IHCD AMBULANCE PERSONNEL AWARDS

TRAINING AND COMMON CORE SYLLABUS FOR AMBULANCE PERSONNEL

ISSUE DATE : MAY 2003

TRAINING AND COMMON CORE SYLLABUS FOR AMBULANCE PERSONNEL

INTRODUCTION

This Syllabus contains details of the awards available from IHCD for Ambulance Personnel, the framework of which can be found on page 5 and shows :

— training pathways leading to IHCD Ambulance awards

— potential shared training

— responsibilities for assessment

— minimum time spans relevant to the awards

The various stages of training as outlined on page 5 are only representations, and are not necessarily in sequence. They can be delivered in any order which achieves the relevant award; this is particularly the case for Driver training. Detailed information on the learning objectives for each of the areas is contained in this document.

The framework allows for allowing for progression to Paramedic training for those considered suitable without the need for an additional 12 months operational experience following the Technician award. This has been balanced with the requirement a minimum 6 months competence based assessment arrangements following in-Hospital placement. (To comply with current legislation, the IHCD Paramedic award will remain at the end of in-Hospital placement).

Services may opt to continue with the existing time-serving approach to Paramedic training whilst gradually building up expertise in workbased assessment.

Only Services whose work based assessment arrangements have been approved by the IHCD will be allowed to progress paramedics at the quicker rate indicated on the framework.

The Framework on page 5 includes reference to areas of Good Practise. In some instances these relate to specific training employing Services may wish or need to provide.

Various support documents are referenced in the document to relevant Sections/Units, in brief these are:

— the IHCD Ambulance Basic Training Manual (BTM)

— the IHCD Driving Manual (DM)

— the IHCD Paramedic Training Manual (PTM)

— the National Occupational Ambulance Standards (NOS).

Where appropriate, reference to the JRCALC National Clinical Guidelines.

AWARDS AVAILABLE

Ambulance Care Assistant (ACA)

FOUNDATION TRAINING (A) - See note 1 . . . . . .

DRIVER TRAINING PROGRAMME I (B) - See note 2 . . . . . .

Ambulance Technician

DRIVER TRAINING PROGRAMME I (B) . . . . . .

ADVANCED DRIVER TRAINING II (C) . . . . . .

TECHNICIAN TRAINING I (D) - See note 3 . . . . . .

TECHNICIAN TRAINING II (E) - See note 3 . . . . . .

TECHNICIAN TRAINING I (F) - See note 3 . . . . . .

Paramedic

As for Ambulance Technician plus

MODULE G

MODULE H

MODULE I

IN – HOSPITAL PLACEMENT

Notes

1 The Ambulance Care Assistant award builds on the content of the First Aid at Work certificate, with additional Ambulance training.

2 This training can be done on a shared basis with Ambulance Technicians.

3 This can be done before or after Driver training.

4 Direct access may be allowed for those entering the Ambulance Service with relevant training and/or experience, provided they first pass the Technician I assessments, both practical and theory.

5 This assumes successfully passing the Paramedic pre-entry assessments.

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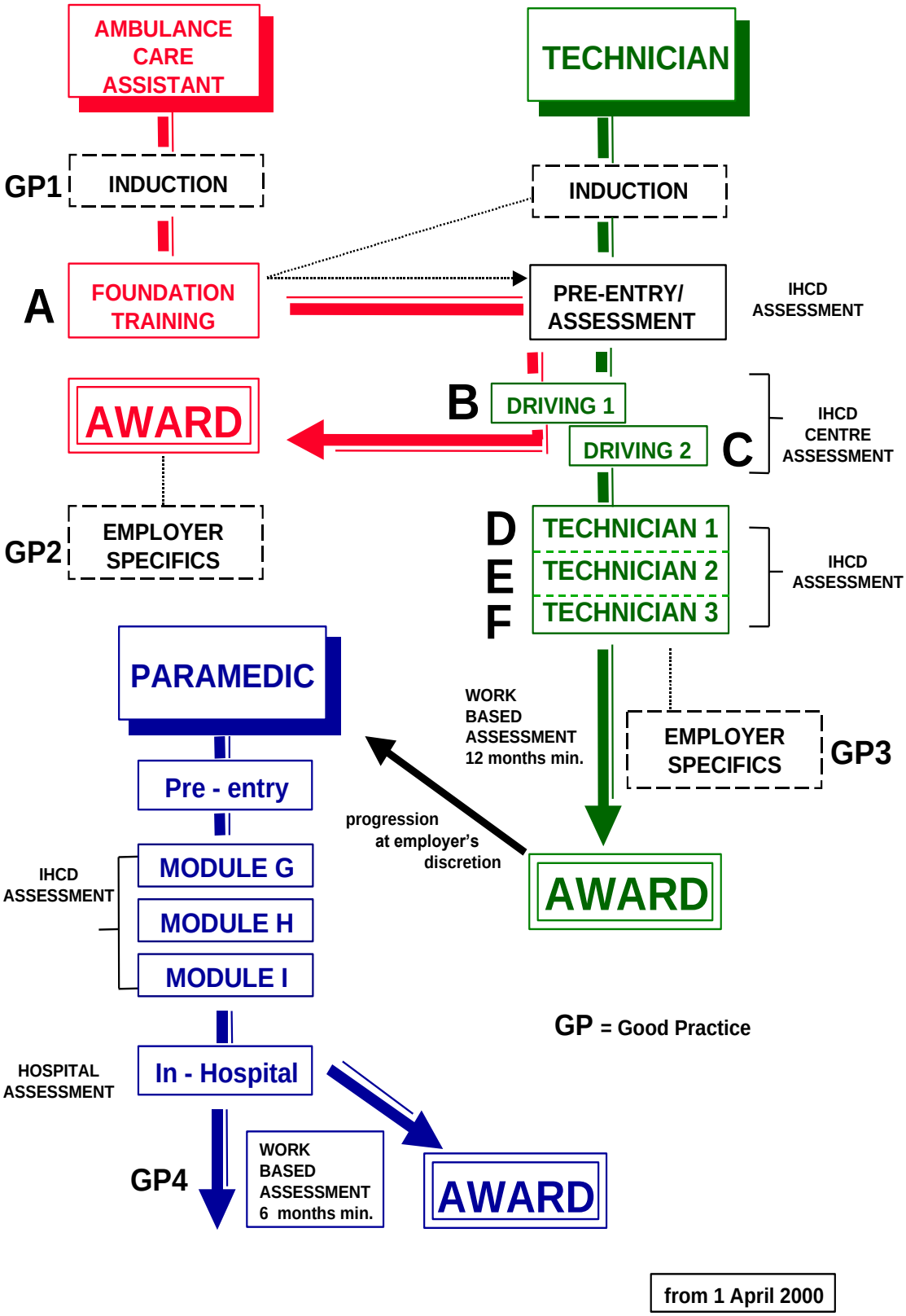
TRAINING FRAMEWORK



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A : FOUNDATION TRAINING

The Foundation training programme has been designed to cover aspects relevant to work in non-Emergency/Patient Transport Services. In addition to the areas of training identified below, employing services are free to provide additional training depending on needs.

Although reference in the ILLNESS AND INJURY SECTION is made to the IHCD Ambulance Basic Training Manual, the requirements are not exactly the same and the specific objectives are contained in the relevant elements.

A:1 ORGANISATION AND MANAGEMENT Page

A:2 NON-EMERGENCY PATIENTS.

A:3 MOVING AND LIFTING PATIENTS.

A:4 ILLNESS AND INJURY (First Aid Level) Page

B : DRIVING TRAINING PROGRAMME I

This section is intended to cover aspects of driving common to Non-emergency and Emergency situations, but essentially Non-emergency. The exception to this is a unit on skids, which can occur for PTS vehicles, more often than not carrying several patients.

Ambulance Driver training and assessment in this section must be undertaken at an IHCD approved centre where it is intended to form part of an award.

B:1 DRIVING Page

OPTIONAL

* These Units can be interchanged depending on the type of gearboxes in use by the Service.

C : ADVANCED DRIVING PROGRAMME II

Ambulance Driver training and assessment in this section must be undertaken at an IHCD approved centre.

This section is intended to follow on from the Driving Training Programme 1 (Section B) and focuses on advanced driving techniques.

C:1 ADVANCED DRIVING Page

* It is recognised that during summer months, it may not be possible to arrange tuition in night driving during a formal training course. Whilst theoretical input should occur, it is incumbent on employing Services to ensure that where this is so, ALL such students receive 'on the job' tuition in night driving by a recognised IHCD Ambulance Driving Instructor, as is current practise.

