be isolated and decontaminated. Decontamination should be co-ordinated by a Medical Physicist if available. This person is available from the University Hospital of North Staffordshire NHS Trust, using the N.A.I.R. scheme of call-out. Monitors may also be available from the X-ray department or the Fire service. Decontamination will be undertaken using the same procedure as for Chemical Incidents (Activate the Chemical Contamination plan). Continue to have guidance from the Medical Physicist on decontamination and staff / patient exposure and prophylaxis (e.g. Potassium Iodate is stocked in the ED and pharmacy).

Nuclear:

Nuclear contamination is likely to result from terrorism. Suspect this with any terrorist incident. Consider the need to decontaminate all patients. If decision is to do so then proceed by activating Chemical Contamination plan together with involvement of the Medical Physicist and the Fire service to ensure monitoring during decontamination. Consider also the effects of irradiation and admit and observe the patients at risk.

Mass Casualties:

In a time of heightened threat a mss casualty incident may arise. See the Hospital Mass casualty response. This will involve activation of the Major Incident plan and establishing rigorous triage to determine who requires Hospital treatment. The County Council will set up community Treatment centres. When established, the minor cases may be diverted to these.

Resuscitation.

You will be trained in resuscitation whilst you are in the department. Only very rarely will you be required to resuscitate severely ill or injured patients on your own and this would usually only be for the first few minutes, until help arrives.

The department is usually warned in advance that a critically ill patient is on the way in. The alert phone will ring and the senior doctor and resuscitation team is called.

After the team has arrived there are occasions when you may be asked to leave resus so that the rest of the department continues to function despite the arrival of someone seriously unwell.

Resuscitation Team Rules:

- Silence is golden.
- Don't shout commands, speak quietly to an individual.
- All communication is to your "leader".
- If not working, stand back.
- If not needed leave the room.
- Know your role and keep to it.
- Don't ignore the patient.
- Wear gloves and eye protection.
- Tell other patients the reason for the delay in their care.

Advanced Life Support guidelines will be followed in Trauma, Paediatric and Medical resuscitation.

Medical Presentations.

Direct Medical Admissions.

NOTE – Use the **Medical Guidelines** available on the Hospital Intranet.

Increasing numbers of acute medical cases are coming to the Emergency Department directly from the community.

- Identify early those who need to be admitted and to perform basic investigations to help reach that decision.
- Opinions on treatment or admission should be sought from an ED Senior, or if alone, from a medical registrar.
- For obvious referrals for admission refer to the SHO.
- At night some patients will clearly need medical admission on arrival. If stable the Clinical Director of Medicine has agreed that they may be referred directly to the in-patient team, either by the senior nurse or yourself. These cases will be managed as follows:

- If a patient is to be referred directly then the following will be done by ED staff first:

    - ID band.
    - Baseline observations.
    - I.V. access.
    - Blood tests following the agreed ED protocol for Medical Admission: FBC, U&E, Liver, Bone, Glucose.
    - ECG.
    - CXR (as indicated by MAU protocol).

- Patients to be considered for **direct admission** include the following:

    - Obvious CVA.
    - Patient with Ischaemic Chest Pain where admission ECG does NOT reveal an Acute MI requiring thrombolitic therapy.
    - Acute exacerbation of Chronic Obstructive Pulmonary Disease.
    - Patient over age 70 admitted late at night with a Medical condition.

Direct Medical Referral: **Exclusions**:

- Patients with Non-Medical conditions e.g. # NOF, Trauma

Patients requiring immediate intervention by ED SHO:

- Unconscious (GCS<13).
- Loss of Airway control.
- Inability to speak in complete sentences.
- Respiratory rate <10, >30.
- Pulse <50, >120 beats/min.
- Patient in severe pain.

If the triage nurse is concerned about a patient then this judgement will over-ride the guidelines and the patient may still be referred to the ED SHO.

Chest Pain.

See **medical guidelines** re. immediate care displayed on the intranet.

A history of chest-pain suggestive of ischaemia must be taken seriously and admitted. AMI is an evolving process and detectable infarction may still be developing. AMI may also present with either atypical pain, silently (collapse) or have no diagnostic features on initial ECG or enzymes. These patients must be admitted, not discharged, and further investigated.

Admit all patients with cardiac-sounding chest pain with duration >15 minutes.

REMEMBER - YOU ARE THE PATIENT'S ADVOCATE – ANY DOUBT – ADMIT!

Thrombolysis for Myocardial Infarct.

- Patients requiring thrombolysis are treated immediately in the ED.
- Drug used is RAPILYSIN – a **thrombolysis chart and proforma** is kept in the thrombolysis tray in resus.
- See dosage regime on the chart.
- Identify the need from ECG & History.
- Identify any risk factors / Contraindications.
- Follow current Medical Guidelines.

Rapilysin (**Reteplase**) For AMI:

- Rapilysin is incompatible with other medication.
- A separate i.v. line is recommended.
- If in unusual circumstances the same line must be used it must be well flushed (minimum 5ml) with 0.9% normal saline or 5% dextrose prior to and following Rapilysin.

Prior to Rapilysin:

- Ensure no contraindications.
- Oral aspirin 300mg (check if given by paramedic prior to admission)
- I V heparin 5000 iu as a bolus.

Administration:

1. IV Rapilysin: Give 1st 10ml bolus injection (slow iv within 2 minutes).
2. Start Clock.
3. Prepare 2nd bolus after 27minutes using a timer as a reminder.
4. 2nd IV bolus after 30 minutes (slow iv within 2 minutes).
5. Heparin: after the second Rapilysin bolus - using heparin designated line. IV heparin infusion 1000 iu per hour (should be administered for at least 24 hours).

Rapilysin - instructions for use:

1. Aseptic technique.
2. Remove flip-cap from vial & clean rubber cap with a steret.
3. Remove both protective caps from the reconstitution spike.
4. Insert spike into the vial of Rapilysin.
5. Remove tip cap from syringe & transfer solvent into vial of Rapilysin
6. While still attached swirl the vial gently to dissolve the Rapilysin powder. (DO NOT SHAKE)
7. Reconstituted solution should be clear & colourless. If not - DISCARD.
8. Withdraw 10ml of solution into the syringe. Overfill may result in excess solution.
9. Disconnect spike.
10. Ready for administration.

TIA:

Use the **guidelines** on the intranet to assess signs of TIA. The **ABCD2 assessment tool** may be used. Patients diagnosed with 'TIA' (transient ischaemic attack) who are sent home should be followed up in the TIA Clinic. To book this is, send a short referral or photocopy of the ED documentation (with any investigations already arranged) either by post to Dr Sinha, consultant physician, or by Fax (261612). Patients are then booked into the **TIA clinic.** The secretary's extension number is 1098 and you can contact her if there is any difficulty with referral.

CVA:

Monday – Friday 09.00 – 17.00: **CVA Assessment guideline.**

Immediately identify patients who may have suffered a Stroke, either by ambulance notification or on arrival. Establish when the Stroke occurred. If less than 2 hrs since start and patient is 18-80yrs then follow this pathway:

1. Bleep the "Stroke Team" via switchboard
2. Receive the patient and ensure he/she is seen immediately
3. Examine and confirm a Stroke. Use the following tool:

Unilateral face weakness	(Y/N)	→ Yes = +1; No = 0
Unilateral arm weakness	(Y/N)	
Unilateral leg weakness	(Y/N)	
Speech disturbance	(Y/N)	
Visual field defect	(Y/N)	
LOC		= minus 1
Seizure activity		= minus 1

STOP if the score is between –2 and 0.

4. Insert IV cannula; take blood for FBC, U&Es, Glucose, Clotting.
5. Arrange CT scan (next slot).
6. Hand over patient's care to Stroke Team.

If patient presents out of hours, or with stroke > 2 hrs duration, or >80yrs, or if stopped on the above tool:

1. Triage nurse receives and assesses patient. Triage category as per national triage scale.
2. Patient put on pressure-relieving mattress, fully undressed and in gown.
3. Full set of patient observations recorded.
4. Insert cannula and take blood for FBC, U&E's, Glucose, Clotting .
5. Patient seen by doctor as per triage category.
6. At night, if ED doctor is busy, obvious stroke patients are referred directly to Medical Team.
7. Patient admitted to MEC.

DVT:

1. There is a policy for out-patient management available on the ED intranet.
2. Diagnosis is suggested based on history, examination, and Well's scoring.
3. The Care Coordination Centre should be contacted to provide dose regime for tinzaparin (and arrangements for further doses of tinzaparin as needed), an outpatient U/S/S, and subsequent follow-up in the community.
4. There is a proforma kept at the nurses station to coordinate DVT management.

Asthma:

- RECORD pre-hospital treatments in our notes, otherwise we don't know what's been given.
- Record pulse, sats, resp rate **AND PEAK FLOW** on arrival, for all asthmatics.
- START bronchodilators IMMEDIATELY on arrival.
- Give steroids as indicated WITHIN 30 minutes of arrival.
- REPEAT all observations following treatment, and within 1 hour of arrival.
- Ensure appropriate patients have prednisolone to go home with if they are discharged.
- Ensure local follow up is in place –definitely back to GP within 48 hours or local asthma clinic.

