London Ambulance Service NHS
NHS Trust

- When to an ECG
- COPD
- Obstetrics Audit

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Clinical update

Have You Seen?

Medical Director's Bulletins

Shortage of Glucagon
30/07/2010

Stroke Referrals Phase Two
13/07/2010

New Safety Cannula
13/07/2010

The future direction of airway management in the London Ambulance Service
08/06/2010

REMINDERS

- Staff are reminded that all blue calls where the patient is being conveyed to major trauma centres, hyper acute stroke units and cath labs are reminded that pre alert (blue call) should be placed via the clinical coordination desk on **PD09**.
- Paramedics are reminded that morphine should be signed in and out at the beginning and end of every shift. Wherever possible this should be witnessed. Paramedics are also reminded that where they have used morphine the amount administered should be recorded in the drug section of the PRF. Any unused portion of the drug should be noted in the free text area of the PRF. The usage and any wastage should be entered in controlled drugs register at the end of the shift and witness signatures obtained.
- Staff are reminded to carefully check IV fluid prior to administration to ensure that 0.9 per cent saline and 10 per cent glucose are not confused.

Febrile convulsion and the flu vaccination

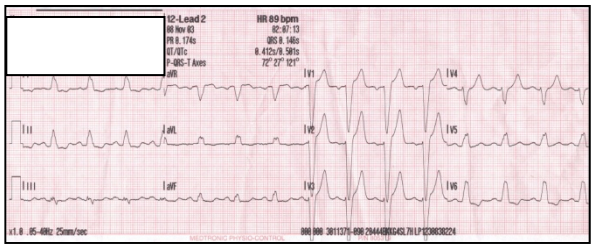
We have been informed by the Department of Health of a potential increased risk of febrile convulsions in children aged under five years, associated with the use of the influenza vaccine marketed by Pfizer under the brand name Enzira® for the 2010/11 influenza series. This increased risk appears to be a product specific reaction. Vaccination with other products has so far not indicated a similar level of risk.

There is currently no evidence to indicate that other influenza vaccines may be associated with this level of risk in children. Nonetheless, the Medicines and Healthcare products Regulatory Agency (MHRA) intends to closely monitor this and will issue further information in advance of this year's immunisation programme.

Patient medication

Staff are reminded that wherever possible a patient's medication should be taken with them to hospital (ideally within the green medication bag) rather than just the prescription form so that hospital staff are aware of the medication the patient is taking. This may assist in preventing the patient being prescribed medication in hospital which may interact with their current medication they are already taking. It also voids delays in hospital accessing medications not available in the hospital pharmacy. Where a patient's medication contains items that would need to be kept in the fridge, this should be made clear to the hospital staff on handover.

When to do an ECG



An electrocardiogram (ECG) is valuable for making diagnoses, especially for rhythm abnormalities and myocardial ischaemia, but it can never rule out a myocardial infarction. Even life-threatening abnormalities or recent ischaemia may show changes only intermittently. A normal ECG can never be used to justify non-conveyance. The patient's history, symptoms and any physical signs - if relevant, are the only basis on which decisions can be made. An abnormal ECG can of course be essential as a guide to treatment, triage and a useful warning of important risks that may not be apparent on clinical grounds alone.

Therefore in prehospital emergency care, an abnormal ECG is likely to be helpful, but a normal one is not. On the basis of these facts, an ECG should generally be part of the assessment of a patient in the following circumstances. If an ECG is not carried out for these conditions then justification for this decision needs to be documented on the PRF.

1. For adult patients with chest pain or discomfort. Remember that cardiac pain may be minor, atypical (more common in women), or even absent in some cases of myocardial ischaemia or infarction, especially in the elderly or diabetics.

2. For patients who are clearly very unwell for reasons that are not apparent, bearing in mind that painless myocardial infarction is unusual but not rare - especially in the elderly and diabetics.

3. For patients who have experienced breathlessness at rest or an exacerbation of breathlessness with effort.

4. For patients who have suffered even brief (transient) loss of conscious or unexplained dizziness. This includes a convulsion in any adult who is not a known epileptic. Note that a normal ECG does not rule out arrhythmias or intermittent heart rate abnormalities as a cause.

5. For patients who complain of recent palpitations (rapid, irregular, or unusually forceful beating of the heart) even if the symptoms have settled. Remember that a resting heart rate faster than 140 in an adult is unlikely to be sinus in origin. In addition, for any adult with an irregular pulse who is not known to have atrial fibrillation, the presence of previously undiagnosed atrial fibrillation must always be documented. An irregular pulse is more often due to extrasystoles, but these call for a 12-lead ECG to identify their origin.

6. For patients who have a heart rate of less than 40 beats per minute. In the absence of any other features of concern, a rhythm strip may be sufficient if it is sinus bradycardia. Note that coupled extrasystoles can halve the radial pulse rate - but that would in any case indicate the need for a 12-lead ECG as noted above.

7. For patients who are unwell due to suspected substance abuse, remember those who may have used cocaine are at an increased risk of MI or coronary vasospasm.

8. For patients 65 or over with unexplained falls. Most people who fall will find a 'reason' whether or not it is plausible or valid, so this indication calls for careful clinical judgement.

9. For patients with diabetes who have symptoms that are not readily explained, and for all patients who have raised blood sugar as indicated by a BM stick reading of over 10.

10. For patients who have suffered a severe allergic reaction with manifestations beyond simple rash - but do not delay conveyance if an anaphylactic reaction has not been reasonably controlled.

Ambulance staff are expected to make their own clinical judgements. Nevertheless the indications offered above provide guidance that must be considered when decisions are made on whether or not to take an electrocardiogram.

If for any reason the patient is not conveyed to hospital, than a copy of the ECG together with a copy of the PRF should be left with the patient.

Not for resuscitation

The medical directorate have received a number of questions relating to patients who are not for resuscitation this article will provide the answers to some of these questions.

The terms "not for fluid resuscitation", and / or "not for nutrition resuscitation", are often used alongside "CPR", particularly in the context of end of life care. It is for this reason that the term "do not attempt CPR" (DNA-CPR) is fast becoming the more desired term, and why DNA-CPR is used consistently in this document. (Its use is supported by the National Palliative Care Council).

The primary goal of healthcare is to benefit patients, by restoring or maintaining their health as far as possible, thereby maximising benefit and minimising harm. Prolonging a patient's life usually provides a health benefit to that patient. If treatment fails, or ceases to benefit the patient, or if an adult patient with capacity has refused treatment, then that treatment is no longer justified. It is not appropriate to prolong life at all costs with no regard to the quality of life or the potential burdens of treatment for the patient. The decision to use any treatment should be based on the balance of benefits, risks and burdens to the individual receiving the treatment. That principle applies as much to cardiopulmonary resuscitation (CPR) as to any other treatment or intervention.