D : AMBULANCE TECHNICIAN TRAINING I

D:1 INTRODUCTION TO THE BODY Page

D:2 MOVING AND HANDLING PATIENTS

D:3 RESPIRATORY SYSTEM

D:4 CIRCULATORY SYSTEM

E : AMBULANCE TECHNICIAN TRAINING II

MOUDLE F : AMBULANCE TECHNICIAN TRAINING III

MODULE G : SYSTEMS OF THE BODY

MOUDLE H : TRAUMA MANAGEMENT AND MEDICAL CONDITIONS

MOUDLE I : PAEDIATRIC AND OBSTETRIC EMERGENCY CARE

GOOD PRACTICE GUIDES

GP1 : INDUCTION – ORGANISATION AND MANAGEMENT

A : FOUNDATION TRAINING

A:1 ORGANISATION AND MANAGEMENT

A1:1 COMMUNICATING WITH PATIENTS

The student should be able to;

Describe and demonstrate factors which improve communication with people.

Key learning points

Supporting evidence is required of the students understanding of:

* the cycle which occurs as a result of communication difficulties which increases stress
* additional ethnic factors which affect communication and may increase stress
* means of using verbal & non-verbal language to reassure and reduce stress
* methods of simplifying language to aid comprehension.

A1:2 OPERATIONAL CONTROL

The student should be able to;

Define and describe the various categories of call.

List the main functions and objectives of Ambulance Control centres.

Describe how Ambulance Service performance is measured by Control.

Key learning points

Supporting evidence is required of the students understanding of:

* scope of the emergency ambulance service
* definition and nature of emergency call and urgent calls
* standards of performance for emergency calls and urgent calls
* arrangements for dealing with major incidents
* contracts and purchasing arrangements for emergency and urgent ambulance services
* definition of the non-emergency patient transport service
* contracts and purchasing arrangements for patient transport services
* mobility of patients
* non-emergency patient categories
* arrangements for conveying escorts
* quality standards typically applied to Patient Transport Services
* national and local patient charters
* function of ambulance control
* ambulance communications systems
* how patient transport requests are received, planned and allocated and how ambulance vehicles are deployed
* importance of cooperation and teamwork between control staff and ambulance crews.

A1:3 SPECIAL JOURNEYS

The student should be able to;

Describe the considerations necessary when undertaking a long distance journey.

Key learning points

Supporting evidence is required of the students understanding of:

* types of special journey
* reasons why escorts may accompany the patient
* necessity and responsibility for specialist equipment
* information required by ambulance crews
* additional requirements if patients are travelling by train, aircraft or boat.

A:2 NON-EMERGENCY PATIENTS

A2:1 NON-EMERGENCY JOURNEYS

The student should be able to;

Prepare, plan and execute a simulated operational plan demonstrating key elements of the role of driver and attendant.

Key learning points

Supporting evidence is required of the students understanding of:

* definition and types of non-emergency journeys
* specific requirements and duties of the driver and attendant throughout the journey
* way in which a journey is planned to reduce delay and minimise travelling time
* joint responsibility of each crew member for standards of patient care provided
* need for teamwork so that comfort and safety is provided for each patient
* need for the attendant to assist in guiding the driver whilst reversing and manoeuvring the ambulance
* importance of close liaison with control at all times
* actions to take if a patient does not answer on arrival
* importance of close liaison with control at all times
* actions to take if a patient does not answer on arrival
* importance of obtaining detailed information about certain types of patients with special needs
* particular needs of some patients, why appropriate equipment should be used and any special instructions followed
* factors to consider when deciding if a patient should travel
* actions to take if a patient is unfit to travel
* importance of reporting to treatment centres any relevant information about the patient or his/her home environment (eg cold house, changes in patient condition)
* documentation associated with non-emergency journey and the importance of full and accurate record keeping.

A2:2 OUTPATIENTS

The student should be able to;

Define the term outpatient.

Discuss the factors of which he/she must be aware to enable optimum care of patients.

Key learning points

Supporting evidence is required of the students understanding of:

* the common reason for outpatient appointments
* the common behaviour patterns evident in patients or relatives
* the importance of professional behaviour to minimise antagonism
* the stress patients/relatives may feel during an outpatient appointment
* the need to maintain patient mobility as far as possible
* the importance of encouraging a patients independence
* the considerations when deciding whether the patient should be carried to/from vehicle
* the information which should be passed from crew to department
* the information required from the department to enable the crew to manage the patient most appropriately
* the facilities which social services and other agencies may be providing such patients
* after/side effects of medical procedures which may affect communication with and handling of the patient
* the need to inform control of patients who do not attend for their appointment so appropriate follow up action can be taken.

A2:3 GERIATRIC PATIENTS

The student should be able to;

List and discuss several normal changes in old age.

List and give examples of the medical conditions common in old age.

Demonstrate, in simulated situations, effective ways of handling patients with these conditions.

Discuss the common special needs associated with old age.

Key learning points

Supporting evidence is required of the students understanding of:

* the effects of ageing on brain function
* the cause and effect of dementia
* the effects of arteriosclerosis on the brains blood supply
* the frustration felt by some elderly people due to normal changes associated with ageing
* the definition of Parkinson's disease, multiple sclerosis and motor neurone disease
* the effect of rheumatoid and osteo-arthritis
* the main consequences of the medical conditions common in the elderly
* the embarrassment felt by many incontinent patients and the need for tact and understanding when dealing with it
* the increase in risk of hypothermia, its contributory factors and the importance of reporting it to treatment centres
* the common walking aids used by the elderly
* the loneliness frequently experienced by the elderly
* the Geriatric day centre (VISIT).

A2:4 AMPUTEES AND ARTIFICIAL LIMB PATIENTS

The student should be able to;

Lift, handle and communicate effectively with patients who have undergone limb amputation.

List the common indications for and levels of limb amputation.

Describe the common artificial limbs.

Discuss the special problems and needs experienced by amputees.

Key learning points

Supporting evidence is required of the students understanding of:

* the range function and limitations of the common types of prosthesis
* the discomfort felt by some patients when wearing a prosthesis
* the checks to be made to a prosthesis before moving a patient
* the action to take if a patient complains of discomfort when walking with a prosthesis
* the discomfort felt by patients in the early stages after amputation and the care required to avoid aggravating the stump
* the variety of walking aids used by amputees
* the possibility of allowing artificial limbs to nip a male patients scrotum by incorrect handling techniques
* the psychological effects of amputation experienced by some patients
* some patients reluctance to wear an artificial limb
* the effect of amputation on balance and walking
* the phenomenon of 'phantom limb'
* ways in which amputees should be encouraged to ascend and descend ambulance steps
* the artificial limb and appliance centre (VISIT).

A2:5 HANDICAPPED AND DISABLED PATIENTS

The student should be able to;

Distinguish between the terms 'handicap and disability'.

Discuss, and where appropriate, demonstrate principles of care and management of patients with handicaps and disabilities.

Key learning points

Supporting evidence is required of the students understanding of:

* the four main categories of handicap/disability
* the common causes of mental handicap
* the difference between mental handicap and mental illness
* the need to treat mentally handicapped people with the same consideration and tact as any other patient
* the cause and range of effects of cerebral palsy and autism
* the need to avoid controversial terms such as spastic and mongol
* ways of improving communication with deaf people
* methods of assisting blind people in walking and negotiating hazards
* the effects of stroke (CVA) on communication ability and ways in which these may be overcome
* the importance of recognising, where appropriate, a handicapped patients independence
* the guidelines for managing patients with handicap as a result of disease
* the need to avoid undermining a handicapped person's confidence.

A2:6 PHYSIOTHERAPY PATIENTS

The student should be able to;

State the reasons why a patients mobility is essential.

Name and state the function of the common aids used by physiotherapy patients.

In a variety of situations, identify problems in a patients mobility and demonstrate methods of overcoming these.

Key learning points

Supporting evidence is required of the students understanding of:

* the need to encourage mobility whenever possible

* the common hazards with walking aids (e.g. worn/missing rubbers)

* how each walking aid is used and the checks to be made to ensure safety

* the safest way for patients with impaired mobility to ascend and descend steps.

SECTION A:3 MOVING AND HANDLING PATIENTS

A3:1 MOVING ABD HANDLING - GENERAL PRINCIPLES

The student should be able to;

Demonstrate safe and effective patient lifting and handling skills.

Key learning points

Supporting evidence is required of the students understanding of:

* principles of moving and handling
* importance of risk assessment – Task, Individual, Load, Environment
* kinetic principles
* posture and technique you should use for lifting
* need to communicate
* need to prepare the working area, route and destination.

A3:2 CARRYING CHAIR

The student should be able to;

Demonstrate the safety checks to be made on a carrying chair.

State the circumstances which indicate use of a carrying chair.

Demonstrate safe use of the carrying chair.

Key learning points

Supporting evidence is required of the students understanding of:

* the limitations of the carrying chair
* health and safety regarding the use of restraining straps
* the need to reassure the patient and give explicit instructions
* the need to prepare the working area, route and destination
* the importance of thorough serviceability and safety checks
* why a patient should never be left unattended on the chair
* the effects of incorrect lifting on the crew and patient.

A3:3 LIFTING AIDS

The student should be able to;

Demonstrate use of the carrying sheet, poles and spreader bars.

Demonstrate use of the orthopaedic stretcher.