WE ARE measured nationally on this, & will be repeating the audit at 6 monthly intervals.

Poisoning:

Overdoses In Adults:

- Initial assessment if unconscious: A, B, C, D.
- Use **Toxbase** or to contact a Poisons Unit for advice.
- Check **Medical Guidelines.**
- Consider all factors which lead to deliberate self harm.
- Assess suicidal ideation using the **Pierce score** – forms at the work-station.

Prevention of Absorption:

Emptying the stomach: Evidence of benefit is lacking. If considering lavage, discuss with a senior. Gastric washout undertaken within 1 hour of ingestion is indicated only if there is life-threatening OD of certain drugs – see Toxbase advice. This procedure should NEVER be used in patients who have ingested corrosives or petroleum products. If the patient is unconscious a cuffed endotracheal tube must be inserted by an anaesthetist prior to gastric lavage - if there is any doubt about airway protection, an anaesthetist should be present.

Administration of Charcoal:

Where recommended - Give 50g PO immediately followed by 2Og 4 hourly.
Charcoal is effective against many drugs. However, iron salts, cyanides, malathion and alcohol cannot be treated with charcoal. The poisons unit may need to be contacted for further advice about the use of charcoal.

Give Antidote if Appropriate.

If life-threatening features are present, contact senior ED or medical doctor, ITU, and Anaesthetist.

REMEMBER to assess patients with deliberate self-harm for suicidal intent.

Alcohol Intoxication

All patient who appear to be drunk and have a decreased Glasgow Coma Scale should have a full set of observations performed:

- Pulse, BP, GCS, Pupils, BM
- Observations should be repeated every half hour.

Examine all patients for head injury. Patients who have evidence or suspicion of head injury should be treated as per the head injury guidelines. All patients who have been unconscious within the last 24hrs should be treated as per head injury guidelines. Remember to check for coexisting cervical spine injury. NEVER assume a decreased conscious level in a head injured patient is due to alcohol.

- As 'drunk' patients are difficult to assess, admission is often indicated, +/- CT scan.
- Alcohol levels are not indicated.
- All children who are intoxicated should be admitted.
- All should have a cannula and a BM.

Patients who appear drunk may be discharged from the department when fully conscious and steady on their feet, providing that head injury has been excluded.

Organ Donation And Transplantation.

The liver, kidney, heart, heart valves, corneas, lung and pancreas are organs suitable for donation.
The decision on whether or not a patient may become a suitable organ donor is sometimes made in the ED. When considering a patient as a potential organ donor, contact the senior doctor in the department and the transplant coordinator / ITU. Do no more than this initially.
Corneas can be harvested up to 12 hours after death and thousands of people have had their sight restored by successful corneal graft. In all cases the Regional Transplant Co-ordinator should be contacted.

Psychiatry.

If a patient is not at medical risk from an attempted self harm (OD, lacerations etc.), but still reporting a high risk for suicide you may have to refer to the on-call psychiatrist or to the psychiatric liaison nurse. Suicidal ideation is assessed using the Pierce score. Forms are available to guide you.

All children with deliberate self harm should be referred to the on-call paediatrician and admitted.

Disturbed behaviour can arise from a personality disorder, an acute psychotic illness or an acute delirium arising from toxic, infective, or metabolic causes. Elective management must depend on the cause and, particularly in the elderly, there may be a strong indication for medical as opposed to psychiatric treatment.

The Mental Health Act 1983 consolidates the Mental Health Act 1959 and the Mental health (Amendment) Act 1982. Parts I and II of the Act provide the legal basis for compulsory admission and detention.

There are three groups of orders:

A. For assessment - sections 2, 4, 5, 135 and 136,
B. Treatment orders - section 3, guardianship
C. Concerned with criminal proceedings - 37, 41, 47, 49

Group A applies to us in the Emergency Department.

Section 2
Is the usual procedure and allows detention for 28 days. It requires an application by a Social Worker or the nearest relative and recommendations by 2 doctors, one of whom must be approved under Section 12, i.e. a Consultant or Senior Registrar in Psychiatry.

Section 4
Is used if there is greater urgency - e.g. in General Practice or in the ED. This allows detention for 72 hours and should be converted into a Section 2 detention as soon as possible. It requires an application by the nearest relative or Social Worker and the recommendation of one doctor.

Section 5
Deals with the voluntary patient in hospital who must then be detained.

Section 136
Allows the Police to take someone to a place of safety e.g. police cells- and allows a maximum detention of 72 hours (note – ED is NOT a place of safety).

In a real emergency your conduct is governed by Common Law, under which, with the exception of emergency conditions, no treatment can be given to a patient without his consent. The Act specifies certain emergency conditions under which treatment can be given without consent to a detained patient, i.e. any treatment (provided it is not irreversible or hazardous) can be given to such a patient without his consent, if it is medically necessary to save the patient's life, to prevent a serious deterioration in his condition, to alleviate serious suffering, or to prevent violence or danger to the patient or others.

Deliberate Self Harm:

Patients may present with either established DSH or be threatening to DSH.
Triage must include an assessment of suicidal risk.
Your priority is firstly to manage any life-threatening injury or poisoning, then to assess and/or manage the condition that resulted in DSH.

Adult DSH patients:

- Investigate and start immediate treatment as indicated (eg paracetamol poisoning).
- Make an assessment of the ongoing risk of suicide. Use the **Pierce Score-sheet** to help you.
- If in any doubt - discuss with your senior doctor.
- Patients may need immediate assessment by a Psychiatrist, Community Mental Health Team, or Mental Health Liaison Nurse.
- Patients can only be discharged if it is established that there is no on-going risk of suicide and that they are safe to be discharged.

Paediatric DSH patients:

- Refer to the paediatric guidelines – SELF HARM IN CHILDREN section.
- Investigate and start immediate treatment as indicated (eg paracetamol poisoning).
- Assess severity of attempt.
- If possible assess ideation.
- Inform your senior doctor of every child who presents with DSH.
- Every child must be referred to the Paediatric team for further assessment / admission.
- If the patient and parent is reluctant to be admitted then ensure a senior doctor and/or the Paediatric team is notified.

The DSH patient who refuses treatment and/or leaves the department against advice:

- Immediately review the suicidal risk.
- Inform your senior doctor.
- Consider how to assess the patient's competency. This may require your senior doctor and/or a Psychiatrist.
- Consider whether the patient must be found and returned to the department (via Police or GP) or taken to a place of safety (either voluntarily or under section 136).
- In all cases inform the GP.

Trauma & Surgical Specialties.

Sprains:

Ankle sprains should be treated with early mobility exercises and the appropriate use of physiotherapy for patients who cannot mobilize – this group may require short-term use of crutches.

Patients may be advised to look at the range of support devices available at local pharmacies (particularly Boots) if they feel the psychological need for a support device. AS-type splints are available at Boots for ~ £20, but other appropriate supports are available.

Knee sprains with haemarthrosis should be treated with wool and crepe bandages and crutches with fracture clinic follow up. The patients should remain non-weight-bearing.

Knee sprains without haemarthrosis should be referred back to the patient's GP, and a short period in wool and crepe bandaging may be helpful. Patients with knee injuries who cannot mobilize well thereafter may benefit from physiotherapy.

Any patients you see with a truly locked knee (in flexion) may be referred directly to the orthopaedic on-call team for assessment and potential arthroscopic intervention, rather than waiting for a fracture clinic appointment.

Seriously Injured Patients:

All injured patients who meet any of the following criteria must be admitted to the resuscitation area.

- Unconscious or significant history of unconsciousness
- RTS less than 12
- GCS less than 13
- Pedestrian hit by car
- Motorcyclist or cyclist (unless accident was stationary or very low speed)
- Death of anyone in the same compartment
- Fall from a height greater than 10 feet
- Burns of 10% or more
- Inhalation burns
- Fractured shaft femur, or
- More than one long bone fracture
- Possible neck fracture
- More than one body compartment involved
- Penetrating injury to head, chest or abdomen
- Entrapment for more than 20 minutes
- Amputation of a limb

When the ambulance crews notify the department of the imminent arrival of an unstable or seriously ill patient the trauma team is to be called by the senior nurse.

Trauma Resuscitation will be lead by the Senior ED doctor and the Hospital Trauma Team will be called where indicated.

ATLS – an overview.

The injured patient must be evaluated rapidly and thoroughly. Treatment priorities must be considered in the overall management of the patent, so that no steps in the process are omitted. An adequate patient history and account of the incident is also important in evaluation and managing the trauma patient. Evaluation and care are divided into five phases:

1. Primary Survey - Assessment of ABCDE:

    - Airway and cervical spine control. Oxygen.
    - Breathing
    - Circulation with haemorrhage control
    - Disability Brief neurological evaluation
    - Exposure Completely undress the patient

2. Resuscitation:

    - Oxygen and ventilation
    - Shock management - intravenous lines x 2. IV fluids
    - The management of life-threatening problems identified in the primary survey is continued
    - ECG monitoring

3. Secondary Survey -Total Evaluation of the Patient:

    - Head and skull
    - Maxillofacial injuries
    - Neck
    - Chest
    - Abdomen
    - Perineum
    - Extremities — fractures
    - Log roll to examine the back
    - Complete neurological examination
    - Appropriate X-rays, laboratory tests, and special studies.
    - ‘Tubes and fingers’ in every orifice i.e. PR, PV, ears, mouth, oro- or naso-gastric tube, urinary catheter

4. Definitive Care:

    - After identifying the patient's injuries, managing life-threatening problems, and obtaining special studies, definitive care begins.