Where CPR will not be successful or may not be in the long term best interest of the patient, making and recording an advance care plan not to attempt CPR aims to ensure that the patient dies in a dignified and peaceful manner. It may also help to ensure that the patient's last hours or days are spent in their preferred place of care. These management plans are called Do Not Attempt CPR (DNACPR) orders, or Do Not Attempt Resuscitation or Allow Natural Death decisions. For the purpose of this bulletin these terms will be collectively referred to as DNA-CPR.

DNA-CPR decisions are normally made for patients who are approaching the end of their life. This includes patients with terminal malignancy (cancer), patients whose death is expected due to end stage organ failure, and patients who are approaching the end of their life and have end stage frailty and dementia. In general terms these discussions should be undertaken when the patient is thought to be entering the final year of their life.

How should a DNA-CPR decision be recorded?

Although most health care providers will have policies to guide them and specific forms for recording decisions relating to CPR there is no standard DNA-CPR form (although the UK Resuscitation Council has recently proposed a standardised form). The documentation of resuscitation decisions can take a number of forms, and it is good practice that they are recorded on a form specific for that purpose. However, a resuscitation decision can still be documented on a letter or as an entry in the patient notes. A resuscitation decision should be clearly documented and signed by the clinician making the decision.

Do I need to see a DNA-CPR for it to be valid?

London Ambulance Service staff should be certain beyond reasonable doubt that a DNA-CPR exists. This does not necessarily mean that staff need to have seen the physical DNA-CPR. For example a growing number of resuscitation decisions are sent to the Service and are logged on the locality information database. Thus where a crew have been notified by EOC and / or CCD that a DNA-CPR exists, it is not necessary for the crew to then physically see the DNA-CPR. Equally if ambulance staff have been informed by a registered health care professional (HCP) that a DNA-CPR exists it is reasonable for the crew to record the name of the HCP who has given them this information and abide by the decision. It is not necessary for them to see the physical DNA-CPR form. (This may apply when phoning a GP or palliative care provider for additional information. If assistance is needed with this staff should speak with the Clinical Coordination Desk). Staff should seek more evidence that a DNA-CPR exists when potentially unsubstantiated statements regarding DNA-CPR are made by the patient's relatives. This situation should, wherever possible, prompt a conversation with the patient's health care team to clarify this issue, or, at the very least a conversation with staff on CCD.

How do I ensure a DNA-CPR is valid?

If ambulance staff are presented with a DNA-CPR it is reasonable to check the following.

- The DNA-CPR is for the correct patient. In essence this is the patient for whom they have been called, the same patient named on the DNA-CPR?
- The DNA-CPR should be signed by the clinician making the DNA-CPR.
- Many DNA-CPR forms will not have a stated review date; this is acceptable and indicates that the patient's condition is not expected to improve. A review date indicates that the decision needs to be reconsidered in the light of all available information and the circumstances you are faced with.
- Are there any exceptions to the DNA-CPR? Some DNA-CPRs will not apply in specific circumstances, such as the patient having a cardiac arrest when undergoing a clinical procedure.

Should we still resuscitate a patient who is clearly in the terminal phase of an illness and resuscitation does not seem appropriate - but there is no DNA-CPR?

The Joint Royal Colleges Ambulance Liaison Committee National Clinical Guidelines (2006) states "resuscitation can be discontinued where the patient's death is expected due to terminal illness". There should be **clear evidence of terminal illness** and this should be detailed on the PRF. Terminal illness does not just include advanced malignancy, but includes conditions such as end stage cardiac and respiratory illnesses.

Examples of such evidence include.

- Documentation in the patient's District Nursing notes that confirms terminal illness.
- Documentation in patient held palliative care notes that confirm a terminal diagnosis.
- Documentation that the patient is on the "Liverpool Care Pathway" (LCP) a commonly used care plan for the last days of a patient's life, and / or documentation relating to the "Gold Standards Framework" (GSF). LCP and GSF can be used independently, but increasingly the use of the GSF leads to a patient having an LCP plan.

- A Preferred Priorities of Care Document which sets out the patient's choice around their care when they reach the terminal phase of their condition.
- Evidence of injectable palliative care medication such as:
  - opioid analgesia
  - anti anxiety medications such as midazolam or haloperidol
  - anti secretion medications such as glycopyrronium and hyoscine butylbromide

  (there is also likely to be supporting documentation within the house regarding these drugs and the doses and route of administration– which will most likely be subcutaneous).
- The presence of a subcutaneous syringe driver containing the above medications (again there is likely to be supporting documentation in the house). Although the presence of a subcutaneous syringe driver does not in itself indicate terminal illness as they are used now for insulin therapy and anti emetics.

Are there circumstances where a patient who has a DNA-CPR should still be resuscitated?

Occasionally a patient who has a DNA-CPR may suffer from a cardiac arrest from a clearly reversible cause such as choking. In these very rare occasions it may be entirely reasonable to consider resuscitation.

Should a patient with a DNA-CPR still be treated for other conditions?

Yes. A DNA-CPR purely relates to CPR and the patient should still receive treatment for any other condition. Therefore, it would be reasonable to discuss the most appropriate treatment with the patient and medical team/GP prior to conveying to the Emergency Department. If further advice is needed the Clinical Coordination Desk can be contacted.

Does the patient, or their relatives need to agree a DNA-CPR?

In most circumstances the capacitant patient will obviously be involved in the decision to make a DNA-CPR. There are circumstances where the patient may indicate they do not wish to discuss resuscitation and in these cases the patient may not be aware of the DNA-CPR. Where the patient lacks capacity there may be a legally appointed proxy who may have a lasting power of attorney (health and welfare) (LPA) who should be consulted in clinical decisions. Unless there is a legally appointed LPA the clinician should work with those close to the patient in order to inform the decision making process although ultimately the decision will rest with the clinician who is treating the patient at the time of cardiac arrest – thus in many cases that will be Service staff.

What is the difference between a DNA-CPR and an Advance Decision?

In essence a DNA-CPR is simply a method of documenting the resuscitation component of a care plan and is a clinically-led decision. An Advance Decision is a tool, set out in law under the Mental Capacity Act 2005, which allows an individual to make decisions regarding their care and treatment should they subsequently lose capacity. An Advance Decision can be about any component of a patient's treatment, not necessarily just resuscitation. The LA67 provides a detailed checklist for ensuring that than an Advance Decision is valid.

Can a DNA-CPR also apply to a child?

Yes. There are a small number of children with life limiting conditions and in some circumstances a DNA-CPR will have been completed. Often these will be in the form of a letter from the lead clinician setting down a detailed resuscitation care plan. This plan has normally been agreed with the clinical team and the parents. In some circumstances the plan may advise that a limited resuscitation takes place (for example bag and mask and chest compression only - no ALS). The Service works with the paediatric palliative care providers where at all possible to produce Patient Specific Protocols for these patients.