Key learning points

Supporting evidence is required of the students understanding of:

* the importance of safety and serviceability checks the need for co-ordination between the crew
* the circumstances indicating use of the equipment
* the importance of using security straps
* the care needed to avoid aggravating injuries or causing discomfort
* the need to minimise the distance before transfer to a conventional stretcher
* the need to remove the orthopaedic stretcher before transport to hospital.

A3:4 BLANKETS

The student should be able to;

Check a et for serviceability.

Demonstrate a variety of stretcher blanketing methods.

Demonstrate a standard blanket fold and a blanket roll.

Demonstrate the use of blanets for support, modesty and padding.

Key learning points

Supporting evidence is required of the students understanding of:

* the need for adequate blanketing of patients, particularly the elderly and those in shock
* the ways in which a et can be modified for a variety of needs.

A3:5 PATIENT POSITIONING *(except maternity)*

The student should be able to;

Describe the principles of patient positioning.

Place a patient in each of the positions used for the cots in use.

State reasons for varying the patients position.

Key learning points

Supporting evidence is required of the students understanding of:

* a patient's tendency to adopt the position which gives them most comfort
* importance of gaining the patient's cooperation when being positioned by adequate explanation
* effects of each of the eight positions recommended for specific circumstances
* need to ensure maximum safety of patients in a moving vehicle
* circumstances or changes which may necessitate a change in the patient's position
* importance of continuous patient observation.

SECTION A:4 ILLNESS AND INJURY

A4:1 PATIENT ASSESSMENT (First Aid level)

The student should be able to;

Describe the elements of each stage (survey) of the patient examination process.

Define the terms 'history', 'signs and symptoms' and provide examples of each.

State the correct sequence of assessment to detect potentially dangerous disorders early. List and give reasons for priorities of patient management.

Demonstrate techniques of examination on a variety of patients.

Report the findings of an examination to a receiving doctor or nurse in a clear, concise and logical manner.

Key learning points

Supporting evidence is required of the students understanding of:

* importance of priority of actions during assessment
* importance of obtaining accurate history
* which observations to make
* guide-lines for making observations on dark skin
* what scale of examination is necessary in a variety of situations
* significance of diagnosis and the factors involved
* appropriate action to take following assessment
* specific system observations and examinations (respiratory, circulatory, nervous) and the relevance of the findings
* importance of the safety of ambulance crew and patient's
* how to determine priorities
* need for minimum patient movement during examination and treatment
* medical terms relating to patient examination and assessment
* frequently concealed effects of trauma
* mechanism of injury and its influence on examination and diagnosis
* need to inform the receiving treatment centre of a patient's trauma

* relationship between trauma score and morbidity

* need to record observations meticulously for future reference

* value of a trauma score to a remote observer

* importance and value of clear, concise and logical reporting when handing over the patient to medical personnel

* the mechanism of injury and its influence on examination and diagnosis

* the need to inform the appropriate person (eg, Clinician, Emergency Service) of a patients condition as soon as possible and regularly update the information

* the need to record observations meticulously for future reference

* the importance and value of clear, concise and logical reporting when handing over the patient to medical personnel.

A4:2 AIRWAY MANAGEMENT AND CARDIO-PULMONARY RESUSCITATION (CPR)

The student should be able to:

Describe the signs and symptoms of airway obstruction and its consequences.

Describe how respiratory arrest may be recognised.

List the main clinical signs of cardiac arrest.

Demonstrate effective basic life support techniques for airway obstruction, respiratory and cardio-respiratory arrest.

Monitor and respond to changes in a patients cardiac and respiratory function.

Demonstrate post-arrest management techniques.

Key learning points

Supporting evidence is required of the students understanding of:

* the need for early intervention in cardio-respiratory emergencies
* the importance in summoning paramedical/medical assistance where appropriate
* the importance of using careful observation to detect deterioration in the patients condition
* the hazards of performing abdominal thrusts
* the relative efficiency of CPR compared with normal function
* the relative benefits of various ventilation techniques
* the limitations of basic life support and the benefits of adjunctive equipment
* the importance of correct chest compression technique
* the differences in technique when single and multiple rescuers are present
* the relevant anatomical and physiological differences in children and infants requiring adapted life support techniques
* the variations in technique with children and infants the necessary observations and care following successful resuscitation in the pre-hospital phase
* the importance of obtaining accurate history of the event and its relevance on potential outcome.

A4:3 UNCONSCIOUS PATIENT

The student should be able to;

List at least ten illnesses or injuries likely to cause unconsciousness.

Demonstrate the methods used in assessing the conscious level.

In simulated situations, demonstrate full examination and optimum management of unconscious patients.

Key learning points

Supporting evidence is required of the students understanding of:

* the mechanisms of various conditions causing unconsciousness
* the need for a systematic approach to priority actions as well as history taking
* correct positioning of the unconscious patient to maintain a patent airway
* the importance and method of patient monitoring and subsequent actions
* the need to deal with problems associated with the airway, breathing and haemorrhage before any further examination
* the effect of unconsciousness on the patients senses and that hearing is last to go
* the necessity to conduct and record sequential observations to assess changes in the patients condition
* the importance of methodical and comprehensive reports on unconscious patients to optimise ongoing care.

A4:4 ASPHYXIA

The student should be able to;

Describe the nature and consequences of asphyxia.

List, or in a variety of situations, indicate the cause, signs and symptoms of asphyxia.

In a variety of situations, demonstrate effective techniques for reversing asphyxia.

Key learning points

Supporting evidence is required of the students understanding of:

* the five main causes of asphyxia
* the need for an immediate response and the management of asphyxia take priority over all other disorders
* the brains oxygen requirements and that irreparable damage can occur in two to three minutes
* the possible need for supplemental oxygen therapy at a high concentration
* the risk of asphyxia in injuries to the face
* the need to ensure dentures do not cause obstruction of the airway
* the importance of positioning in maintenance of the airway
* the need to make frequent careful observation of respiratory function to prevent asphyxia.

A4:5 WOUNDS AND BLEEDING

The student should be able to;

State the definition of a wound.

List and briefly describe the five main types of wound.

Describe the appearance and/or effects of various types of bleeding.

Describe in the sequence, the body's response/reaction to uncontrolled blood loss.

Demonstrate techniques of management of external and internal bleeding.

Key learning points

Supporting evidence is required of the students understanding of:

* the types of bleeding ,their source and main complications
* blood volumes, (inc. pregnant patients) and assessment of blood loss
* the factors affecting bleeding and indications of severity
* the dangers of constriction bandages and tourniquets
* the need for aseptic procedures
* when to leave foreign bodies in situ and when to remove them
* the types of internal bleeding
* the importance of adequate examination to detect concealed bleeding
* the dangers of severe blood loss and the priorities when managing multi organ or multi system injury
* the need for early skilled medical attention in cases of uncontrolled severe bleeding
* the need for careful monitoring for evidence of recurrent bleeding
* the common medical terms associated with wounds and bleeding
* the particular characteristics required of a wound dressing
* the location of 'pressure points'.

A4:6 SHOCK

The student should be able to;

List four most common types of shock.

Describe the physiological effects of the various types of shock.

Describe the manifestations of shock in relevant body systems.

Describe, in the correct sequence, the bodies response/reaction to uncontrolled blood loss.

In simulated situations, demonstrate effective techniques for the management of shock.

Key learning points

Supporting evidence is required of the students understanding of:

* the causes of shock, relevant history as well as common signs and symptoms
* the categories of patient especially at risk of shock
* the basic pathophysiology of hypovolaemic shock
* the body's responses to illness and injury which results in shock
* the role of early recognition of actual or potential shock in limiting its effect, the nature of shock , that it is not a disease in itself and that it develops due to the body's responses to illness or trauma.

A4:7 CARDIAC CONDITIONS

The student should be able to;

List and describe the common types of cardiac illness.

Describe the history, signs and symptoms usually associated with cardiac related illnesses.

Describe or, in simulated situations, demonstrate the principles of management of acute cardiac illnesses.

Describe the various types of cardiac arrest and common causes.

Demonstrate, in simulated situations, the optimum management of cardiac arrest.

Key learning points

Supporting evidence is required of the students understanding of:

* factors and illnesses which predispose to cardiac related illnesses
* the importance of reassurance and patient confidence in the management of acute cardiac illnesses
* the aims of early treatment in cardiac emergencies
* the need to rest and oxygenate the myocardium in a pain free state
* the signs and symptoms which may indicate impending cardiac arrest
* the classic signs of cardiac arrest.

A4:8 INJURIES TO BONES, JOINTS, TENDONS AND LIGAMENTS

The student should be able to;

Define the terms 'fracture', 'dislocation', 'sprain', and 'strain'.

List the history, signs and symptoms commonly associated with each.

In simulated situations, demonstrate the treatment of these injuries using appropriate equipment and immobilisation devices.