5. Transfer:

    - If the patient's injuries exceed the institution's immediate treatment capabilities, the process of transferring the patient is commenced as soon as the need is identified.
    - Delay in transferring the patient to a facility with a higher level of care may significantly increase the patient's risk of mortality.

Wound Management.

History:

- Record time and mechanism of injury
- Record any history of penetrating or puncture injury
- Record any risk of retained foreign body or contamination e.g. Smashed glass, bites, meat, knives
- Record tetanus status
- Record medications e.g. Steroids, anticoagulants.
- Record allergies
- Record significant medical history e.g. Diabetes.

Examination:

- Record site size and depth of wound
- Record type of wound /contusion (abrasion, laceration, incised wound etc.).
- Note if contamination or devitalised tissue is present.
- Look into the wound for evidence of damage to nerves, vessels or tendons
- Check the function of nerves, vessels and tendons and record this.
- Put your finger into scalp lacerations and feel for a fracture under local anaesthetic. (Avoid this in wounds of the neck where exploration may lead to bleeding and subsequent airway compromise).

ONLY CLOSE CLEAN WOUNDS

Treatment:

In this ED the nurses share wound management including suturing.
The following types of wound should not be closed:

- Grossly contaminated wounds
- Penetrating wounds or punctures
- Bites (discuss with senior member of staff)
- Wounds on meat knives (discuss)
- Wounds over six hours old
- Wounds which are already infected
- Wounds containing devitalised tissue

These compromised wounds may be cleaned and dressed and either left to heal or closed at a later date. The exception to this rule is facial wounds where the risk of sepsis is less and cosmetic results become more important.
Significant contamination or devitalized wounds should be referred to the appropriate in-patient team for management under GA.

Wound Closure:

- Try to use glue in children on suitable wounds (discuss with senior and nurses)
- Never suture wounds under tension.
- Never suture pre-tibial lacerations.
- Use fine sutures on faces and never leave them in longer than necessary.
- Always record the number of sutures you have used.

Local Anaesthetic:

- Avoid using local with adrenaline. Use 1% lignocaine.
- Never use more than 3 mg/kg of lignocaine for infiltration.
- WEIGH children to see how much you can safely use.
- 1Lml of 1% lignocaine is 10 mg (1% is 1g in 100mls); 1ml of 2% lignocaine is 20 mg.
  - E.g. 60 kg man can have 6Ox3mg = l80mg = 18mls of 1% lignocaine.

- Use local for cleaning wounds. (Topical lignocaine can be used on abrasions – leave on wound for 15mins)

Retained Foreign Bodies.

Always x-ray wounds where there is a risk of a retained radio-opaque foreign body e.g. all wounds sustained on glass. Note that glass always shows on x-rays but wood is rarely visible. If foreign material is present which cannot be removed, refer into fracture clinic for further assessment.

Antibiotics in wound care.

See section on prescribing in the Emergency Department.
Antibiotics should not be routinely used in wound care. They should only be used when the wound cannot be adequately cleaned e.g. bites or penetrating injuries, wounds where there is established infection, and significant wounds in patients who are immunocompromised – e.g. Diabetes, corticosteroids, chemotherapies etc. Antibiotics are NOT a substitute for adequate wound toilet.

Needle Stick Injury, HIV And Hepatitis B

Needle stick injuries are usually due to poor technique. The technique most commonly associated with an injury is re-sheathing of needles. Needles should be disposed of in the sharps bins provided. Do not over fill the bins as stuffing more needles in risks an injury. Disposal of needles is the responsibility of the person using the needle. All suture needles should be disposed of by the attending doctor and not left to a nurse.

Some protection from needle stick injury is provided by wearing gloves, and gloves should always be worn where there is potential for your hands to come into contact with body fluids. All members of the resuscitation team must wear gloves. Masks and goggles are available in the resus. room and should be worn. Skin contamination should be washed off at once.

All Staff should ensure that they have been immunised against hepatitis B and that their immunity is sufficient.
If suffering from a needle stick injury, or treating someone with one, encourage the wound to bleed and then clean thoroughly.

Please read the **needle stick policy for the ED** on the intranet site. This includes guidance about Hep B, Hep C and HIV prophylaxis. Contact the on-call microbiologist if in doubt.

Note: -

HIV incidence in the local population is very small; even in drug users needle infection is low.

- Transmission rates are low from an HIV +VE person - needle stick 0.67% (regular IV use!)
- Unprotected vaginal sex 0.03 - 0.09%.
- Unprotected anal sex 0.03 - 3% in regular partners.

Trauma / Orthopaedics:

Fractures requiring admission: - Orthopaedic SHO on call.
Major trauma: - Orthopaedic SHO will be called as part of the Trauma Team. Registrar and consultant will attend as called.

Fractures And Dislocations:

Manipulation of Fractures and Dislocations:

- Give IV analgesia before x-ray (Oromorph or intranasal diamorphine in children).
- The ED SHO's will learn to reduce shoulders and other dislocations, and to manipulate simple fractures.
- Most reductions performed by ED staff will be done under L.A.
- Seniors will direct you. Do NOT do this unless supervised.

Post reduction of dislocation or fracture:

- Obtain check x-ray to ensure dislocation / fracture is reduced.
- All patients discharged home with a fracture or dislocation MUST be followed up in the next fracture clinic. An appointment can be made at the reception desk.

Sedation In The Emergency Department.

Sedation should only be carried out in the ED by senior doctors with adequate experience of sedation and suitable airway management skills. These are general principles:

Introduction.

These guidelines aim to give the non-anaesthetist a review of the practical use of Midazolam to ensure optimal patient care. They are also to alert staff to the inherent risks of potent IV sedation. There is a Trust guideline for the use of sedation available on the intranet.

A SENIOR DOCTOR SHOULD BE PRESENT. PROCEDURES UNDER SEDATION SHOULD BE A 'TWO DOCTOR' PROCEDURE - one to concentrate on the administration of the drugs and monitoring of the patient whilst the other does the procedure. The doctor responsible for sedation MUST be competent in the skills of airway management.

Note sedation is not analgesia. Patients also need analgesia but this may potentiate the effects of Midazolam.

Aims of using IV Midazolam:

- Sedation without loss of consciousness or verbal contact.
- Patient co-operation.
- Anterograde amnesia.

Pharmacology:

- Powerful sedation: Approx. 2.5 times more potent than diazepam.
- Wide variation in dose requirement.
- Short elimination half-life, no relevant long acting metabolites like diazepam.
- Can cause marked venodilation contributing to a fall in cardiac output and BP. Hypovolaemia, hypertension, beta-blockers and increasing age compromise cardiac output. Ischaemic heart disease and CCF are not in themselves contraindications to Midazolam use.
- Will potentiate other CNS depressants (**alcohol, opioids**).
- Causes loss of consciousness, with loss of protective reflexes and risk of aspiration if larger doses are used. Can cause apnoea.

Presentation:

- Only 1mg/ml strength in either 2ml or 5ml vials should be available in the Emergency Department.
- No other strength should be used in the ED.

Potential risks:

- Apnoea.
- Loss of consciousness and respiratory obstruction.
- Loss of cough reflex with risk of aspiration.

Pre-sedation risk assessment:

- Any pre-existing medical conditions e.g. blood loss, hypertension, beta-blockers.
- Does difficulty of procedure suggest regional or general anaesthesia would be better?
- Is patient at risk if over sedated eg full stomach, CNS depression.

Sedation: Administration:

- Ensure that flumazenil and airway management equipment are both readily available.
- Ensure patient is on a tipping trolley IN RESUS.
- Obtain consent - If verbal consent, document in notes. Written consent is preferable.
- Ideally the patient should be starved for 4 hours.
- IV cannula should be in situ, and oxygen administered.
- Minimum monitoring required is ECG, B.P. and SaO_2 (Royal College of Anaesthetists).
- Trained nurse must be present at all times.
- The doctor must inform a senior ED doctor before doing the procedure. Another doctor must be present in the department. The senior doctor will stay with the patient during the procedure.

- Calculate the **MAX.** dose of Midazolam:

    - 0.1 mg /kg up to 70 years.
    - 0.05 mg /kg over 70 years
    - **E.g. 7mg for 70kg man less than 70 yrs, 3.5mgs for the same weight but older man.**

    - Consider a reduced dose if opiates have been used for analgesia.

- Use midazolam at 1mg/ml. This strength of solution should be the only one stocked in the ED.
- If a higher strength solution has been provided, it must be diluted down to 1mg/ml with water for injections.