What else is the Service doing to support End of Life Care patients?

- We are working with GP and palliative care providers to share palliative care plans and resuscitation decisions in advance of a patient's death though the palliative care handover form.
- We have worked with palliative care providers to produce a multi-professional electronic learning package for palliative care which will have specific modules for ambulance staff. We are investigating how End of Life care education can best be delivered to ambulance staff.

Further Reading & References

The *Gold Standards Framework* 'prognostic indicator' is one example of a tool that helps with end of life prognosis www.goldstandardsframework.nhs.uk

Decisions relating to cardiopulmonary resuscitation. A joint statement from the British Medical Association, the Resuscitation Council (UK) and the Royal College of Nursing (October 2007) available at www.bma.org.uk

The Liverpool Care Pathway for the dying patient is an integrated poathway that is used at the bedside to ensure that the patient receives sustained quality care in the last hhours and days of life. www.liv.ac.uk/mcpcil/liverpool-care-pathway

The GMC guidance *Consent: patients and doctors making decisions together* (2008) gives an overview of the statute and case law that affects all treatment decisions and the use of organs and tissue, and that relates to adults (with and without capacity to make their own decisions), neonates, children and young people. www.gmcuk.org/guidance/ethical_guidance/consent_guidance/index.asp

The GMC guidance *Treatment and care towards the end of life: good practice in decision making* (2010) provides detailed guidance to doctors involved in end of life care decisions http://www.gmc-uk.org/static/documents/content/End_of_life.pdf

The *Mental Capacity Act 2005* (England and Wales) and its Code of Practice

Airedale NHS Trust v Bland [1993] 1 All ER 821 at page 860 per Lord Keith and page 866 per Lord Goff. Also Re JT (Adult: Refusal of Medical Treatment) [1998] 1 FLR 48 and Re AK (Medical Treatment: Consent) [2001] 1 FLR 129
An adult patient who has capacity may decide to refuse treatment even if refusal may result in harm to themselves or in their own death

Re Ms B v a NHS Hospital Trust [2002] EWHC 429
Doctors are bound to respect a refusal of treatment from a patient who has capacity and, if they have an objection to the refusal, they have a duty to find another doctor who will carry out the patient's wishes.

Re J (A Minor) (Child in Care: Medical Treatment) [1992] 2 All ER 614; and Re G (Persistent Vegetative State) [1995] 2 FCR 46
There is no obligation to give treatment that is futile or burdensome

An NHS Trust v Ms D [2005] EWHC 2439 (Fam). Burke v GMC [2005] EWCACiv 1003.*A patient's best interests may be interpreted as meaning that a patient should not be subjected to more treatment than is necessary to allow them to die peacefully and with dignity*

Ebrahim S. Do not resuscitate decisions; flogging dead horses or a dignified death? Br Med J 2000; 320: 1155–6

Regnard C, Randall F. A framework for making advance decisions on resuscitation. *Clin Med* 2005. 535

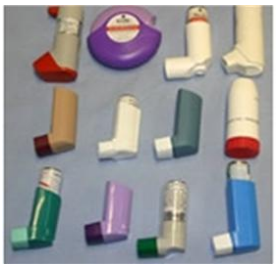
New adhesive tape

Two new adhesive tapes have been added to the equipment catalogues for stations to order. They include four inch wide elastoplast tape for securing head blocks to the scoop stretcher. In addition to this an inch wide pink elastoplast tape has been added. This can be used for securing dressings etc in conditions where transpore tape will not stick. If you using the new tape please remember to check the patient does not have an allergy to elastoplast.

COPD

An estimated three million people are affected by chronic obstructive pulmonary disease (COPD) in the UK. About 900,000 have been diagnosed with COPD and an estimated two million people have COPD which remains undiagnosed. The symptoms of the disease usually develop insidiously, making it difficult to determine the incidence of the disease. Most patients are not diagnosed until they are in their fifties. Unlike many other common chronic diseases the prevalence of COPD has not declined in recent years.

COPD is closely associated with levels of deprivation - rates of COPD are higher in more deprived communities. COPD accounts for approximately 30,000 deaths each year in the UK, with more than 90 per cent of these occurring in the over 65 age group. An average general practice in the UK which cares for about 7,000 people will have up to 200 people with COPD on its practice list, for many of whom the condition will be undiagnosed. This equates to around 1.4 million consultations with GPs each year, up to four times more than the number of consultations for angina. COPD patients admitted to hospital are frequent users of primary care in the 12 months prior to their admission. Although only a small proportion of people with COPD are admitted to hospital each year, one in eight (130,000) emergency admissions to hospital is for COPD, making it the second largest cause of emergency admission in the UK, and one of the most costly inpatient conditions treated by the National Health Service.



COPD is an umbrella term for people with **chronic bronchitis**, **emphysema**, or both. With COPD the airflow to the lungs is restricted (obstructed). COPD is usually caused by smoking. The lining of the airways becomes inflamed and damaged by smoking. About three in 20 people who smoke one packet of cigarettes (20 cigarettes) per day, and one in four for 40-per-day smokers, develop COPD if they continue to smoke. Air pollution and polluted work conditions may cause some cases of COPD. There are some other rare causes including genetic enzyme deficiencies this can be the cause of COPD in younger patients.

- Bronchitis is inflammation of the bronchi (the airways of the lungs).
- Emphysema is damage to the smaller airways and air sacs (alveoli) of the lungs.

Symptoms of COPD

- **Cough** is usually the first symptom to develop. It is productive with sputum (phlegm). It tends to be intermittent at first, and then gradually becomes more persistent (chronic).
- **Breathlessness (shortness of breath) and wheeze** may occur on exertion. Exercise limitation can be assessed by asking the patient how far they can walk on the flat. These symptoms tend to become gradually worse
- **Sputum** - the damaged airways make a lot more mucus than normal. This forms sputum (phlegm).
- **Chest infections** are more common in have COPD. A sudden worsening of symptoms (such as when you have an infection) is called an exacerbation. Wheezing with cough and breathlessness may become worse than usual in a chest infection sputum usually turns yellow or green during a chest infection. Chest infections can be caused by bacteria *or* viruses. Bacteria (which can be killed using antibiotics). Viruses (not killed with antibiotics) are a common cause of infections too, particularly in the winter months. The common cold virus may be responsible for up to one in three exacerbations.
- Other symptoms of COPD can be more vague. Examples are weight loss, tiredness and ankle swelling.
- **Chest pain** and **Haemoptysis** (coughing up blood) are **not** common symptoms in COPD.

Asthma and COPD cause similar symptoms however they are different diseases. In COPD there is permanent damage to the airways. The narrowed airways are fixed, and so symptoms are chronic (persistent) COPD treatment to open up the airways is therefore limited. In asthma there is inflammation in the airways which makes the muscles in the airways constrict. This causes the airways to narrow. The symptoms tend to come and go, and vary in severity from time to time. Treatment to reduce inflammation and to open up the airways usually works well. There will be a small number of patients who have both asthma and COPD.