Key learning points

Supporting evidence is required of the students understanding of:

* the potential effects of poor assessment and handling of such injuries
* the need for reassurance and patient co-operation when dealing with these injuries
* the common types of fracture and damage to organs which may result
* the common causes of injuries to bones, joints and tendons the general rules of treatment of each
* the vital need for early immobilisation of the head and neck in any case of confirmed or suspected spinal injury
* the need to minimise patient movement during treatment to reduce shock and pain
* the need for careful observation for sign of impairment to the circulation, nerves and other underlying structures
* the importance of comprehensive reporting of the circumstances and mechanism of the injury to the treatment centre to optimise ongoing care
* the benefits of a flexible approach to immobilisation and that the provision of comfortable support may be sufficient in certain cases
* methods of immobilisation using the full range of equipment issued in their service the function and operation of a traction splint (if appropriate)
* the value of allowing the patient to assist in their treatment, where appropriate
* the considerations to be made when deciding the level of initial care, e.g. other injuries, distance to treatment centre .

A4:9 IMMOBILISATION AND SUPPORT

The student should be able to;

In simulated situations, demonstrate competent use of the range of immobilisation devices issued to his/her service.

Key learning points

Supporting evidence is required of the students understanding of:

* the general rules of immobilisation and support
* when and how to correct deformities
* the need for constant post-immobilisation checks
* the value of analgesia and patient co-operation prior to immobilisation
* the checks and maintenance procedures for all immobilisation devices issued in his/her service
* the function of and the indications for each device
* the possible complications of splinting and how to avoid these
* the need to maintain immobility until a medical examination is performed.

A4:10 HEAD INJURIES

The student should be able to;

List the common types of head injury.

Describe the history, signs and symptoms commonly associated with each.

Describe the consequences and complications which may be associated with head injuries.

Demonstrate, in simulated situations, the correct principles of assessment and management of head injuries.

Key learning points

Supporting evidence is required of the students understanding of:

* the injury mechanism commonly associated with injury to the head and brain (eg, sudden deceleration)

* the vital need to assess and record information such as history, changes in physiological observations and behaviour

* the possibility of other injuries frequently associated with head trauma and which may mask signs of intracranial damage

* the danger of missing head injuries in patients smelling of alcohol

* the importance of correct patient positioning, especially the unconscious patient

* the likelihood of the patient vomiting and/or fitting at any time

* the seriousness of extradural haemorrhage, its manifestations and the correct actions in these cases

* the painful effect of bright light on some head injury patients

* the vital importance of airway management and adequate ventilation to prevent secondary brain damage through hypoxia

* the need for comprehensive reporting on arrival at hospital to optimise ongoing care

* the calculation and significance of the Glasgow Coma Scale

* the appearance and significance of visible cerebro-spinal fluid

* the presence of shock indicating other injuries.

A4:11 CHEST INJURIES

The student should be able to;

State the two main categories of chest injury.

Describe the basic pathophysiology of the common types of closed and open chest injuries described in this unit.

In simulated situations, demonstrate technique of management and treatment of a variety of chest injuries.

Key learning points

Supporting evidence is required of the students understanding of:

* the extreme seriousness of some chest injuries

* the underlying structures at risk in chest injury

* pneumothorax and its effects

* the vital importance of maintaining adequate ventilation and maximum oxygenation

* the value of correct patient positioning for drainage and comfort

* the potentially fatal consequences of tension pneumothorax and 'sucking' wounds and the action needed in these cases

* the need to involve appropriate medical assistance at an early stage in cases of severe chest injury

* hypoxia, its clinical presentation and the fact that cyanosis is a very late sign.

A4:12 BURNS AND SCALDS

The student should be able to;

Accurately assess, using conventional methods, the size of burns (serial halving).

Describe the effects of burns and the main dangers.

Demonstrate, in simulated situations, the management of a variety of burns and scalds.

Key learning points

Supporting evidence is required of the students understanding of:

* the types of burns in terms of depth of tissue damage
* the common causes of burns and characteristics of each
* the procedure for estimate burn area using serial halving
* the extent of fluid loss possible from large burns
* the need to minimise the risk of infection and shock
* the grave danger in burns affecting the airway
* acceptable methods of cooling burns
* the aims of treatment for burns
* the importance of comprehensive reporting at handover
* the need to avoid self-contamination and danger in dealing with burns.

A4:13 CEREBROVASCULAR EVENT (STROKE)

The student should be able to;

In simulated situations, demonstrate effective management of a patient with clinical signs of a stroke.

Key learning points

Supporting evidence is required of the students understanding of:

* the terms commonly applied to stroke (eg, apoplexy, C.V.E.)
* the basic pathophysiology of a stroke
* the history, clinical signs and symptoms commonly associated with a stroke
* the special difficulties experienced by stroke patients, especially in communication, mobility and anxiety
* the importance of reassurance and patience in these cases
* the vital importance, where the patient is unconscious, of effective airway management, correct positioning and oxygenation
* the importance of comprehensive reporting on arrival at the treatment centre to optimise ongoing treatment.

A4:14 EPILEPSY

The student should be able to;

Define the terms 'epilepsy', 'seizure', and 'status epileptics'.

Describe the clinical presentation of an absence and generalised tonic clonic seizure.

Demonstrate, in simulated situations, competent management of a patient suffering a seizure.

Describe the actions necessary in a case of infantile (febrile) convulsions.

Key learning points

Supporting evidence is required of the students understanding of:

* the most common known cause of epilepsy
* the two main categories of seizure
* the history clinical signs and symptoms associated with each
* the grave danger of uncontrolled status epileptics
* the possibility of injury associated with epileptic seizure
* the importance of limiting intervention during a seizure to airway management, oxygenation and prevention of injury
* the stages of a tonic clonic seizure
* the medicines commonly carried by an epileptic which may identify him/her as a sufferer
* the cause and effect of infantile convulsions
* the importance of cooling an infant following a convulsion
* the need for tact, diplomacy and understanding as a patient recovers from a major seizure.

A4:15 FAINTS

The student should be able to;

Demonstrate the management techniques for a faint.

Key learning points

Supporting evidence is required of the students understanding of:

* the causes of a faint
* the history, clinical signs and symptoms associated with faints
* the correct positioning of the patient to restore normal blood supply to the brain
* the importance of airway management for unconscious patients
* the normally brief duration of a faint and that delayed recovery could mean a more serious condition.

A4:16 DIABETES (see also Section 6:1 : Other Medical Emergencies)

The student should be able to:

Define diabetes mellitus.

In simulated situations, demonstrate techniques for assessing and managing diabetic emergencies.

Key learning points

Supporting evidence is required of the students understanding of:

* characteristics of the two main types of diabetes
* function of the pancreas and insulin
* differences between insulin and non-insulin dependant diabetes
* various methods to control diabetes
* complications most commonly associated with diabetes
* importance of a carefully controlled diet
* definition of hypo- and hyperglycaemia
* history, clinical signs and symptoms commonly associated with hypo- and hyperglycaemia
* common causes of a hypoglycaemic episode
* severe dehydration which may occur in hyperglycaemia
* normally rapid improvement in hypoglycaemic episode
* vital importance of airway management in unconscious patients
* importance in ensuring a patient recovering from hypoglycaemia is given carbohydrate to prevent recurrence
* common types of insulin regimes required
* how to manage unconsciousness in a patient with uncontrolled diabetes
* how to manage diabetic hypoglycaemic coma
* authorised dosage of glucagon for the range of patients
* drug routes used for the administration of glucagon
* ongoing care required when fully conscious.

A4:17 EXTREMES OF BODY TEMPERATURE

The student should be able to;

State the normal body temperature.

Define hypothermia.

Describe the common causes of hypothermia.

Define heat stroke and heat exhaustion.

Describe the history, signs and symptoms commonly associated with hypothermia - heat stroke - heat exhaustion.

List those categories of people most at risk from extremes of body temperature.

Describe the management principles of hypothermia, heat stroke and heat exhaustion.

Key learning points

Supporting evidence is required of the students understanding of:

* the progressive effects of continued drop in the body's core temperature
* the insidious onset in certain types of patient (eg, the elderly)
* the particular techniques for managing immersion hypothermia
* the possibility of being misled by the apparent deathly appearance of such patients
* the prolonged efforts which may be needed to resuscitate profoundly hypothermic patients
* how a thermal et should be used
* the extreme danger of heat stroke.

A4:18 POISONING

The student should be able to;

Define the term poison.

Name and list the effects of the five main types of poison.

Describe and demonstrate, in simulated situations, the techniques of management of a variety of types of poisoning.

Key learning points

Supporting evidence is required of the students understanding of:

* the four ways in which a poison may enter the body
* the need to avoid self contamination when treating a poisoned patient
* the absolute priority of ventilating patients who have stopped breathing
* the increase of toxicity of paraquat if the patient is given supplemental oxygen
* the importance of retaining vomit for analysis
* the variation of absorption rates of different substances
* the importance of establishing what substance, how much and when it was taken
* the common methods used in deliberate self poisoning
* the psychological state of patients who have deliberately poisoned themselves
* the tact, diplomacy and understanding required when dealing with self poisoning patients
* the danger of inducing vomiting by giving salt solution
* the need, in certain circumstances, to have the vehicle, equipment and crew declared free of contamination before resuming duty
* the function of a national poisons information unit and how to obtain information from one if required
* the importance of comprehensive reporting on arrival at the treatment centre to optimise ongoing treatment.