- Give **a quarter** of max dose to start (e.g. 1.75mg in the example above). Titrate slowly: Leave a **minimum** of 2 minutes in the young or 4mins in the elderly between repeat doses. Be patient, particularly in the elderly, where the circulation time is slow but the dose needed will be small.

- AVOID LOSS OF VERBAL CONTACT AND LOSS OF CONSCIOUSNESS.

- Do not give incremental doses if:

    - Oxygen sat <94%.
    - Systolic BP falls> 20%.
    - Resp rate <10/min.
    - You lose verbal contact.

After the procedure:

- Only use flumazenil (5mls) +/- naloxone to reverse excess sedation or respiratory depression. This is NOT a substitute for careful sedation, and should be an infrequent event.
- The patient must be able to walk unassisted before discharge home, but not less than 1 hour after sedation.
- Instruct patients not to drive, not to drink alcohol, not to take sedatives and not to operate machinery for 12 hrs.

When used correctly this should be a safe effective procedure.

BUT:

- If you lose verbal contact with your patient, by definition you have given an anaesthetic and must be prepared to deal with the possible consequences.
- Once the fracture or dislocation is successfully reduced and the painful stimulus removed, it is common for the patient to become more heavily sedated or lose consciousness. Do not leave your patient or send them to X-ray until you have regained verbal contact and the patient is awake.
- It is unlikely that the injury you are treating is life threatening - the possible consequences of inappropriate sedation are. If in doubt discuss with senior, and defer the procedure to when or where it will be safe.

Patients with Fractured Hips.

Assessment by triage nurse: **Fractured Neck of Femur pathway.**

- Check and document all pre-hospital interventions (analgesia given etc).
- If clinical fractured neck of femur is suspected (or confirmed):

Make Triage Category 2.

- Undress and put into a gown, place on pressure area care mattress.
- Place Identification bracelet on wrist.
- Perform essential observations:
- EWS (PAC) score.
- 12-lead ECG (if not done already).
- Temp, Pulse, BP, Resp rate, O_2 Sats, AVPU, BM.
- Insert a cannula (either nurse or doctor), and commence VIPS form.
- Take blood for FBC, U&E, LFT, Ca^{2+}, glucose, G & S.
- Place affected limb into a foam trough.
- Document pain assessment and scoring.
- Ensure urgent analgesia is given, and document its effect.
- Request orthopaedic bed.

Assessment by ED doctor within 10 minutes:

- History & examination – exclude serious acute medical condition.
- Check ECG and all obs.
- URGENT X-rays of injured hip, pelvis, and CXR (as indicated).
- Use blue sticker on x-ray card to flag urgency.
- Review x-rays immediately on return from the Radiology department.

If x-ray confirms a fracture:

- Commence IV fluid infusion (Normal Saline 1L – Rate depends on clinical state).
- Ensure that tasks mentioned in (1.) Above have all been performed.
- Inform orthopaedic SHO.
- Inform patient and relatives.

The 'Non-weight-bearing hip' protocol:

All patients who cannot bear weight following a hip injury should be admitted under the orthopaedic surgeons:

AIM : Less than 2 hours in the ED for all NOF #'s.

Referral to Physiotherapy: Musculoskeletal Problems.

The Following conditions may benefit from physiotherapy intervention (**Physio Clinic Follow-up**):

Lower Limb Problems:

- Any patient returning to the ED (department or clinic) with a definite soft tissue injury that is failing to improve.
- Considerable loss of function, i.e. less than 50% of normal range of motion.
- Mobilizing with a poor gait pattern, with or without a walking aid.
- Recurrent injury to the affected area.
- Muscle belly haematomas, Severe ligament strains.

Upper Limb Problems:

- Any patient returning to the ED (department or clinic) with a soft tissue injury that is failing to improve.
- Considerable loss of function.

For the **shoulder**:

- 75% or less of normal range of motion with / without poor scapulo-humoral rhythm.
- Pain / weakness on rotator cuff tests.
- Stiff, painful and/or with limitation of movement post-trauma.

For the **elbow**:

- Definite soft tissue injury.
- Loss of 50% or more of normal range of motion.

For the **wrist** / **hand**:

- Definite soft tissue injury.
- Loss of normal function particularly of the dominant hand.
- Loss of 50% or more of normal range of motion.

Spinal Injuries:

- Mechanical low back or neck pain with:
  - Reluctance to move the affected area.
  - Considerable loss of motion
  - History of recurrence particularly with episodes resulting in time off work

Post RTA:

- Soft tissue injury where there is:
  - Neck and / or low back pain with considerable loss of normal movement.
  - Reluctance to move the affected area.
  - Neck injuries and torticollis (following an RTA a normal X-ray is required before commencing physio).

If you have any patients that you are unsure of the need for physiotherapy intervention please discuss them with:

Mark Buckley ED physiotherapist.

Burns.

Estimation of Depth:			
Erythema only:	Superficial	1st degree	No significant damage. 'Sunburn'
Erythema and blistering, sensation intact .	Partial thickness (superficial)	2nd degree	Epithelium loss, should heal with dressings. Expect plasma loss.
Patchy white, some deep sensation present.	Partial thickness (deep)	2nd degree	Deep dermal damage - may need grafting. Plasma loss ++ expected.
White, brown charred. Thrombosed vessels, anaesthetic skin.	Full thickness	3rd degree	Needs grafting if greater than 50p piece in size. Expect plasma and RBC loss.

Estimation of Extent:

- Draw extent of burns on a **Burns Chart** (available on the intranet or at doctors' station).
- Exclude areas of simple erythema from calculation.

Burns: Referral To Senior ED Doctor, In-Patient Team, Or Tertiary Centre:

- All 2° and 3° burns > 5% for admission.
- All 2° and 3° burns > 15% body surface area (>10% children) need resuscitation. Call senior doctor.
- All significant full thickness burns (>50p piece-size).
- Most palm, facial and eye burns.
- Possible non-accidental injury in children. Call senior doctor and Paediatric Registrar.
- Chemical burns.
- Electrical burns:
  - May have significant underlying tissue damage.
  - If high voltage, may develop renal failure (from haemoglobinuria or myoglobinuria) and cardiac problems.
- Inhalation injuries:
  - Suspect from history and the presence of smoke or steam.
- Severe head/neck burn.
- Period of unconsciousness.
- Burnt vibrissae / oropharynx / redness or sooty sputum in mouth.
- Dyspnoea / stridor.

Burns: Treatment in the ED:

- Treat associated injuries using ATLS principles.

- Possible inhalation burns:
  - Intubation may be necessary with severe upper airway oedema or developing stridor.
  - Take blood gases and carbon monoxide level and measure peak flow rate.
  - Involve anaesthetist early.

- IV infusion:
  - Patients with 15% burn (10% children). A large bore IV cannula through un-burnt skin if possible.
  - Venous cut down may be necessary.
  - In children consider I/O access.
  - Avoid damage to veins which are often in short supply in these patients.
  - Fluid initially N. Saline.
  - Fluid regime: The plasma requirement in the twenty four hour period post-burn (from the time of burning, not from arrival at hospital) can be calculated from:

    Plasma requirement = 2-4 x (Weight (Kg) x %BSA burnt) in mls, over 24hrs, first half over first 8 hours.

  - Remember that hypovolaemic patients arriving within 1 – 2 hrs of injury are not hypovolaemic from the burn.

- Analgesia must be given IV not IM or SC.
- Give tetanus prophylaxis as required.
- Patients with burns involving 25% or more of the body should be catheterised.
- Escharotomies must be performed if there are deep circumferential burns over the limbs, neck and chest which are likely to produce a tourniquet effect.
- If facial burns are likely to cause eye closure put Chloramphenicol ointment in the eyes.
- For severe burns, cover with warm sterile towels, or clingfilm for transfer.
- Avoid over-cooling, especially in children who can become rapidly hypothermic if over-cooled.

- **Dressings**:

  - Initially use Flamazine or Mepotil dressings with plenty of absorbent dressing to contain exudate.
  - Hand burns: use Flamazine hand bags.
  - Discuss with senior and experienced nurses.

Head Injuries.

The history should cover the following:

- Time of injury
- Mechanism of injury
- Period of unconsciousness, objective drowsiness, or post traumatic amnesia
- Headache or visual disturbance
- Vomiting
- Neurological symptoms (weakness, paraesthesia, speech deficit, fitting)
- Past medical history, drugs, tetanus status

Examine and document:

- Glasgow coma scale
- Pupils
- Neurological signs, focal signs
- Signs of basal skull fracture (panda eyes, CSF from ears or nose, Battles sign)
- Cranial nerve assessment
- Injury site and type

Consider x-rays and CT scanning according to guidelines discussed previously.

- Aims:
  - Early detection of significant intracranial injury.
  - Avoidance of secondary brain injury.