Clinical features differentiating COPD and Asthma	**COPD**	**ASTHMA**
Smoker or ex-smoker	Nearly all	Possibly
Symptoms under age 35	Rare	Often
Chronic productive cough	Common	Uncommon
Breathlessness	Persistent and progressive	Variable
Night-time waking with breathless and or wheeze (nocturnal cough)	Uncommon	Common
Significant daytime or day to variability of symptoms	Uncommon	Common

As the disease becomes more severe, not enough oxygen reaches the lungs through the narrowed airways. As a result, the amount of oxygen that gets into the bloodstream is reduced. This can ultimately cause **heart failure** as the heart muscle needs oxygen to work and pump normally.

Treatments

Patients with COPD can be prescribed a number of treatments. The most common treatments are inhalers.

Short-acting bronchodilator inhalers
These relax the smooth muscle in the airways allowing them to dilate.The most common ones are:.

- **Beta-agonist inhalers**. Examples are **salbutamol** (brand names include Airomir®, Asmasal®, Salamol®, Salbulin®, Pulvinal Salbutamol® and Ventolin®) and **terbutaline** (brand name Bricanyl®). These inhalers are often (but not always), blue in colour. Other inhalers containing different medicines can be blue too.
- **Antimuscarinic inhalers**. For example, **ipratropium** (brand name Atrovent®).
  These inhalers work well for some people, but not so well in others. The effect from both types typically lasts for three to six hours. They can assist with reducing secretions.

Long-acting bronchodilator inhalers
These work in a similar way to the short-acting inhalers, but each dose lasts at least 12 hours. Long-acting bronchodilators may be an option if symptoms remain troublesome despite taking a short-acting bronchodilator.

- **Beta-agonist inhalers**. Examples are **formoterol** (brand names Atimos®, Foradil®, and Oxis®) and **salmeterol** (brand name Serevent® - a green-coloured inhaler).
- **Antimuscarinic inhalers tiotropium** (brand name Spiriva®).

Steroid inhalers A steroid inhaler may help in addition to a bronchodilator inhaler.

- **Beclometasone**. Brands include Asmabec®, Beclazone®, Becodisks®, Clenil Modulite®, Pulvinal Beclometasone® and Qvar®. These inhalers are usually brown and sometimes red in colour.
- **Budesonide**. Brands include Easyhaler Budesonide®, Novolizer Budesonide® and Pulmicort®.
- **Ciclesonide**. Brand name Alvesco®.
- **Fluticasone**. Brand name Flixotide®. This is a yellow-coloured or orange-coloured inhaler.
- **Mometasone.** Brand name Asmanex Twisthaler®.

Steroids prevent inflammation and aim to prevent the worsening of COPD.

Combination inhalers are available, usually containing a steroid medication and either a short-acting or long-acting beta-agonist.
Examples of combination inhalers are:

- Fostair® (formoterol and beclometasone).
- Seretide® (salmeterol and fluticasone). This is a purple-coloured inhaler.
- Symbicort® (formoterol and budesonide).

Bronchodilator tablets Theophylline is a bronchodilator (it 'opens' the airways) medicine that is sometimes used. It is used in stable COPD rather than in an acute exacerbation.

Mucolytic medicine A mucolytic medicine such as:

- **carbocisteine** (Mucodyne®), erdosteine (Erdotin®) and mecysteine (Visclair®)

mucolytics makes the sputum less thick and sticky, and easier to cough up. This may also have a knock-on effect of making it harder for bacteria to infect the mucus and cause chest infections. The number of flare-ups of symptoms (exacerbations) tends to be less in people who take a mucolytic.

Oxygen
Some patients with COPD will be prescribed long term home oxygen therapy.

Exacerbations of COPD

Exacerbations of COPD are often the main reason why patients with COPD will have contact with the ambulance service.
Exacerbations are acute worsening of COPD symptoms (shortness of breath, quantity and colour of phlegm) It may be triggered by an infection or by environmental pollutants. Typically, infections are the cause of over 75 per cent of exacerbations; bacteria can be found in approximately 25 per cent of cases and viruses in approximately 25 per cent. Both viruses and bacteria are present in 25 per cent.
Airway inflammation is increased during the exacerbation which reduces the **expiratory airflow resulting in increased hyperinflation, this has a negative impact on an already impaired gaseous exchange process. A prospective study demonstrated that 14 per cent of patients will die three months after hospitalization for an exacerbation and a further 34 per cent will be re-admitted. The recent NICE guidelines for COPD provide some advice on when patients with COPD should be conveyed to hospital.**

Exacerbations of COPD can be associated with the following signs and symptoms:[1]

- **Increased cough; increased sputum purulence and increased sputum volume**
- **Upper airway symptoms (eg colds and sore throats)**
- **Increased dyspnoea**
- **Increased wheeze and chest tightness**
- **Reduced exercise tolerance**
- **Fluid retention**
- **Increased fatigue**
- **Marked respiratory** distress with dyspnoea and tachypnoea, acute confusion, increased cyanosis, peripheral oedema and decreased oxygen saturations

Factors to consider when deciding to convey a patient with COPD exacerbation to hospital		
	Refer to GP for further treatment	Convey to hospital
Able to cope at home	Yes	No
Breathlessness	Mild	Severe
General condition	Good	Poor /deteriorating
Level of activity	Good	Poor / confined to bed
Cyanosis	No	Yes
Worsening peripheral oedema	No	Yes
Level of consciousness	Normal	Impaired
Patient on long term oxygen therapy	No	Yes
Social circumstances (support)	Good	Living alone not coping
Acute Confusion	No	Yes
Rapid rate of onset	No	Yes
Significant comorbidity (particularly cardiac disease and patients who have insulin controlled diabetes)	No	Present

Pre-hospital treatment of exacerbations

Oxygen
There are well documented risks of oxygen toxicity in patients with COPD and targeting oxygen to a patient's saturations reading is essential. A significant number of patients now have oxygen alert cards or patient specific protocols which document their normal oxygen saturations. If a patient does not know their normal saturations the target range for COPD of 88-92 per cent should be used. British Thoracic Society emergency oxygen guidelines (see Medical Director's Bulletin September 2008 on the pulse under Bulletins > Other Bulletins > Medical > 12 September 2008 or by clicking **here** provide the treatment guideline for the use of oxygen with COPD patients.