A4:19 EYE INJURIES

The student should be able to;

Describe the basic management principles for eye injuries.

Key learning points

Supporting evidence is required of the students understanding of:

* the potentially serious implications of even relatively minor eye injuries
* the need to avoid unnecessarily tampering with eye injuries
* the need to avoid contaminating an unaffected eye during irrigation
* the reason for dressing both eyes
* the significant benefits, where possible, of taking the patient directly to an eye hospital's casualty department
* the possibility of displacement of contact lenses
* the need to obtain a sample of a chemical causing eye injury wherever possible.

B : DRIVING TRAINING PROGRAMME I

B:1 DRIVING

B1:1 AMBULANCE DRIVING AND THE HIGHWAY CODE (including Road Traffic law)

The student should be able to;

Describe the importance of the Highway Code to drivers of the ambulance service.

Drive in accordance with the Highway Code in various situations encountered.

State the basic responsibility of the ambulance service.

Identify a selection of road traffic signs.

Explain the duties of the driver in the conveyance of patients.

Drive an ambulance with consideration for the condition, comfort and safety of the patient.

State what exemptions from normal traffic regulations ambulance vehicles have on an emergency.

Key learning points

Supporting evidence is required of the students understanding of:

* the Highway Code and how to apply it
* the service's responsibility for patient conveyance
* how the patients condition governs a journey
* the drivers responsibilities
* how the drivers responsibilities should be carried out during a journey
* why complete concentration and careful driving are so vital
* the importance of smooth use of gears and foot controls, (co-ordination).
* compliance with Road Traffic Regulations and the Highway Code
* what is meant by the term 'exemption' and how it affects ambulance drivers.

B1:2 VEHICLE DAILY INSPECTION

The student should be able to;

Demonstrate a vehicle daily inspection.

Demonstrate a drivers daily cab inspection.

Key learning points

Supporting evidence is required of the students understanding of:

* the items to check daily
* the reasons for carrying out a vehicle daily inspection
* the checklist for the drivers cab
* the reasons for a cockpit drill.

B1:3 DRIVING PLANS AND THE SYSTEM OF VEHICLE CONTROL

The student should be able to;

Describe the basis of a driving plan.

Make and carry out driving decisions, without hesitation, in a methodical manner.

Discuss the importance of observation.

Whilst driving give a basic commentary to demonstrate observation and assessment of road signs and hazards.

Describe and demonstrate the three main features of the revised system of vehicle control (position, speed and gear).

Key learning points

Supporting evidence is required of the students understanding of:

* what is meant by a 'driving plan'
* what is meant by 'concentration'
* why some drivers fail to make a driving plan
* what factors are taken into consideration when formulating a driving plan
* why observation is important
* how to link observation to potential hazards
* that you should consider every possibility, including mistakes by other drivers
* why recognition and observance of road markings and road traffic signs are important.
* why the system of Vehicle Control was devised
* the three main features of the revised system
* their correct sequence
* why you should follow them closely
* the term "Hazard" and the three main types
* applying the modified "system" when making manoeuvres
* early commencement of the system.

B1:4 ACCELERATION

The student should be able to;

Demonstrate good acceleration technique.

Demonstrate the procedures to achieve the highest standards of acceleration.

Answer a number of relevant questions.

Key learning points

Supporting evidence is required of the students understanding of:

* the meaning of 'acceleration sense'
* why good forward observation is important
* how the characteristics of a vehicle affects its acceleration
* the definition of ''acceleration sense''
* how to maintain speed on a curve
* the road conditions which need extra thought when accelerating
* how to make use of 'engine braking'
* the correct way to move off in an automatic vehicle.

B1:5 BRAKING

The student should be able to;

Skilfully apply the brakes to achieve optimum patient care .

Demonstrate good braking techniques for smoothness and patient comfort.

Answer a number of relevant questions.

Key learning points

Supporting evidence is required of the students understanding of:

* the rules of braking
* why using brakes skilfully is important
* when to slow down by easing pressure on the accelerator
* when you need to use the brake pedal
* what 'three pressure tapering braking' is and how to apply it
* the factors you need to take into consideration, whatever method of slowing down you use.

B1:6 STEERING

The student should be able to;

Demonstrate the correct way to hold and turn the steering wheel.

Using the steering technique to steer a vehicle through a set obstacle course using both forward and reverse gears.

Answer a number of relevant questions.

Key learning points

Supporting evidence is required of the students understanding of:

* the correct way to hold and manipulate the steering wheel
* the reasons for doing things this way
* the rules for steering
* the factors taken into consideration to give optimum control.

B1:7 REVERSING

The student should be able to;

Describe the principles for safe reversing.

Describe the areas where reversing is dangerous.

Reverse and manoeuvre a vehicle through a set obstacle course.

Key learning points

Supporting evidence is required of the students understanding of:

* when and why many accidents happen with ambulances
* the safe procedure for reversing an ambulance
* the importance of correct positioning of the vehicle at the start of the manoeuvre
* the importance of setting driving mirrors
* the tighter the manoeuvre the slower the speed.

B1:8 MANUAL GEARBOX

The student should be able to;

Demonstrate good gear changing and discuss why it is important.

Discuss the main principles of good gear changing.

Key learning points

Supporting evidence is required of the students understanding of:

* why the use of the gears is such an important driving skill
* the aspects of driving which lead to effective use of a manual gearbox
* the importance of knowing when and how to change gear
* what your aims should be in your use of the gears
* the importance of co-ordination between clutch and accelerator.

B1:9 SKIDS

The student should be able to;

State the definition of skids.

Describe the factors to minimise the risk of skidding.

Answer a number of relevant questions and on a skid training facility, recognise and correct the three types of skids.

Key learning points

Supporting evidence is required of the students understanding of:

* what a skid is and what features of the tyres may be involved
* what driving actions cause a skid
* the road conditions which can present skid hazards
* how to drive to avoid skids
* where counteracting skids can be practised
* what cadence braking is.

B1:10 AUTOMATIC GEARBOX *(optional)*

The student should be able to;

List the two types of automatic gearboxes used in ambulance vehicles.

Demonstrate the principles for safe and smooth use.

State how to avoid bad habits and faults.

Demonstrate selection and use of the various gears.

Key learning points

Supporting evidence is required of the students understanding of:

* the types of automatic gearboxes used in the ambulance service
* the various positions for each gearbox and how to engage them
* the correct sequence for starting and normal driving with the gearbox
* when it is acceptable to select I or L
* factors to bear in mind when starting an automatic transmission vehicle
* why you should never park in P without applying the handbrake as well
* what kickdown is and at which speeds you would use it
* the common driving faults to avoid.

C : ADVANCED DRIVING PROGRAMME II

C:1 EMERGENCY DRIVING

C1:1 ROAD TRAFFIC LAW

The student should be able to;

State what exemptions from normal traffic regulations ambulance vehicles have on an emergency.

State when and how these exemptions can be used.

Describe the procedure if you have an accident.

Discuss the guidelines on legal matters involving accidents.

Drive in compliance with the current Road Traffic Law.

Key learning points

Supporting evidence is required of the students understanding of:

* compliance with Road Traffic Regulations and the Highway Code
* what is meant by the term 'exemption' and how it affects ambulance drivers
* lighting regulations as applied to an ambulance
* the rules about seat-belts
* construction and use as applied to an ambulance
* what actions to take if involved in a road traffic accident
* who owns your ambulance and what effect that has on insurance
* what to do if you are prosecuted for a motoring offence
* how 'standard of care' and 'negligence' are defined in civil law.

C1:2 THE SYSTEM OF VEHICLE CONTROL

The student should be able to;

Describe and demonstrate the six features of vehicle control.

Key learning points

Supporting evidence is required of the students understanding of:

* why the system of Vehicle Control was devised
* the six features of the system
* their correct sequence
* why you should follow them closely
* the importance of using the latest edition of Roadcraft
* the term "Hazard" and the three main types
* applying the "system" when making manoeuvres
* early commencement of the system.

C1:3 SPEED AND SAFETY

The student should be able to;

State the principles affecting how speed is experienced.

Describe the guidelines for choosing the appropriate speed.

Drive at a safe speed for any situation encountered.

Key learning points

Supporting evidence is required of the students understanding of:

* the conditions which determine the speed at which a vehicle should be driven
* why concentration and adaptability are vital
* the dangers of incorrect use of speed
* why observation is important
* how to estimate speed
* the importance of weather and road conditions
* the importance of being safe on the road at all times.

C1:4 POSITIONING

The student should be able to;

Demonstrate the principles of correct positioning of the vehicle according to traffic conditions.