Risks of Intracranial haematoma:
(Teasdale et al, 1990)

		Adults	Children.
All cases		1 in 348	1 in 2100
No skull fracture	- Fully conscious	1 in 7900	1 in 13000
	Impaired LOC	1 in 150	1 in 580
	Coma	1 in 27	1 in 65
Skull fracture	- Fully conscious	1 in 45	1 in 150
	Impaired LOC	1 in 8	1 in 25
	Coma	1 in 4	1 in l2

Definitions:

MAJOR HEAD INJURY =	GCS < 8
MODERATE HEAD INJURY =	GCS 8-12
	Depressed #, penetrating injury, compound #
MINOR HEAD INJURY =	GCS 13-15
- Low risk	GCS 15, normal CT
- High risk	GCS 13-14
	GCS 15 with abnormal CT

Further Imaging: Consult ED or Surgical Senior doctor if:

Adults:
Imaging.

Local guideline:	**Head Injury**

The following signs after a head injury in adults should alert the emergency doctor to contact a more senior colleague (surgical registrar at night, middle grade or consultant in emergency medicine at other times) to assess the patient and if necessary arrange urgent CT scanning:

- TRUE GCS < 13 on arrival in emergency department.
- TRUE GCS still < 15 in emergency department 2 hours after the injury.
- Suspected open or depressed skull fracture.
- Sign of fracture at skull base (haemotympanum, 'panda' eyes, CSF leakage from ears or nose, Battle's sign).
- Post-traumatic seizure.
- Focal neurological deficit.
- >1 episode of vomiting.
- Amnesia > 30 mins or loss of consciousness with coagulopathy (history of bleeding, clotting disorder, current treatment with warfarin).
- Confirmed deterioration in any of the above clinical findings over time.

Patients with the following signs who do not fit the criteria above should ideally have a CT scan arranged within 8 hours (i.e. Admit and observe if overnight):

Refer for admission under the general surgeons:

- Amnesia > 30 mins or loss of consciousness since the injury with:
- Age >= 65 years.
- Dangerous mechanism of injury:
- Pedestrian or cyclist struck by a motor vehicle.
- Occupant ejected from a motor vehicle.
- Fall from > 1 m or 5 stairs.
- Amnesia > 30 minutes before impact.

GCS is defined as the very best response and every effort should be made to measure this accurately. (i.e. Patients should be properly woken up for the assessment). A trauma call should be made for those patients with a genuinely significantly reduced GCS after serious head injury.

CT scanning should not be requested without an assessment from an appropriate senior medical practitioner (registrar-equivalent or above).

Children:

All children with head injury and any of the findings listed below should be referred to the paediatric team on call or to senior emergency department staff for consideration of further imaging:
(Based on: Indication for CT scan in children (< 16yrs) –NICE guidance CG 56, Sept 07, Quick ref. Guide page 9)

- Witnessed loss of consciousness lasting > 5 minutes.
- Amnesia (antegrade or retrograde) lasting > 5 minutes.
- Abnormal drowsiness.
- 3 or more discrete episodes of vomiting.
- Clinical suspicion of non-accidental injury.
- Post-traumatic seizure but no history of epilepsy.
- Age > 1 year: GCS < 14 on assessment in the emergency department.
- Age < 1 year: GCS (paediatric) < 15 on assessment in the emergency department.
- Suspicion of open or depressed skull injury or tense fontanelle.
- Any sign of basal skull fracture (haemotympanum, 'panda' eyes, cerebrospinal fluid leakage from ears or nose, Battle's sign).
- Focal neurological deficit.
- Age < 1 year: presence of bruise, swelling or laceration > 5 cm on the head.
- Dangerous mechanism of injury:
- High-speed RTA either as pedestrian, cyclist or vehicle occupant.
- Fall from > 3 m.
- High-speed injury from a projectile or an object.

There may still be a role for admission and observation in some patients with isolated simple vomiting, amnesia, or bruising, but only if the GCS is 15 and there are no other signs or symptoms of major head injury. This should be discussed with a senior clinician on a case-by-case basis.

Definitions:

GCS - Glasgow Coma Scale
ED - Emergency Department
NAI - Non-accidental Injury
CSF - Cerebro-spinal fluid
RTA/C - Road Traffic Accident / Collision
SXR - Skull X-ray
CT - Computerized Tomography

Admit:

- Loss of consciousness or amnesia other than momentary
- Skull #/ suture diastasis
- Abnormal neurology
- No supervision at home
- Persistent severe symptoms
- Difficult clinical assessment (alcohol, child)
- Other medical conditions e.g. Coagulation disorder

Discharge advice

Written/printed discharge advice for minor head injuries must be given to the patient's carer.
Patients should return if persistent vomiting, severe headache, weakness in arms or legs, double vision, fits, excessive drowsiness or loss of consciousness occur. Any patient who returns should be discussed with a senior.

BEWARE:

Where a patient appears drunk ignore the alcohol and attribute his neurological status solely to the head injury. The patient may have to be admitted and observed until fully recovered.
Consider a coexisting cervical spine injury in all head injuries.
Hypotension is rarely due to a head injury - always look for blood loss or a spinal injury.

Urology.

Clinical Problems:

Renal Colic:

- Diagnose clinically with history, examination and haematuria. Get KUB and urinalysis.
- Refer patients to Urology SHO if there is frank haematuria, a recent positive IVU, or pre-existing stone disease.
  - Patients without these positive findings are referred to the surgical team, to arrange an IVU or admit.
- ALL patients who present with signs or symptoms of renal colic **MUST** be discussed with the general surgeon or urologist on call, regardless of the presence of haematuria and normal U&E's (Patients have normal U&E's if one kidney is working OK). A KUB is not enough.
- ED staff should NOT arrange outpatient ultrasound or IVU investigations.
- Patients should NOT be referred back to their GP's for routine investigation.
  - A dead kidney is NOT a routine outcome.

Indwelling catheters:

- Often patients presenting to the Emergency Department with problems relating to indwelling catheters have been referred by their GP directly to the on-call Surgical or Urology SHO.
- If a supra-pubic catheter has recently fallen out then try to replace it as quickly as possible. The tract closes very quickly and the bladder "falls away".
- All patients who sustain a traumatic removal of urethral catheter (e.g. Confused pt, pulled out with balloon inflated etc) and have a history of MRSA in their urine should be admitted for IV antibiotic therapy as per the protocol: "Clinical alert antibiotic prophylaxis July 07". See intranet for full guidance.
- The admitting team should be the most appropriate given the presenting underlying issues:
  - Medical admission if acute confusion led to traumatic removal.
  - Urology admission if recent urological intervention.

Acute Retention:

- Acute retention is painful sudden inability to pass urine.
- Ask about preceding lower urinary tract symptoms:
  - E.g. Poor flow, dribbling, hesitancy, urgency, frequency, nocturia, dysuria, haematuria.
- Rectal examination: assess prostate, faecal load and anal tone.
- Check U&Es and temperature.
- Insert either a 14 or 16F Foley catheter & send a CSU. Use aseptic technique.

Reconsider Diagnosis if:
- Pain not relieved by catheter.
- Suprapubic mass still present post catheterisation despite adequate drainage time.
- Residual urine<300mls.

Features requiring discussion with urologist on call:

- Residual >1 litre.
- Pyrexia > 38°C.
- Systemically unwell.
- Social difficulties.
- Abnormal U&E's.
- Clot retention or significant haematuria.
- Unable to catheterise or suprapubic catheter insertion.
- Rectal examination suggestive of prostate malignancy.
- Severe faecal impaction.
- Abnormal neurology suggestive of cord compression.
- Female.

Otherwise patient may be suitable for discharge with catheter and early urology follow up.

- Please fill in Urology Referral Form and fax/send form and copies of ED documents to Urology Secretaries.
- FAX: 01743 261062

Facial Trauma.

Referral for bony injury and wounds: Maxillo-facial SHO (MaxFax or ENT overnight).

Most facial bony trauma may be seen in the following OPD and this should be arranged through the maxillo-facial SHO on call who normally comes to see the patient.

- The maxillo-facial SHO will undertake facial suturing, especially where the laceration is large or complex.
- Complicated lacerations, especially those in children, require admission for suture under GA.
- Children may sometimes need suture under GA for minor wounds.

- The Maxillo-facial SHO does not cover emergency dental work e.g. toothache. Out of hours dental treatment may be arranged on a 24 hour basis by telephoning the out of hours service (via NHS Direct).
- Teeth that have been knocked out completely can be re-implanted if done early enough – ideally within 1hr. These should be referred to max-fax.

Gynaecology & Sexual Health.

Pregnancy Testing.

- Pregnancy testing kits are available in the Emergency Department.
- A test can only be performed with the patient's consent and it is the responsibility of the doctor to obtain this consent and discuss the result with the patient.
- All fertile females with abdominal pain should have a pregnancy test.

Bleeding in Early Pregnancy.

- The threatened or inevitable loss of a child in early pregnancy is a disaster for the parents.
- Consider this in all cases and be supportive and sympathetic.
- Discuss all cases with the Gynaecology team or Early Pregnancy Assessment Service (EPAS).
- Some may need admission, others will be referred to the next Early Pregnancy Assessment Clinic.
- Do NOT perform vaginal examination unless competent to do so.