Nebuilsers
Where the patient presents with evidence of bronchospasm (wheeze on auscultation) the patient can be administered a salbutamol nebuliser. As we use oxygen to drive the nebuliser this should be limited to six minutes to reduce the risk of oxygen toxicity. If after six minutes of nebulisation the patient still has a wheeze and the patient's saturation remains below the target range the nebuliser can be repeated. If a second nebuliser is given, consideration can be given to also administering ipratropium bromide concurrently with the second dose of salbutamol. Patients who present with exacerbations of COPD they should not be administered IM adrenaline (a treatment for life threatening asthma). As there is a limited level of reversibility to the airway compromise in COPD, unlike asthma, adrenaline will have a little or no effect but may have a detrimental effect by increasing blood pressure (which may already be elevated) and heart rate in a myocardium hypoxic. In addition to this patients with COPD often have co-existing heart disease and thus the risk of arrhythmias is increased.

References
Roberts, C.M. et al (2002) Clinical audit indicators of outcome following admission to hospital with acute exacerbation of chronic obstructive pulmonary disease. *Thorax*; 57: 2, 137–141.
Price L C, et al on behalf of the British Thoracic Society and the Royal College of Physicians Clinical Effectiveness Evaluation Unit (CEEu) (2006) UK National COPD Audit 2003: impact of hospital resources and organisation of care on patient outcome following admission for acute COPD exacerbation. *Thorax;* 61: 10, 837-842
NICE (2010) *Chronic Obstructive Pulmonary Disease – Management of Chronic Obstructive Pulmonary Disease in Adults in Primary and Secondary Care.* NICE: London.
British Thoracic Society (2008) Guideline for emergency oxygen use in adult patients. *Thorax;*63 (Supp VI): vi1–vi73.
British Thoracic Society (2006) *The Burden of Lung Disease:* A Statistics Report from the BTS.
Rabe KF, Hurd S, Anzueto A, *et al.* (2007). "Global Strategy for the Diagnosis, Management, and Prevention of Chronic Obstructive Pulmonary Disease: GOLD Executive Summary". *Am. J. Respir. Crit. Care Med.* **176** (6): 532–55. doi:10.1164/rccm.200703-456SO.

Critical transfers

When carrying out critical transfers for STEMI and FAST positive patients or patients being transferred to a major trauma centre, a pre-alert call must be placed via PD09. It is the responsibility of the transferring crew to alert the receiving centre not the hospital that is transferring the patient. Failure to do this may result in an absence of specialist staff on arrival at the unit and a significant delay in treatment of the patient.

LBBB & the cath lab

Patients with left bundle branch block which can be indentified by a wide QRS complex and no Q wave in V6 (see last issue's ECG on page 12) , who have cardiac sounding chest pain and present with signs and symptoms of a myocardial infarction (MI) should be conveyed directly to a cath lab preceded by a pre-alert message via PD09.

Clopidogrel should NOT be given to LBBB. (see last issues ECG on page 12)

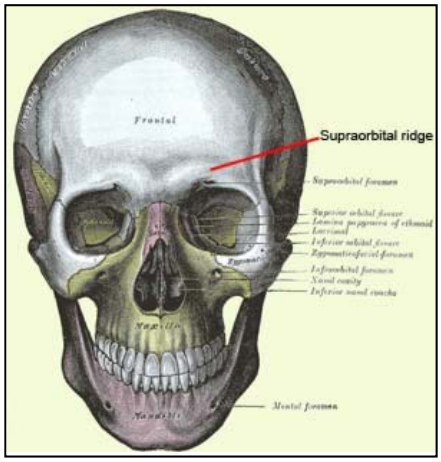
The Glasgow Coma Score

The Glasgow Coma Score (GCS) was published in 1974 by Graham Teasdale and Bryan J. Jennett, professors of neurosurgery at the University of Glasgow. The GCS was created as an objective measure to assess the level of consciousness in patients with head injury. T Pathological reports from deaths in Glasgow showed that deaths caused by secondary brain damage, (by raised intra-cranial pressure caused by brain haematoma) were preventable by early detection The GCS was thus created to reduce ambiguity and allowed early detection of deterioration in patients with neurological deficit. The GCS was initially developed to assess patients in intensive care six hours post injury but has now been expanded to nearly all clinical environments.

Before calculating GCS, the 'AVPU' scale should be used as part of the primary survey. 'AVPU' stands for Alert, Voice, Pain and Unresponsive. The AVPU scale is quicker and easier, but more subjective method of establishing level of consciousness compared to the GCS. It is used in rapid assessment and should be expanded to encompass the individual components of the GCS in further assessment.

The best response for each category should be documented and any difficulties should be discussed in the written history. Ideally the GCS should also be calculated by more than one health professional and before and after handover. Therefore, when possible (and it is appreciated that this may not always be possible) the attendant should confer with their crewmate and calculate a GCS together thus increasing the accuracy.

Interestingly, the motor response is the best predictor of patient outcome and therefore careful assessment and documentation of the whole GCS and particularly the motor response is crucial. However, different sources recommend different painful stimuli. Sources recommend supra-orbital ridge pressure as this allows clear distinction between localising pain and withdrawal from pain. To localise the pain, the patient should move an upper limb across the mid-line of their body. To withdraw from pain, a patient may move their head in an attempt to move away from the pain. However, as with all painful stimuli, this should only be attempted when in a safe environment and where it does not cause the patient permanent harm. It is important to assess responses to pain but this should only be conducted in an ethical manner and not as a means of inflicting unnecessary pain on the patient. Staff should also be aware that onlookers may perceive all types of painful stimuli to be harming the patient and this should be considered when carrying out the GCS. Supra-Orbital pressure puts pressure onto the supra-orbital nerve causing pain. This should NOT be carried out in patients with suspected orbital (eye area) fractures. The diagram below show the anatomy and demonstrate how this should be done.



Other responses to pain may be seen, these are obeying commands (in which case painful stimuli is not appropriate), abnormal flexion- characterised by adduction (shrugging) of the shoulders and internal rotation of the arms with spastic like flexion of the wrist (also known as decorticate flexion). Finally abnormal extension (also known as decerebate extension) is characterised by abnormal extension with adduction (shrugging) extension at the elbow. Both the two latter features are characterised by a slow movement. A distal painful stimulus may also need to be considered to be able to fully assess withdrawal.

The type of painful stimuli used should be fully documented in the written section of the notes. If the receiving unit are aware of which type of painful stimuli has been used, then it is more apparent if the patient deteriorates.

In the occasions where eyes and verbal response cannot be assessed, effort should be taken to find out what is 'normal' for the patient. Documentation for occasions when an Endo Tracheal Tube (ETT) or a tracheotomy is in- situ then a 'T' should replace the score in the Verbal section. If the patient cannot open their eyes due to injury or swelling, then this should be noted on the PRF.

The fact that the patient had consumed alcohol should on no account be taken into consideration when calculating GCS. The GCS scale has been modified for the paediatric patient taking into account the limited verbal ability of young children.