State the techniques and factors to be considered when positioning the vehicle on the road.

Key learning points

Supporting evidence is required of the students understanding of:

* how to position the vehicle safely according to traffic conditions
* why forward vision is important
* the importance of assessing a potential hazard correctly
* how to position the vehicle safely when approaching a nearside junction
* the margins to be allowed between their vehicle and the vehicle in front and what factors effect that margin.

C1:5 CORNERS AND BENDS

The student should be able to;

Demonstrate, explain the importance of good corner and bend management.

Describe the basic techniques for achieving excellence.

Key learning points

Supporting evidence is required of the students understanding of:

* the principles of cornering
* why cornering correctly is important to the patient
* the safety factors when cornering
* about the forces affecting the vehicle and its passengers
* how vehicle condition affects cornering
* how road conditions affect vehicle stability when cornering
* how to approach a corner or turn.

C1:6 OVERTAKING

The student should be able to;

Demonstrate the correct overtaking procedure.

Answer a number of relevant questions.

Key learning points

Supporting evidence is required of the students understanding of:

* why overtaking with an ambulance poses special problems
* occasions when a driver MUST NOT overtake
* the guidelines for overtaking safely
* occasions when it is permissible to overtake on the left
* why patience and erring on the side of safety are important
* the rules of overtaking.

C1:7 SKIDS

The student should be able to;

State the definition of skids.

Describe the factors to minimise the risk of skidding.

Answer a number of relevant questions and on a skid training facility, recognise and correct the three types of skids.

Key learning points

Supporting evidence is required of the students understanding of:

* what a skid is and what features of the tyres may be involved
* what driving actions cause a skid
* the road conditions which can present skid hazards
* how to drive to avoid skids
* where counteracting skids can be practised
* what cadence braking is.

C1:8 NIGHT DRIVING

The student should be able to;

State the special demands night driving brings.

Describe the procedures and techniques for safe night driving.

Drive during the hours of darkness.

Key learning points

Supporting evidence is required of the students understanding of:

* what preparations to make before starting a driving duty at night
* what you must check on your vehicle before driving at night
* what you must remember about your field of vision at night
* the causes of variations in available light at night and how you can help yourself cope with them
* how to cope with dazzling headlights on other vehicles
* how to deal with fatigue when you are driving at night.

C1:9 MOTORWAY DRIVING

The student should be able to;

List the three types of motorway.

Describe the dangers of motorway driving.

State what procedures you must follow when motorway driving.

Discuss the various warning systems and what they mean.

Drive on a motorway making safe progress, having regard to the high speeds encountered.

Key learning points

Supporting evidence is required of the students understanding of:

* the purpose of motorways
* the classes of road vehicles not allowed on motorways
* the types of features of motorways found in the UK
* how to join and leave a motorway safely
* how to change lanes and overtake safely
* what to do in fog
* how to recognise and use emergency cross-over points
* the precautions to take on elevated sections and bridges
* motorway signs/signals and their meanings
* what to do if your vehicle breaks down
* overtaking procedures on motorways.

D : AMBULANCE TECHNICIAN TRAINING I

SECTION D:1 INTRODUCTION TO THE BODY

D1:1 ANATOMY AND PHYSIOLOGY

The student should be able to;

Briefly describe the structure of cells and body tissues.

Define common anatomical terms listed in this unit.

List and locate body cavities and the major structures contained in each.

Key learning points

Supporting evidence is required of the students understanding of:

* the cells structure and tissues of the body
* the meaning of the basic anatomical terms
* the meaning of directional terms
* the components and boundaries of the body's cavities.

SECTION D:2 MOVING AND HANDLING PATIENTS

D2:1 GENERAL PRINCIPLES OF MOVING AND HANDLING

The student should be able to;

Demonstrate safe and effective patient moving and handling skills.

Key learning points

Supporting evidence is required of the students understanding of:

* principles of moving and handling
* importance of risk assessment – Task, Individual, Load, Environment
* kinetic principles
* posture and technique you should use for moving patients
* need to communicate
* need to prepare the working area, route and destination.

D2:2 CARRY CHAIR

The student should be able to;

Demonstrate the safety checks to be made of a carrying chair.

State the circumstances which indicate use of a carrying chair.

Demonstrate safe use of the carrying chair.

Key learning points

Supporting evidence is required of the students understanding of:

* the limitations of the carrying chair
* health and safety regarding the use of restraining straps
* the need to reassure the patient and give explicit instructions
* the need to prepare the working area, route and destination
* the importance of thorough serviceability and safety checks
* why a patient should never be left unattended on the chair
* the effects of incorrect lifting on the crew and patient.

D2:3 CARRY SHEETS / ORTHOPAEDIC STRETCHERS

The student should be able to;

Demonstrate use of the carrying sheet, poles and spreader bars.

Demonstrate safe and correct use of the orthopaedic stretcher.

Key learning points

Supporting evidence is required of the students understanding of:

* the importance of safety and serviceability checks and the need for co-ordination between the crew
* the circumstances indicating use of the equipment
* the importance of using security straps
* the care needed to avoid aggravating injuries or causing discomfort
* the need to minimise the distance before transfer to a conventional stretcher
* the need to remove the orthopaedic stretcher before transport to hospital.

D2:4 PATIENT POSITIONING

The student should be able to;

Describe the principles of patient positioning.

Place a patient in each of the positions used.

State reasons for varying the patients position.

Key learning points

Supporting evidence is required of the students understanding of:

* a patients tendency to adopt the position which gives them most comfort
* the importance of gaining the patients co-operation when being positioned by adequate explanation
* the effects of each of the eight positions recommended for specific circumstances
* the need to ensure maximum safety of patients in a moving vehicle
* the circumstances or changes which may necessitate a change in the patients position
* the importance of continuous patient observation.

D2:5 MULTI-POSTURE COT

The student should be able to;

Demonstrate the care, maintenance and operational checks of appropriate multi-posture cots.

Demonstrate the techniques for their use.

Key learning points

Supporting evidence is required of the students understanding of:

* the features of relevant cots and the effects of each
* the safest method of loading the cot into a vehicle
* how to secure the cot for a journey to allow observation/care
* the importance of safety and serviceability checks as well as cleanliness of the equipment.

D2:6 RESCUE STRETCHERS

The student should be able to;

Demonstrate the care, maintenance and use of appropriate rescue stretchers.

Key learning points

Supporting evidence is required of the students understanding of:

* the characteristics of relevant rescue stretchers
* the circumstances indicating use of a rescue stretcher
* the importance of safety and serviceability checks
* the importance of reassuring the patient.

D2:7 PARAGUARD STRETCHER

The student should be able to;

Demonstrate effective use of the paraguard stretcher for moving patients in both horozintally and vertically.

Key learning points

Supporting evidence is required of the students understanding of:

* correct procedure for assembling and disassembling the stretcher
* correct methods for securing patients to the stretcher for both horizontal and vertical moving of patients
* methods use to clean the stretcher

D2:8 LIGHT RESCUE

The student should be able to;

Describe situations which necessitate light rescue procedures.

Demonstrate effective use of a variety of light rescue equipment.

Key learning points

Supporting evidence is required of the students understanding of:

* the role and responsibilities of each emergency service with regard to rescue and where these may overlap
* the situations where it is appropriate for ambulance staff to attempt rescue
* the importance of considering all factors involved before attempting light rescue
* the responsibilities of ambulance staff for decisions on treatment and advising other services
* the paramount importance of the safety and survival of the patient
* the need for continual monitoring of the patient during rescue
* the importance of not taking risks with the patients life or one's own
* the importance of the need to co-operate with and inform other services.

SECTION D:3 THE RESPIRATORY SYSTEM

D3:1 ANATOMY AND PHYSIOLOGY

The student should be able to;

Describe the composition of inspired and expired air.

State and briefly describe the principle functions of the respiratory system.

Locate, name and describe the structure and function of the major parts.

Describe the mechanism of respiration and how it is controlled.

Define the common terms relating to respiration.

Key learning points

Supporting evidence is required of the students understanding of:

* the essential role of oxygen in maintaining life
* the mechanism of gaseous exchange during internal and external respiration
* the normal range of breathing rates of adults and children
* the common causes of altered breathing rates
* the relationship between the respiratory and circulatory systems
* the effects of hypoxia, hypercarbia dyspnoea and apnoea.

D3:2 CHEST INJURIES

The student should be able to;

State the two main categories of chest injury.

Describe the basic pathophysiology of the common types of closed and open chest injuries described in this unit.

In simulated situations, demonstrate techniques of management and treatment of a variety of chest injuries.

Key learning points

Supporting evidence is required of the students understanding of:

* the extreme seriousness of some chest injuries

* the underlying structures at risk in chest injury

* pneumothorax and its effects

* the vital importance of maintaining adequate ventilation and maximum oxygenation

* the value of correct patient positioning for drainage and comfort

* the potentially fatal consequences of tension pneumothorax and 'sucking' wounds and the action needed in these cases

* the need to involve appropriate medical assistance at an early stage in cases of severe chest injury

* hypoxia, its clinical presentation and the fact that cyanosis is a very late sign.