Threatened Abortion: Vaginal bleeding. Viable pregnancy and cervical os closed.
Bleeding usually light. Will not have passed clots. Little or no pain.
Uterine size compatible with dates.
Confirmed by ultrasound scan showing viable intra-uterine pregnancy at EPAS.
Management: Bed rest.
Missed abortion: Non viable pregnancy, cervical os closed.

Inevitable Abortion: Vaginal bleeding with or without pain. May be clots. Cervical os open.
Incomplete Abortion: Cervical os open. Heavy bleeding with passage of clots and products. (Admit).

Inevitable/Incomplete:

- 6-12 weeks amenorrhoea.
- Pregnancy test previously positive and often still is.
- Begins with gradual onset of period-like pain which may become severe (like 'labour pains').
- Followed by increasingly heavy vaginal bleeding and the passage of clots.
- Signs of pregnancy may have begun to disappear.
- Bleeding is occasionally torrential resulting in shock 2° to blood loss, but this is rare.
- Occasionally products within the cervical canal will cause a vasovagal response.
- On Examination:
  - Abdomen soft with suprapubic tenderness
  - Vaginal bleeding
  - Cervical os open
  - Uterus smaller than dates
  - Ballooning of upper vagina
- Management:
  - IV fluids and/or blood if excess loss.
  - Remove products from Cervical canal if vasovagal collapse is a feature. This leads to rapid improvement.
  - Refer to Gynae Team on call. Admit.

Ectopic Pregnancy.

- Any pregnancy implanting outside the uterine cavity.
- Usually tubal but may occur within the abdominal cavity with implantation over the femoral vessels, inferior vena cava or even the liver.

Predisposing factors:
- History of infertility.
- History of pelvic inflammatory disease.
- Previous sterilisation.

Symptoms and signs:

- 6 - 12 weeks amenorrhoea.
- Positive pregnancy test and normal signs of pregnancy.
- Sudden onset of severe lower abdominal pain often with faintness.
- May also be shoulder tip pain (blood under diaphragm).
- Pain on sitting or defecation (blood in pouch of Douglas).
- Patient may be pale and hypotensive.
- Hb estimation usually much lower than would be expected for a fit female.
- Abdomen - marked tenderness, may have guarding.
- Uterus equivalent to dates: os closed.
- ? Cervical excitation. Little or no vaginal bleeding.
- May be able to palpate mass.

Ultrasound scan (organised by Gynae team):

- Bulky uterus with no intrauterine sac.
- May be able to see adnexal masses.
- May see free fluid.

Management:

- Involve senior ED doctor.
- Refer to Gynae SHO if well enough to transfer, or request they come to the department.
- Resuscitate with crystalloids and blood (Organise urgent cross-match).
- Proceed directly to laparotomy if shocked (Urgent referral to Gynae team).
- Many ectopics are now managed medically if no signs of shock.

Remember that with a heavy bleed, the patient will be losing blood into the abdominal cavity at a greater rate than it can be replaced. Therefore it is important to refer for laparotomy as quickly as possible.

Ovarian Cyst.

May cause acute gynaecological emergency due to torsion, rupture, or bleeding into the cyst.

Symptoms and signs:

- May have long history of non-specific lower abdominal / pelvic discomfort or dyspareunia which Is usually unilateral.
- May have had previous episodes of relatively short lived but severe pain due to twisting and untwisting on pedicle.
- Sudden onset of severe lower abdominal pain often associated with vomiting.

Refer suspected torsion of the ovary to the Gynae on-call team.

Pelvic Inflammatory Disease.

History: ask about
- Discharge.
- Abdominal pain, dyspareunia.
- Urinary symptoms, abnormal vaginal bleeding.
- LMP, contraception.
- Partner's symptoms, number of partners.

Examination: note
- Temperature.
- General condition.
- Abdominal tenderness, rebound tenderness, guarding.
- Discharge.
- Cervical excitation, pelvic tenderness, pelvic mass.
- **N.B. Only perform vaginal examination if competent to do so.**

Investigations:

Refer to gynaecology team if not competent at vaginal examination.

- Take 3 swabs:
  - Endocervical -GC - Stuarts medium
  - Endocervical - Chlamydia - viral cult: pink bottle
  - High vaginal – dry
- Transport immediately to lab during opening hours or store in fridge; it is of utmost importance that this is done.
- The patient's address must go on the microbiology form for contact tracing.

Treatment:

- If unwell, admit for bed rest, IV fluids and antibiotics:
- If well, start antibiotic treatment in ED. Use adult antibiotic therapy guidelines found on the intranet.
- All patients should be contact traced to prevent re-infection.
- Refer to GUM clinic for follow up.

Accidental Failure Of Barrier Contraception.

For females: Use department proforma to assess suitability for morning-after pill, and give appropriate counselling.
For females and males: Consider need for Hepatitis B and HIV post-exposure prophylaxis. Contact the microbiologist on call if there is a risk of HIV infection.

Contact on-call Microbiologist for all advice on anti-viral (HIV) therapy and post-exposure prophylaxis.

Rape:

If a rape patient presents to emergency department.

- Inform senior emergency or gynaecology doctor & treat all injuries as appropriate. This is the priority.
- Avoid examining perineum since forensic evidence may be destroyed.
- Does the patient wish to report rape to police?

YES:	**NO:**
Contact CID: Give brief details. Examined by Police Surgeon. Forensic evidence collected.	Contact on-call Gynae senior doctor. Examined by Gynae consultant. Forensic evidence collected and stored in case patient changes mind.

- Appropriate evidence kits are available in the department. Instructions for use should always be followed. Evidence which may be collected in the ED may include urine sample, sputum sample, foreign material, clothing etc.
- The patient should be seen by a gynaecologist for counselling on pregnancy, morning after pill and Hep B.
- Consider HIV post-exposure prophylaxis.. The *HIV PEP algorithm* is available on the ED intranet site. Contact the microbiologist on call if there is a risk of HIV.
  - Patient is allowed to shower and change clothes.
  - May be discharged home with friends, relatives.
  - Advice sheet given with contact numbers.
  - Follow up by Gynaecology Consultant if desired.

A rape victim may need **advice** regarding:

- Avoiding pregnancy.
- Pregnancy Testing.
- Follow Up: family doctor or Pregnancy Advisory Service – Tel. No. 0121 643 1461.
- Venereal Disease Testing: Contact the Department of Genitourinary Medicine.
- Psychological Support: Family G.P. or Victim support Tel. Nos. 01743 362812 / 01952 463349.

Male Rape.

- Follow procedure as above.
- Involve police if patient is reporting incident: Police surgeon to collect forensic evidence.
- Contact gynaecology consultant on-call if the patient does not wish to report the incident to the police.
- Consider Hep B and HIV Post-exposure prophylaxis. Contact the microbiologist on call if there is a risk of HIV infection.
- Give appropriate advice with support numbers as above. Arrange follow up in next GU clinic.

Paediatrics.

Child Protection In The ED:

- For children from Powys region there is no on-line register. Use the telephone numbers listed on the intranet if you have suspicions about a child's welfare.
- The Shropshire Child Protection Register is held on computer and automatically generates an 'alert' if the child is known to be at risk when they book in to the ED at reception.
- The receptionist places a large warning sticker on the ED record if a child is on the register. More information will be recorded inside the card confidentially if necessary.
- Children on the register should be seen by a senior doctor.
- Overnight the ED doctor should initially see and assess the patient, but always discuss the case with a senior doctor, either in emergency medicine or paediatrics.
- Please view the **NON-ACCIDENTAL INJURY** information on the intranet. This includes a NICE guideline.

Paediatric Medicine.

Current **Paediatric Guidelines** are available on the Hospital Intranet.

- Young babies (under 6 months) with medical presentations may be referred directly to the paediatric team.
- Paediatric Resuscitation and Trauma Teams will be called to all sick or severely injured children.
- If a child is ill, get help from the senior ED doctor until the Paediatric Team arrive.
- Children should be seen promptly, especially at night.

- Gain the confidence of the child by talking to the parents and examining non-tender parts first.
- Talk to the child and be honest, if it is going to hurt warn them.
- Children may be treated without a parent or guardian present if the child is judged by the doctor to be able to make a reasoned assessment of the situation. ("Gillick-competent"), or if treatment is urgent.
- No child under 15 should be discharged unless accompanied by a responsible adult.
- Details of all children up to the age of five are relayed to the Liaison Health Visitor automatically.
- Messages may also be relayed to the LHV via the nurses.

Remember
- Analgesia. Pain score pre- & post-analgesia.
- Involve parents. They know their child best.
- Get Help Early.

Paediatric Deaths.

Be led by the nursing staff. Get support from senior ED and Paediatric staff. Following such a tragedy there should always be an informal debriefing with all personnel involved. The paediatric on-call Consultant should be informed. The General Practitioner and the Coroner's officer must always be notified.

Sudden Infant Death.

- Parents should be invited to remain in the resuscitation room.
- Parents should have access to their child after death to touch and hold – and commence the grieving process.
- Paediatricians should always be involved to arrange follow up and counselling.
- Police routinely investigate 'cot deaths', whatever the cause, and it is important to warn and reassure the parents.

Paediatric Resuscitation.