The GCS should be clearly handed over to hospital staff, both in written form on the PRF and when conducting a verbal handover. GCS should be regularly re-assessed just like any other observation. It is vital to accurately calculate a GCS in a pre-hospital environment, however, stabilisation of the airway, breathing and circulation; and recognition of priority transportation is fundamental when dealing with patients (Joint Royal Colleges Ambulance Liaison Committee, 2006). Thus, GCS may be sacrificed when patients require constant re-assessment of the primary survey. In this case, AVPU should replace the GCS.

To conclude, GCS is an accurate, objective measure that allows early detection in deteriorating patients. The better we can calculate it, the quicker we can spot a change in the patients' condition.

Joint Royal Colleges Ambulance Liaison Committee (2006).

References and Bibliography:

Bazarian, J.J., Eirich, M. A. & Salhanick, S. D. (2003). The relationship between pre-hospital and emergency department Glasgow coma scale scores. *Brain Injury, 17*(7), 553-560.

Cox, N.L.T. & Roper, T.A. (2005). *Clinical skills.* New York: Oxford University Press Incorporation.
Edwards, S.L. (2001). Using the Glasgow coma scale: analysis and limitations. *British Journal of Nursing, 10*(2), 92-101.

Elling, R. & Elling, K. M. (2003). *Principles of patient assessment in EMS.* New York: Thomson- Delmar Learning.

Flint, A.C., Naley, M.A.C. & Wright, C.B. (2006). Ataxic hemiparesis from strategic frontal white matter infarction with crossed cerebellar diaschisis. *Stroke, 37*(1), 1-2.

Health Professions Council. (2004). Standards of conduct, performance and ethics. *Your duties as a registrant.* Retrieved 24th March, 2010, from http://www.hpc-uk.org/assets/documents/10001BFBSCPEs-cfw.pdf .

Iacono, L.A. & Lyons, K.A. (2005). Making GCS as easy as 1,2,3,4,5,6. *Journal of Trauma Nursing, 12*(3), 77-81.

Jennett, B. (2002). The Glasgow coma scale: history and current practice. *Trauma, 4*(2), 91-103.

Jevon, P. (2008). Neurological assessment: Part 1- assessing level of consciousness. *The Nursing Times, 104*(27), 26.

Joint Royal Colleges Ambulance Liaison Committee. (JRCALC), (2006). *UK ambulance service clinical practice guidelines.* London: Ambulance Service Association.

Neuro High Dependency Leeds Teaching Hospitals Trust. (2006). Clinical guidelines: performing Glasgow coma scale and papillary responses. *Staff Development.* Retrieved March 1st, 2010, from http://www.leedsneurosurgery.com/HDU/staff/gcs.htm.

Qureshi & Hodkinson. (1974). Evaluation of a ten- question mental test in the institutionalized elderly. *Age Aging, 3.* 152-157. Reilly, P.L., Adams, J.H., Graham, D.I. & Jennett, B. (1975). Patients with head injury who talk and die. *Lancet, 2*(7931), 375.

Alex Urich (Student Paramedic)

‘Legal’ highs

The London Ambulance Service has recently received a number of Department Of Health alerts that relate to recreational drugs that are commonly referred to as ‘herbal highs’ or ‘legal highs’. Both of these terms are significantly misleading as many of the substances are not herbal and have significant chemical contents. In addition to this a number of these substances have been recently reclassified as illegal.

Ivory Wave

There has been a cluster of A&E admissions following the use of ‘legal highs’, mainly reported after use of Ivory Wave. Analysis found that Ivory Wave contained MDPV and Lidocaine. MDPV is a cathinone, (**Cathinone**, a monoamine alkaloid found in the shrub *Catha edulis* (khat) and is chemically similar to ephedrine, cathine and other amphetamines. Cathinone induces the release of dopamine).

Current knowledge of the side-effects of using Ivory Wave is based on recent self-reports and clinical observations, and users seem to face the risks of both amphetamine-type drugs and ecstasy-type drugs. These include overstimulation of the cardiovascular system, with risk of heart and circulatory problems; and overstimulation of the nervous system, with risk of agitation, hallucinations and fits. Dangerously raised body temperature, risk of renal failure and altered blood pressure may also occur.

The cluster of A&E cases appear to have an unusual severity of such symptoms; and, anecdotally, compared to other ‘legal highs’, Ivory Wave is reported as being very potent with long-lasting effects.

Patients with acute toxic effects should be managed symptomatically and may need urgent referral to A&E.

Mephedrone

Mephedrone is a stimulant drug with effects similar to amphetamines (speed) and to ecstasy (MDMA) producing euphoria, alertness, talkativeness and feelings of empathy. Mephedrone, is a white or off-white powder, usually snorted like cocaine or swallowed in wraps of paper it can also be smoked and in rare cases it is injected and also comes in capsules and pills.

It is usually sold on the internet as a ‘legal high’ and described as a plant food or a research chemical “not for human consumption.”

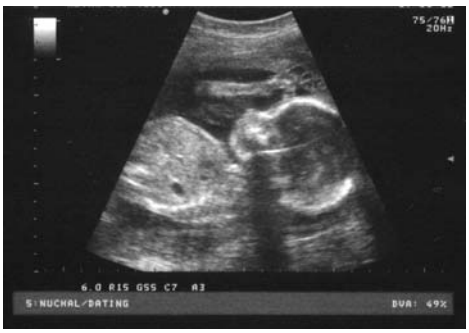
Severe nosebleeds have been reported after snorting mephedrone and it can overstimulate the heart and may cause problems with the circulation (eg cold and blue fingers). It can also overstimulate the nervous system causing fits or feelings of anxiety, agitation or paranoia, and may cause hallucinations. It is thought to be very compulsive to use and could create psychological dependence. Deaths have also been seen in a small number of users.

The health risks from mephedrone are increased if combined with alcohol or other drugs. Mephedrone is usually snorted, but can be swallowed and may be used by other routes. Mephedrone became controlled as a Class B drug on 16 April 2010.

Those with acute toxic effects should be managed symptomatically and may need referral to A&E. Less acute physical or psychological problems should be assessed and managed as for any other users of psychoactive drugs. Some patients may present early with a temporary 'comedown' and low mood from recent drug use, and may just need reassurance, support and monitoring. Others may have started to show signs of dependence and need specialist assessment. Others may present with physical or psychological symptoms that they believe may be linked to their drug use, in which cases, appropriate diagnostic assessments are needed, as per normal clinical practice.

Further advice can be sought from the Clinical Coordination Desk in EOC if needed who have access to Toxbase the National Poison Information Service Database.