D3:3 CHEST DISEASES AND THE USE OF SALBUTAMOL

The student should be able to;

Describe the common diseases affecting the respiratory system.

List the history, signs and symptoms commonly associated with these diseases.

Describe and demonstrate, in simulated situations, the principles of care of a variety of chest diseases.

List the three main common types of chronic obstructive airway disease.

Discuss alveolar disease and describe the most common signs and symptoms of this condition.

Describe what factors can interfere with the normal mechanism of breathing.

Describe the indications for the administration of broncho dilating agents via a nebuliser.

Prepare a nebuliser and associated equipment to deliver the prescribed dose of the broncho dilating agent.

State the possible side effects of the agent to be given and the necessary action if any should occur.

Key learning points

Supporting evidence is required of the students understanding of:

* the mechanism of gas exchange at the alveoli
* the difference between acute and chronic chest disease
* the two main ways in which chest disease causes hypoxia
* the basic pathophysiology of bronchitis-emphysema-asthma
* hypoxia, its effects and the hypoxic stimulus (drive)
* the need for caution in the use of oxygen in acute bronchitis
* the potential for cardiac arrest in cases of pulmonary embolism
* the potentially serious nature of asthma and that its severity must not be underestimated
* the causes of respiratory distress and how to recognise it
* the factors that can effect the mechanics of breathing
* the management of upper airway obstruction and respiratory arrest

* the dangers of a tension pneumothorax
* the importance of constant observation and reassurance
* the complications oxygen therapy can bring
* the way in which a nebuliser works
* the flow rate required when a nebuliser is driven by oxygen
* the contra indications of the prescribed broncho dilator
* the authorised dosage of the agent for a range of patients
* the signs of successful nebulisation therapy
* how to help the patient obtain maximum benefit from therapy
* ways in which the fear of the mask experienced by some patients may be overcome (e.g. using a mouthpiece)
* in-line nebulisation using bag/valve/mask with suitable nebuliser attachment

D3:4 DROWNING

(JRCALC References : TR 9)

The student should be able to;

Describe the physiology of drowning.

List the five main types of drowning.

Describe the basic complications that can occur from drowning.

In simulated situations, demonstrate technique of management of drowning.

Key learning points

Supporting evidence is required of the students understanding of:

* the difference between drowning and near drowning
* the difference between salt water and freshwater drowning
* how secondary drowning occurs
* how prolonged immersion can effect the body when it is removed from the water
* the management checklist to assist in the treatment
* the importance of personal safety

D3:5 RESPIRATORY ARREST

The student should be able to;

State the four most common effects of respiratory arrest.

State the five causes and signs of respiratory arrest.

Describe the means by which air passages can become obstructed, including:

* physical
* chest or lung trauma
* nervous/muscles
* non-oxygen atmospheres
* disease and illness.

Describe the signs/symptoms of respiratory arrest.

Demonstrate the techniques of airway management of respiratory arrest.

Key learning points;

Supporting evidence is required of the students understanding of:

* the need for immediate response to respiratory arrest effect
* the effect of lack of oxygen on the Brain
* the additional risks involved with maxillo-facial Injuries
* the need for supplemental oxygen therapy at high levels
* the importance of positioning and observation of the patients respiratory function to prevent respiratory arrest.

SECTION D:4 THE CIRCULATORY SYSTEM

D4:1 ANATOMY AND PHYSIOLOGY

The student should be able to;

Define the term blood pressure.

Describe the structures and functions of the circulatory system.

Locate, name and describe the structures and function of the major parts.

Describe the basic structure and function of the blood.

Define the term 'pulse' and accurately measure and record it.

Define the terms tachycardia and bradycardia

Locate the spleen and describe its structure and function.

Key learning points

Supporting evidence is required of the students understanding of:

* the difference between the five types of blood vessel
* the factors affecting venous return to the heart
* the three divisions of the circulatory system: systemic, portal and pulmonary
* the normal blood volume of adults and children
* the normal range of heart rate of adults and children
* the factors to be noted when palpating the pulse and the significance of each
* the blood clotting process
* the difference between systolic, diastolic and pulse pressure.

D4:2 CARDIAC CONDITIONS

The student should be able to;

List and describe the common types of cardiac illness.

Describe the history, signs and symptoms usually associated with cardiac related illnesses.

Describe or, in simulated situations, demonstrate the principles of management of acute cardiac illnesses.

Describe the various types of cardiac arrest and common causes.

Demonstrate, in simulated situations, the optimum management of cardiac arrest.

Key learning points

Supporting evidence is required of the students understanding of:

* factors and illnesses which predispose to cardiac related illnesses
* importance of reassurance and patient confidence in the management of acute cardiac illnesses
* the aims of early treatment in cardiac emergencies
* the need to rest and oxygenate the myocardium in a pain free state
* the signs and symptoms which may indicate impending cardiac arrest
* the classic signs of cardiac arrest
* the precautions to be taken during defibrillation.

D4:3 CARDIAC MONITORING

The student should be able to;

Assist in positioning the patient on a firm surface ready for cardiac monitoring/defibrillation.

Correctly position the electrodes and leads as directed and an interpretable ECG is obtained.

Avoid inflicting any unnecessary injury/discomfort to the patient.

Maintain the dignity and wishes of the patient at all times.

Seek any clarification of instructions and pass on any wishes of the patient to the practitioner/rescuer immediately.

Key learning points

Supporting evidence is required of the students understanding of:

* the importance of following directions and notifying the practitioner/rescuer of any changes in the patients condition
* principles of patient sensitivity
* equipment types, use and application
* the importance of patient consent.

D4:4 SHOCK

The student should be able to;

List the five most common types of shock.

Describe the physiological effects of the various types of shock.

Describe the manifestations of shock in relevant body systems.

Describe, in the correct sequence, the body's response/reaction to uncontrolled blood loss.

In simulated situations, demonstrate effective techniques for the management of shock.

Key learning points

Supporting evidence is required of the students understanding of:

* the causes of shock , relevant history as well as common signs and symptoms
* the categories of patient especially at risk of shock
* the basic pathophysiology of hypovolaemic shock
* the body's responses to illness and injury which results in shock
* the role of early recognition of actual or potential shock in limiting its effect the nature of shock, that it is not a disease in itself and that it develops due to body's responses to illness or trauma.

D4:5 DEFINITION, SIGNIFICANCE AND MEASUREMENT OF BLOOD PRESSURE

The student should be able to;

Define the term 'blood pressure' - 'hypertension' -'hypotension', and their significance.

List the factors which are involved in maintaining the blood pressure within normal limits.

Describe, in simple terms, how a sphygmomanometer works in measuring blood pressure.

State the average blood pressure: elderly - adults - children - infants.

Give examples of factors which increase and decrease blood pressure and the mechanism of each.

Define 'postural hypotension' and state how this can be avoided.

Accurately measure and record a patients blood pressure.

Key learning points

Supporting evidence is required of the students understanding of:

* the physiological factors which cause alterations of blood pressure
* the acute and chronic dangers of hypo- and hypertension
* the effect of hypotension on cerebral perfusion
* the relationship between hypotension and clinical shock
* describe changes which occur normally in old age which reduce the control of blood pressure
* the functions of the nervous and circulatory systems in maintaining blood pressure
* compensation mechanism which occurs within the body to maintain blood pressure following injury or disease.

D4:6 FAINTS

The student should be able to;

Demonstrate the management techniques for a faint.

Key learning points

Supporting evidence is required of the students understanding of:

* the causes of a faint
* the history, clinical signs and symptoms associated with faints
* the correct positioning of the patient to restore normal blood supply to the brain
* the importance of airway management for unconscious patients
* the normally brief duration of a faint and that delayed recovery could mean a more serious condition.

SECTION D:5 CARDIAC MONITORING

D5:1 DEFIBRILLATION AND CARDIAC MONITORING

The student should be able to:

Explain the role of the Automated External Defibrillator in relation to pre-hospital care.
State the clinical signs and be able to recognise and respond to cardio-pulmonary arrest.

Demonstrate and explain the operation of the Automated External Defibrillator in use within his/her service.

State the aftercare necessary for a patient successfully defibrillated.

Demonstrate the use of the Automated External Defibrillator in conjunction with Cardio-pulmonary Resuscitation.

Assist in positioning the patient on a firm surface ready for cardiac monitoring/defibrillation.

Correctly position the electrodes and leads as directed and ensure an interpretable ECG is obtained.

Avoid inflicting any unnecessary injury/discomfort to the patient.

Select and prepare the required equipment ready for use as directed.

Adhere to defibrillation safety procedures.

Maintain the dignity and wishes of the patient at all times.

Seek any clarification of instructions and pass on any wishes of the patient to the practitioner/rescuer immediately.