- Familiarise yourself with the paediatric resus bay.
- Paediatric arrests have a very poor prognosis and success lies in prevention by recognising the ill child and instigating immediate treatment.
- Unlike adults, arrest in a child always has preceding warning signs.

Follow Advanced Paediatric Life Support guidelines.

NOTE:

A child is different anatomically:

Airway: -
- Face is small, large cranium flexes the neck forward.
- Loose teeth.
- Large tongue.
- High larynx, short, small radius trachea.
- Very compressible floor of mouth.

- A Guedel airway is measured from the centre of a child's mouth to the angle of the jaw.
- The head of an infant (< 1 year) is kept in the neutral position for easier intubation.
- Uncuffed oro-pharyngeal tubes are used for children < 12.

Breathing:
- Small, easily obstructed airways.
- Increase resistance to flow.
- Diaphragm action important.
- Fatigue early.
- Flexible ribs giving underlying structural damage without fractures.

Circulation:
- Different circulation volume and land marks:
  - Circulating volume is 70 - 80 mls / kg (90mls/kg in neonates)
- Cardiac massage landmarks:
  - Infant - use 2 fingers. 1 finger below inter-nipple line.
  - Small Child (I-8yrs) - use 1 hand. 1 finger above lower end of sternum.
  - Large Child (9-12yrs) - use 2 hands, 2 fingers-breadths above lower end of sternum.

Resuscitation Notes:

- In infants, serious bradycardia is a HR <60 and cardiac massage should be commenced, along with atropine and fluid.
- Be generous with fluids in children. Give 10-20 ml/kg in rapid bolus and repeat three times as necessary .
- The standard fluid is crystalloid, but paediatricians may still recommend albumin use.
- Drug dosages are weight related. A formula to help estimate a child's weight is:

Weight in kg = (Age in years + 4) x 2

- This formula applies to children > 1 yr of age. Typically children weigh 3-4 kg at birth, and 10 kg at 1 year.
- The Broselow tape, kept in the paediatric resus bay, is an adjunct to weight estimation and drug dose calculation.

Paediatric Basic Life Support.

Stimulate and check responsiveness.
▼
Shout for help
▼
Open airway
Head tilt, chin lift
Jaw thrust if trauma
▼
Check breathing
Look, listen, feel for max 10 secs
▼
5 rescue breaths if not breathing.
If breathing, place in recovery position.
If no chest rise:
Reposition airway
If no success treat as airway obstruction.
▼
Check pulse and signs of circulation.
Max 10 secs
▼
If no pulse,
Compress chest:
15 compressions: 2 ventilations
100 compressions/minute.

Infant and child differences:

N.B. Infant < 1year
Child 1-8 years

- In infant, for breaths seal your mouth around their nose and mouth.
- In child pinch nose and breathe into mouth.

- In infant feel for a brachial or femoral pulse. The carotid is difficult to feel.
- In a child you can feel the carotid.

- In an infant, CPR is 2 fingers, 1 finger breadth below inter-nipple line.
- In a child use the heel of 1 hand, 1 finger above xiphisternum.
- In a child over 8 years you may need to use 2 hands.
- Depress sternum by approx. 1/3 depth of child's chest.

Choking.

If conscious:

INFANT(< I YEAR OLD)

OPEN AIRWAY (inspect – direct vision)
5 BACK BLOWS
5 CHEST THRUSTS

CHECK MOUTH – remove visible FB

Repeat Sequence

CHILD (1-8)

OPEN AIRWAY (inspect – direct vision)
5 BACK BLOWS
5 CHEST THRUSTS ALTERNATING WITH 5 ABDOMINAL THRUSTS
CHECK MOUTH – remove visible FB

Repeat sequence

If unconscious: Perform BLS protocol.

Drowning.

Call trauma team and paediatric resuscitation team.

- Third most common cause of accidental death in children.
- Cervical spine injuries are common.
- Intubation and insertion of N.G. tube with stomach aspiration are mandatory.
- Have an anaesthetist in resuscitation awaiting the patient's arrival..
- Record CORE temperature:
- If advanced warning, get heating blanket.
- If core temperature is higher than 32 degrees C, external warming is sufficient, i.e. Use blankets, heating blanket, humidified oxygen. Remove wet clothes.
- If core temperature is lower than 32 degrees C, also give warmed IV fluids, gastric or bladder lavage with Normal Saline at 42°C, and consider extra corporeal re-warming (contact Renal Unit).
- Look for associated injuries.
- Arrhythmias, especially VF, may be resistant to treatment including cardioversion if hypothermic.
- DO NOT abandon resuscitation until core temperature is greater than 32 degrees C.
- Any drowning victim is only dead when they are warm and dead.
- Take bloods for U&E's, Glucose, ABG's and blood cultures.
- Get a BM reading and chest x-ray, start IV broad spectrum antibiotics.
- Basic life-support at the waterside is the most important prognostic factor.

The Ill Child.

Rapid ABCDE Assessment: (ABCDEFG: ABC Don't Ever Forget Glucose !!)

Respiratory Assessment:

A: AIRWAY PATENCY
B: BREATHING:
Rate
Air Entry
Chest rise
Breath Sounds
Stridor
Wheezing
Nasal Flaring
Mechanics
Retractions
Grunting
Accessory muscle use

Cardiovascular Assessment:

C: CIRCULATION:
Heart Rate
Colour
Peripheral Pulses:
Present / absent
Volume

Skin Perfusion:
Capillary refill time
Temperature
Colour
Mottling

D: CNS PERFUSION:
Recognition of parents
Reaction to pain
Muscle tone
Pupil size
B.M. result

Go to Resus if:

- RR> 60
- HR> 180 or<80
- Stridor
- Intercostal retractions
- Accessory muscle use
- Pallor
- Absent peripheral pulses
- Altered consciousness

Note: BP is not mentioned as a child can lose half total circulation before BP falls:

Hypotension is a near-fatal finding. A hypotensive child needs a full paeds team response.

Capillary refill:
- Press on a digit for 5 seconds.
- Normally on release capillary refill occurs in 2 seconds. If this is prolonged it may indicate shock.

Once an ill child has been recognised, the immediate management is easy and always the same:

- Oxygenation, give 100% always via mask or ambu-bag.
- Fluid replacement, give IV or intraosseous route – 10-20 mls/kg STAT until response.
- **Get Help.**
- Know where the Broselow and other guidance Charts are in Resus are kept.
- Use the paediatric drug dose calculator on the intranet.

- Two useful formulae are: Weight (kg) = 2 (age in years + 4)
- Expected systolic BP: 2x (age in years) + 80
- Beware of the Quiet Child. This is an early sign of shock / serious illness.

Suspected Meningitis.

Features in children aged three and above:

- Possible prodrome of febrile illness, sore throat.
- Photophobia.
- Severe headache
- Neck stiffness.
- Coma.
- Convulsions.
- Shock
- Rash (may be a scanty erythema or classical purpura)

Features In Children Under Three:

- Shock
- Drowsiness.
- Irritability.
- Poor feeding.
- Unexplained pyrexia.
- Convulsions with or without temperature.
- Apnoea, cyanotic attacks.
- Purpura.
- Bulging fontanelle (a late sign)

If a child is suspected of having meningococcal meningitis:

- Inform senior ED staff and on call paediatric team.
- Take blood cultures, throat swab, and culture skin lesions. Do not delay giving antibiotics – use antibiotic policy.
- Exclude hypoglycaemia.
- Rehydrate the child as necessary.

Rashes And Measles.

There has been a sharp increase in the incidence of measles in the local population, particularly seen in travelling families in the local area, who tend to seek medical advice and help from emergency departments.

Any child presenting with a rash or prodromal symptoms suggestive of measles should be notified to the health protection agency for Shropshire (William Farr House, SY3 8XL, Telephone 261353 – 1353 internally), and advice sought from the on-call microbiologist about further management.

The child with a fever:

- There is a reference guide for assessing sick children with a fever produced by NICE (**NICE CG47**):
  - 'Traffic light' system for assessing warning features in children under 5 years of age.
  - Some of the concepts in it can be used for older children too.
  - Useful for making decisions about whether to admit or discharge children, and how quickly to treat them.
  - Use the flowchart for "management by a non-paediatric practitioner" in the guideline (unless you have a strong paediatric background).
  - The guideline is available on the ED Intranet (& SHO Induction CD).
  - There is a link to the NICE website on the intranet ED home page.

You should make a thorough assessment of every sick child you see, with a complete examination, and recording of observations.

Gastroenteritis.

Essential Features In The History:

- Duration of symptoms.
- Urine output (wet nappies per day).
- Amount of fluid input.
- If possible comparison of present with previous weights.

Examination:

- Weight.
- Temperature.
- Full examination of the systems.
- Assess hydration as per the chart below.

Blood tests are usually not warranted in uncomplicated gastroenteritis.