Obstetrics audit recommendations



The Clinical Audit & Research Unit recently undertook an obstetric audit of obstetric patients conveyed by the Service to three London maternity units: The Homerton, The Royal London with the Barkantine on Isle of Dogs and St George's in Tooting. The aim of the audit was to understand the quality of obstetric care provided in London so that any gaps in care were identified. The audit found that the majority of obstetric cases require care for routine labour or an imminent birth, with serious obstetric complications being a rare event. The rarity of serious complications presents an increased clinical risk to the service as obstetrics complications may be unfamiliar to crews and assessment skills are often not practiced regularly to maintain competency. Patients are generally being conveyed appropriately according to the JRCALC Clinical Practice Guidelines. The majority of women were happy with the care they received this is a testament to the care provided by Service staff. However, the use of pre-hospital alerts in cases with complications was not consistent.

The following recommendations were identified:

(1) Crews should be reminded to exercise caution when attending all obstetrics cases, as ambulance services have only limited capabilities in identifying and managing obstetric abnormalities.

Action - Exercising caution is an important principle, as crews have limited capabilities and are not able to identify all abnormalities due to the rarity of complications. The crews are not able to assess foetal wellbeing and crews should consider the second hidden patient may also need help.

(2) Crews should be reminded of the importance of taking more than one set of observations, as time allows, to detect any changes in the woman's condition. This is especially important in cases where the woman presents with frank bleeding and severe, continuous abdominal pain.

Action - This aids the crew with decision making and urgency required. As a general rule, obstetric emergencies require rapid assessment with rapid transfer.

(3) A memory aide should be produced listing the key questions to ask and document for routine pregnancies, to include: history of the presenting pregnancy, history of previous pregnancies and live births, estimated date of delivery, the pain score and whether entonox administration is required. In addition, it should contain a reminder of when women should be conveyed to their booked maternity unit, the nearest maternity unit or to an emergency department.

Action - This memory aid will be developed by the Service to assist crews but the information should be recorded on the PRF.

(4) Crews should be reminded to document an estimated volume of blood loss when a woman presents with bleeding, or a reason why this could not be documented.

Action - This is an important clinical assessment which must be recorded in the PRF. Guidance to this will be provided on the aide memoir.

(5) The Service continues to work with maternity units and Healthcare for London to ensure dedicated emergency alert lines are placed in each unit.

Action - London maternity units are now installing a dedicated emergency phone line.

(6) The Service should explore ways of encouraging the further education of ante-natal women about what constitutes normal signs of labour and what constitutes signs of potential complications and when to call an ambulance.

Action - The website has been updated with this information and midwives are having a pre-labour talk with women around transport arrangements and there are plans to add this to the women's maternity notes. Routine obstetric calls have declined in the last three years figures.

(7) Crews and control staff should maintain a positive and kind attitude when dealing with all service users.

Action - the results of the audit will be made available to all staff.

(8) <u>Crews and call-takers should be commended that the majority of questionnaire respondents were very happy with the service they received.</u>

Action - <u>Well done and many thanks to all crews</u>

Andrew Stallard LAS Midwife Advisor & Clinical Audit Research Unit

Messages from the Service's Midwife

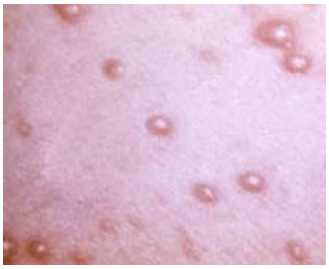
<u>Third stage management and fundal massage</u>

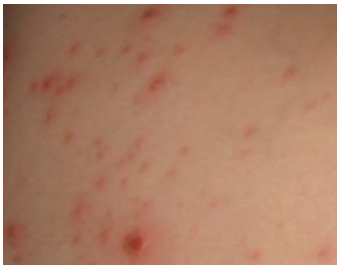
During the third stage fundal pressure or massage **should not be used** before and during delivery of the placenta as this can cause partial separation of the placenta and excessive bleeding. Only after the placenta is fully delivered and bleeding continues can the uterus be gently palpated to ascertain if fully contracted. If excessive bleeding occurs the JRCALC (2006) National Clinical Guidelines should be followed.

<u>Management of a miscarried foetus</u>

Staff are reminded where a patient has miscarried any tissues or foetus should be conveyed to hospital along with the patient. Staff are urged to be sensitive when doing this and that the foetus should be carefully wrapped in a towel or pad and not placed in a clinical waste bag

Chickenpox





Early Chicken Pox Rash

Chickenpox is an acute, infectious disease caused by the varicella-zoster virus and is most commonly seen in children under 10 years old. This virus, if re-activated in a person who has had chickenpox previously, can also cause shingles (herpes zoster). It is not possible to develop shingles from exposure to a person with chickenpox. It is possible however, to develop chickenpox as a result of exposure to a person with shingles.

Transmission

Chickenpox is highly contagious, infecting up to 90 per cent of people who come into contact with the disease. Transmission is through direct person to person contact, airborne droplet infection or through contact with infected articles such as clothing and bedding. The incubation period is from 10 to 21 days. The most infectious period is from one to two days before the rash appears but infectivity continues until all the lesions have crusted over.

Symptoms

Chickenpox may initially begin with cold-like symptoms followed by a high temperature and an intensely itchy, vesicular (fluid-filled blister-like) rash which appears over three to five days, mostly over the trunk and more sparsely over the limbs.

- **Fever (temperature), aches and headache** often start a day or so before a rash appears.
- **Rash.** Spots appear in crops. They develop into small blisters which often rupture and are very itchy. They can be anywhere on the body. Several crops may develop over several days. Some children may be covered in spots, others have only a few or even none.
- **Dry cough and sore throat** are common.

Possible complications and at risk groups

Chickenpox is usually a mild illness and most healthy children recover. Groups who are at risk include

- neonates,
- adults,
- pregnant women
- those who are immunocompromised,

Anyone who is pregnant and has been in contact with chickenpox should be advised to consulate their GP and/or midwife as soon as possible.

Chickenpox red flags

- Breathing problems.
- Weakness.
- Drowsiness.
- Convulsions.
- Pains or headaches which become worse despite paracetamol or ibuprofen.
- Being unable to take fluids due to a severe rash in the mouth.
- A severe rash, or a rash which bruises or bleeds into the skin (haemorrhagic rash).
- Becoming generally more and more unwell.
- Children (babies) less than one month old.
- Children and adults with a poor immune system. For example, children with leukaemia, immune diseases or HIV/AIDS.
- Children taking certain medication such as steroids, immune suppressing medication or chemotherapy.
- Children with severe heart or lung disease.
- Children with severe skin conditions.

Chickenpox complications

- Reye's syndrome.
- Myocarditis (inflammation of the heart muscle).
- Glomerulonephritis (kidney inflammation).
- Appendicitis.
- Hepatitis (inflammation of the liver).
- Pancreatitis (inflammation of the pancreas).
- Henoch–Schönlein purpura (a condition that can affect the kidneys).
- Orchitis (inflammation of the testes).
- Arthritis.
- Inflammation of various parts of the eye.