Assess for extent of dehydration:

Signs & Symptoms:	**Mild <5%**	**Moderate 5-10%**	**Severe >10%**	**Notes/Caveats**
Decreased urine output	+	+	+	Beware watery diarrhoea.
Dry mouth	+/-	+	+	Mouth breathers are always dry.
Decreased skin turgor	-	+/-	+	Beware the thin patient.
Sunken anterior fontanelle	-	+	+	Crying increases pressure.
Sunken eyes	-	+	+	
Tachypnoea	-	+/-	+	Worse in metabolic acidosis and with pyrexia.
Tachycardia	-	+/-	+	Also seen with hypovolaemia, pyrexia & irritability.
Drowsiness, irritability	-	+/-	+	

Referral To Paediatrics:

- Refer to paeds if problems have continued for over 48 hours or if stools are frequent and watery or contain blood.
- If less than 2 wet nappies in 24 hours.
- If parents or GP unable to manage the child at home.
- If 5% dehydration or more.
- High fever.
- Blood in motion.
- Inform senior staff if 10% dehydration.

If Sending The Child Home:

- Send a letter to the GP. The child should be reviewed by the GP within 24 hours.
- For the first 24 hours of illness the child should be encouraged to drink Dioralyte or clear fluids.
- The child may restart light diet or milk after 24 hours of illness.
- Give advice on hygiene to the family.

Acute Asthma:

See current guidelines on Hospital Intranet.

Child Not Using A Limb:

History:

Duration and nature of symptoms.
Presence of systemic symptoms (pyrexia, anorexia, etc.).
History of injury and exact mechanism.
Previous history of similar.
Remember the possibility of NAI.

Examination:

Assess the whole limb, comparing with the other side. Second injuries in the same limb are easily missed as the child may only complain of the most painful site.
Look for deformity. Try to localise pain / tenderness.
Examine all joints for pain and range of movement.
Neurology and vascular status of limb.
Temperature.

Differential Diagnosis:

The most common diagnosis will be trauma, either soft tissue injury or fracture. Always be suspicious about fractures in infants.
The important diagnosis to confirm or exclude is septic arthritis or less commonly osteomyelitis.

Septic arthritis usually presents with:

- Constant pain which is severe, especially with movement: often the child holds the joint absolutely still.
- Pyrexia.
- Systemic upset: loss of appetite. Miserable.
- Hot swollen joint.

Upper Limb:

- Common fractures include: clavicle, neck of humerus, supracondylar, and radius and ulna.
- Always check neuro-vascular status of distal part of limb for every injury.
- Supracondylar fractures of the elbow are a particularly high risk group for vascular or neurological injury.
- Pulled elbow:
    - Unique to children, affecting toddlers - 5 years.
    - Diagnosis is clinical.
    - History must be of a specific pulling injury. e.g. being pulled up by the hands or slipping on stairs resulting in the child being suspended by the parent on one arm.
    - Child presents with a limp arm. It is difficult to localise any tender spot but there is pain on elbow movements.
    - Underlying pathology is distal subluxation of the radial head, resulting in impaction in the orbicular ligament and hence pain on rotation
    - Diagnosis is clinical - X-rays look normal and are therefore not indicated unless there is doubt about the history.
    - Treatment consists of warning the parents that you are about to make the child cry (explaining the diagnosis usually helps at this point), and simply supinating the forearm whilst applying a little pressure in a proximal direction.
    - If the child uses the arm within a few minutes no splinting is required. If it does not, reconsider your diagnosis and ask for senior advice.

Lower Limb:

Any child presenting with a limp should have the whole leg examined including the sole of the foot.
Common pitfalls: A toddler with a fractured tibia may still be able to weight bear. Knee pain in children is commonly referred from the hip.

Differential Diagnosis of **Hip Pain**:

- Any age: Septic arthritis
  Transient synovitis
  Chronic synovitis
- 4-10 years: Perthes' disease
- Puberty: Slipped Upper Femoral epiphysis (SUFE)

Septic arthritis, Perthes' disease and SUFE all need in-patient referral to orthopaedics.

Transient synovitis:

- Common.
- Presents as a limp, pain at limit of hip movements, child is afebrile and has no systemic symptoms.
- If you think there is any likelihood of septic arthritis ask for senior advice or refer to orthopaedics.
- Children who cannot weight-bear should always be referred.
- If the child can partially or fully weight-bear, follow-up in fracture clinic is indicated to arrange ultrasound of the hip, on the same day, to look for an effusion.
- If the child is fully weight-bearing and you have no clinical concerns about an infected joint you can discharge the child advising rest, simple analgesics and as usual to return if things deteriorate.

Fractured Tibia:

- Toddlers with fractured tibia may still weight bear.
- Oblique fractures in toddlers are often very difficult to spot radiologically.
- Obtain an AP and Lateral view of the tibia, you will often miss it on an AP of the whole leg.
- Fractured tibia in a child not old enough to walk is a result of NAI until proved otherwise. Always involve senior Paediatric staff as well as Orthopaedics if there is any suspicion of NAI.

Limb Trauma:

- Always examine the whole of an affected limb in children with limb injuries:
  - e.g. If a patient presents with an injury to the arm, the whole of the upper limb must be carefully examined and this requires exposure of the upper limb.
- If pain prevents examination, adequately treat the pain and return to the patient later to ensure a full examination.

Non Accidental Injury In Children.

Emergency Department staff need to be particularly alert for injuries which may be non accidental and to the possibility of child abuse. See **Children in the ED guidelines** on the intranet. This includes a NICE assessment guideline.

Indication for Referral:

- If you have any suspicions about a case, these must be discussed with a senior colleague.
- It is not your responsibility to decide if a situation definitely is or is not abuse, but you are responsible for identifying possible cases.
- Most children have bruises from time to time, especially on knees, shins, arms and elbows.
- Some types of injury should raise suspicion as should certain other features as given below.

Non accidental injury should be suspected if there is:

- Delay in seeking medical help.
- Inadequate, discrepant or unlikely explanation for the injury.
- Evidence of repeated injury or injuries of different types.
- Parents exhibit disturbed behaviour or unusual reaction.
- Child or sibling with previous history of injury.
- Child frequently brought for no apparent reason.
- Child failing to thrive or looks neglected.
- Child's story indicates abuse.

Physical indicators of abuse:

Bruises:

Some type of bruising are particularly characteristic of non-accidental injury.

- Hand slap mark.
- Marks from an implement, pinch or grab marks.
- Grip marks. In a young baby this could indicate that the child has been shaken, risking injury to the brain.
- Black eyes.
- Bruising to breasts, buttocks, lower abdomen, thighs and genital or rectal area, could be an indicator of sexual abuse. Sometimes bruising will be confined to grip marks where a child has been held so that sexual abuse can take place.
- Bruising may be faint or severe. Some skins show bruising very easily whilst others do not. Bruises on black children for instance are more difficult to detect. There may be a pattern to the bruising, e.g. After the weekend.

Other Types Of Injury:

Children do have accidents. Sometimes accidents occur because they have not been provided with a safe environment. The accidents can involve burns, scalds, fractures and poisoning. Some types of injury are less likely to be accidental than others:

- Burns inside the mouth, inside arms and on the genitals.
- Scalds where the child appears to have been “dipped”.
- Cigarette burns, burns with an object.
- Bite marks.
- Evidence of old or repeated fractures.
- Torn skin inside the upper lip of a baby (frenulum).
- Any injuries, bleeding or soreness in the genital or rectal area could be an indicator of sexual abuse.
- Persistent vulva reddening and discharge (may indicate sexually transmitted disease).
- Female circumcision.

Signs of Neglect:

A child who is neglected may show obvious signs:

- Underweight.
- Always dirty and smelly.
- Always hungry.
- Neglect of a child’s need for love, care, food, warmth, security and stimulation will have an effect on their emotional and physical development.
- Some children may also have been left unattended or without suitable arrangements for their care.

Behavioural Indicators Of Abuse:

Children who are physically neglected or abused often have behavioural problems. Some behavioural signs may reflect that a child is suffering in some other way e.g. separation of parents, birth of a new baby, illness of parent. The signs must be looked at in light of family circumstances. Behavioural signs and symptoms may be the only outward indicators of sexual abuse. It is possible to use behaviour as the starting point for investigations.

Indicators include:

- Pseudo-mature or sexually explicit behaviour.
- Continual open masturbation or aggressive sex play with peers (as distinct from normal sexual curiosity).
- Overly compliant or watchful attitude - can be present in physical, emotional or sexual abuse.
- Acting out aggressive behaviour, severe tantrums.
- An air of detachment - “don’t care attitude”.
- Child only appears happy when in school, or is kept away.
- Child is isolated in school - no friends.
- Child does not trust anyone.
- Tummy pains with no medical explanation - “It hurts down there”.
- Eating problems and sleep disturbance.
- Children who constantly run away from home.
- A frightened child..
- Children who inflict harm on themselves.
- Children who are depressed or show signs of withdrawal or regression.

Action:

- Discuss any child or family who worry you with a senior colleague or a senior paediatrician.
- Inform senior emergency doctor and then paediatric consultant.
- Arrange the immediate management of acute injuries as indicated.
- Admit the child to the paediatric ward.

Make detailed case-notes, detailing the history given to you (and by whom), your findings – including descriptions and drawings of bruising, abrasions etc., and your actions (including the names of the doctors to whom you have referred the child).

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