References

http://www.hpa.org.uk/Topics/InfectiousDiseases/InfectionsAZ/ChickenpoxVaricellaZoster/GeneralInformation/

Davies EG, Elliman DAC, Hart CA, Nicoll A, Rudd PT . Manual of Childhood Infections 2nd edition Royal College of Paediatrics and Child Health China: WB Saunders, 2001:240-4.

Clinical audit

A baseline clinical audit looking at the use of naloxone in the Service was released in March 2010. The clinical audit found that the Service is performing well when administering naloxone to patients. Naloxone was administered appropriately in 96 per cent of cases and 90 per cent of patients were transported to hospital in accordance with the guidelines. An ECG was taken in almost a third of cases.

The JRCALC naloxone guidelines state that naloxone may precipitate cardiac arrhythmias in patients that are physically dependant on narcotic drugs. Where cardiac arrhythmias are suspected the ambulance crew should, where possible, monitor the patients' cardiac rhythm as part of their assessment. The JRCALC naloxone guidelines can be found on *the pulse* under patients > national clinical guidelines > drugs.

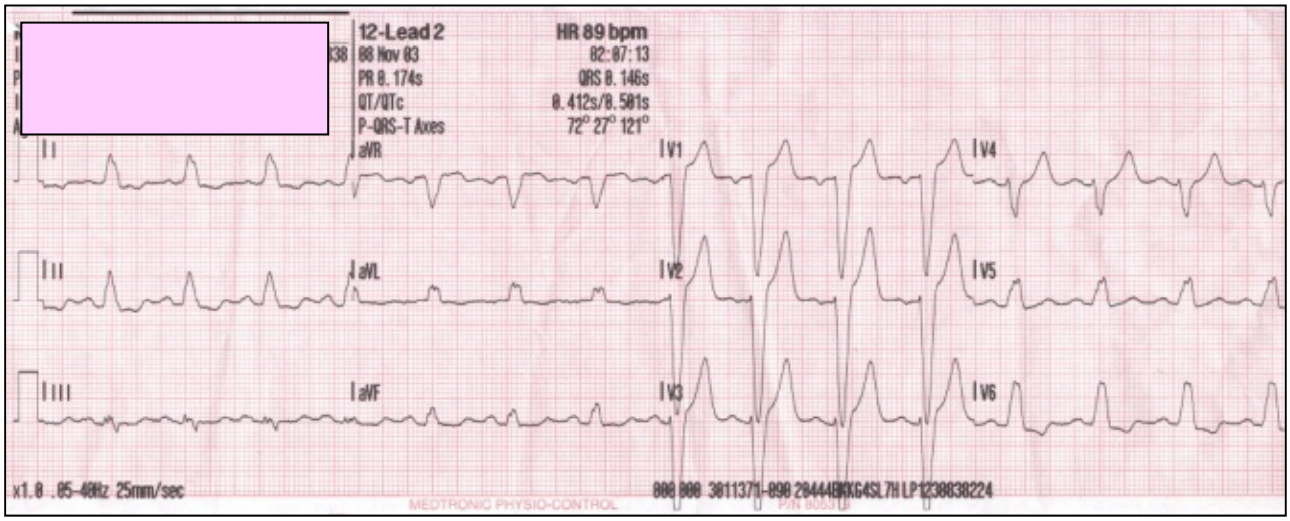
ECGs and PRF

Crews are reminded that a copy of ECGs they have recorded should be submitted along with the PRF at the end of the shift with CAD number and date clearly written on it. This forms a vital component of the CPI audits

The cath lab team have asked us to remind crews to remember to submit to them a copy of the PRF with ALL the times recorded on it to the cath lab when they convey a patient their. This information is invaluable to the Heart attack centres, particularly for the purposes of clinical audit.

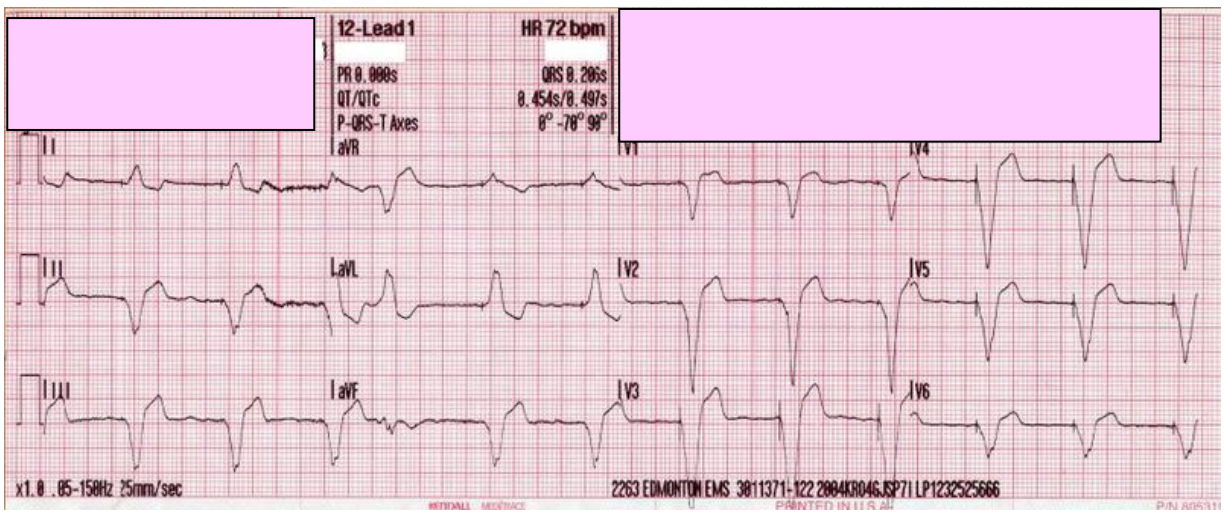
ECG questions and answers

This ECG belongs to an 86-year-old female who had a history of hypertension. She woke from sleep with shortness of breath. Observations: Blood pressure of 178/100 and initial oxygen saturations on air of 92 per cent.
What does this ECG show?
This ECG shows left bundle branch block (wide QRS complex no Q wave in V6)
Where should this patient be conveyed? This patient should be conveyed to the nearest Emergency Department. Remember for an a left bundle branch block to be taken to the cath lab the patient MUST have cardiac sounding chest pain and look like they are having an MI.



This ECG belongs to an 81-year-old female who has a history of mild dementia, falls and was recently discharged from hospital. The ambulance was called as she was complaining of abdominal pain.
What does this ECG show?

Where should this patient be conveyed?



Staff are welcome to submit articles for the Clinical Update (we can offer assistance with writing and arrange a review). This can provide useful evidence for your profile. Equally if staff have comments or suggestions for improvements please contact Mark Faulkner in the Medical Directorate mark.faulkner@lond-amb.nhs.uk

Past issues of the Clinical Update can be found on The Pulse under news, clinical updates http://thepulse/news/11909002015164.html