Key learning points

Supporting evidence is required of the students understanding of:

* the assessment of cardiac rhythms
* the shockable rhythms - ventricular fibrillation (VF), ventricular tachycardia (VT)
* the non-shockable rhythms – pulseless electrical activity (PEA), sinus rhythm or asystole
* the precautions to be taken during defibrillation
* the controls, indicators and associated equipment related to the Automated External Defibrillator
* automated external defibrillation procedures
* the importance of following directions and notifying the practitioner/rescuer of any changes in the patients condition
* safety requirements for defibrillation
* principles of patient sensitivity
* equipment types, use and application.

SECTION D:6 AIRWAY MANAGEMENT AND RESUSCITATION

D6:1 AIRWAY MANAGEMENT AND CARDIO-PULMONARY RESUSCITATION (CPR)

The student should be able to;

Describe the signs and symptoms of airway obstruction and its consequences.

Manage the choking patient

Describe how respiratory arrest may be recognised.

List the main clinical signs of cardiac arrest.

Demonstrate effective basic life support techniques for airway obstruction, respiratory and cardio-respiratory arrest.

Monitor and respond to changes in a patients cardiac and respiratory function.

Demonstrate post-arrest management techniques.

Key learning points

Supporting evidence is required of the students understanding of:

* the need for early intervention in cardio-respiratory emergencies
* the importance in summoning paramedical/medical assistance where appropriate
* the importance of using careful observation to detect deterioration in the patients condition
* the hazards of performing abdominal thrusts
* the relative efficiency of CPR compared with normal function
* the relative benefits of various ventilation techniques
* the limitations of basic life support and the benefits of adjunctive equipment
* the importance of correct chest compression technique
* the differences in technique when single and multiple rescuers are present
* the relevant anatomical and physiological differences in children and infants requiring adapted life support techniques
* the variations in technique with children and infants, the necessary observations and care following successful resuscitation in the pre-hospital phase
* the importance of obtaining accurate history of the event and its relevance on potential outcome.

D6:2 ORO-PHARYNGEAL / NASOPHARYNGEAL AIRWAYS AND RESUSCITATION EQUIPMENT

The student should be able to;

Describe the purpose of oro-pharyngeal / Nasopharyngeal airways.

Demonstrate correct measurement and insertion techniques.

Describe indications and contra indications for O.P. and NP airways.

Name and describe the function of relevant manual mechanical resuscitators.

Demonstrate effective use of resuscitation equipment.

Demonstrate the care and maintenance procedures for relevant resuscitation equipment.

Key learning points

Supporting evidence is required of the students understanding of:

* the importance of oro-pharyngeal and NP airways and their use with unconscious patients
* the importance of checking adequate ventilation occurs when using resuscitators
* the need to clear the airway before using airway adjuncts
* the correct sizing technique for O.P. and NP airways and the hazards of using an incorrect size
* how to keep the lumen clear by means of suction
* the need to remove blood and secretions from the airway
* disassembly, reassembly and trouble shooting of resuscitation equipment
* the way each resuscitator works
* the features of a face mask
* the anaesthetist grip
* the importance of careful cleaning and maintenance to ensure serviceability
* the importance of observing safety regulations which apply to oxygen equipment
* the need for high concentrations of supplemental oxygen during resuscitation
* the dangers of making makeshift repairs to resuscitators.

D6:3 OXYGEN THERAPY

The student should be able to;

Deliver oxygen therapy, at appropriate concentrations, using equipment issued in his/her service.

Perform appropriate operational checks and maintenance procedures on oxygen equipment issued in his/her service.

Key learning points

Supporting evidence is required of the students understanding of:

* the size and colour coding of various oxygen cylinders, the volume and pressure of standard oxygen cylinders, the effects of oxygen in the presence of fire, the fitting and operation of relevant oxygen delivery devices

* how various oxygen concentrations are achieved using the equipment issued in his/her service

* how the running time of a cylinder may be calculated

* how certain (decanting) cylinders may be recharged (if issued by his/her service)

* the clinical presentation of hypoxia and its effects

* the fact that cyanosis is a late sign of hypoxia and in some cases is absent

* illnesses and injuries indicating oxygen administration

* the effects of long term administration of oxygen to neonates

* the drying effects of oxygen given over prolonged periods

* the potential hazards of high concentrations of oxygen in chronic obstructive pulmonary diseases

* the importance of comprehensive reporting of oxygen therapy on arrival at the treatment centre.

D6:4 ENTONOX

The student should be able to;

Describe the nature and properties of Entonox.

Demonstrate correct administration procedure.

Perform prescribed care and maintenance procedures relevant to his/her service.

Key learning points

Supporting evidence is required of the students understanding of:

* the physiological response to pain
* the definition of analgesia
* the indications and contra indications for Entonox and the rules for its administration
* the continuing necessity for careful handling where Entonox is administered
* how to instruct a patient in self administration and monitor its effect
* the advantages and disadvantages of Entonox compared to other forms of analgesia
* the benefits of the high percentage of oxygen in Entonox
* the need to report the use of Entonox on arrival at the treatment centre
* the rules for storage of gas cylinders
* the function of the component parts of the Entonox delivery set
* the dangers of Entonox in a fire risk situation
* the effects of low temperatures on Entonox and the necessary actions
* the possible result of using oils or grease on Entonox equipment.

D6:5 SUCTION EQUIPMENT

The student should be able to;

Demonstrate effective airway aspiration on an appropriate manikin using equipment issued in his/her service.

Perform appropriate operational checks and maintenance procedures on suction equipment issued in his/her service.

Key learning points

Supporting evidence is required of the students understanding of:

* the indications for airway aspiration
* the potential dangers if suction is not used where indicated
* the damage which may be caused to tissues by excessive suction
* when to use soft and hard angled catheters
* how to measure a soft catheter prior to insertion
* methods of clearing a blocked catheter
* how to aspirate an oro-pharyngeal airway
* the need to dispose of used catheters
* running/charging times of electrically/gas powered aspirators
* how to use a baby mucous extractor
* the need to reduce suction pressure for children.

SECTION D:7 EXAMINATION AND ASSESSMENT

D7:1 CONSCIOUS PATIENTS

The student should be able to:

Describe the elements of each stage (survey) of the patient examination process.

Define the terms 'history', 'signs and symptoms' and provide examples of each.

State the correct sequence of assessment to detect potentially dangerous disorders early.

List and give reasons for priorities of patient management.

Demonstrate techniques of examination on a variety of patients.

During an examination, accurately calculate the Glasgow Coma Scale.

Report the findings of an examination to a receiving doctor or nurse in a clear, concise and logical manner.

Define the term 'trauma score' and 'revised trauma score'.

Describe the relevant aspects of the origins and development of modern trauma care.

List the factors necessary to calculate a trauma score.

List the three factors included in the calculation of revised trauma score.

State the purpose of trauma score.

State the highest score and the score indicating an actual or potentially serious state.

Key learning points

Supporting evidence is required of the students understanding of:

* the importance of priority of actions during assessment
* the importance of obtaining accurate history
* which observations to make
* the guide-lines for making observations on dark skin
* what scale of examination is necessary in a variety of situations
* the significance of diagnosis and the factors involved
* the appropriate action to take following assessment
* the specific system observations and examinations (respiratory, circulatory, nervous) and the relevance of the findings
* the importance of the safety of ambulance crew and patients
* how to determine priorities
* the need for minimum patient movement during examination and treatment
* the medical terms relating to patient examination and assessment
* the frequently concealed effects of trauma
* the mechanism of injury and its influence on examination and diagnosis
* the need to inform the receiving treatment centre of a patients trauma score as soon as possible and regularly update the information
* the relationship between trauma score and morbidity
* the need to record observations meticulously for future reference
* the value of a trauma score to a remote observer
* the importance and value of clear, concise and logical reporting when handing over the patient to medical personnel.

D7:2 UNCONSCIOUS PATIENT

The student should be able to;

List at least ten illnesses or injuries likely to cause unconsciousness.

Demonstrate the methods used in assessing the conscious level.

In simulated situations, demonstrate full examination and optimum management of unconscious patients.

Key learning points

Supporting evidence is required of the students understanding of:

* the mechanisms of various conditions causing unconsciousness
* the need for a systematic approach to priority actions as well as history taking
* correct positioning of the unconscious patient to maintain a patent airway
* the importance and method of patient monitoring and subsequent actions
* the need to deal with problems associated with the airway, breathing and haemorrhage before any further examination
* the effect of unconsciousness on the patients senses and that hearing is last to go
* the necessity to conduct and record sequential observations to assess changes in the patients condition
* the importance of methodical and comprehensive reports on unconscious patients to optimise ongoing care.

SECTION D:8 ASSISTING THE PARAMEDIC

D8:1 FLUID ADMINISTRATION

The student should be able to;

Select the required fluid, as directed, and make the safety checks during handover to medical/paramedic personnel.

Select a fluid within the expiry date, free from solids and with the integrity of the packaging intact.

Select and prepare ready for use, fluid and any ancillary administration equipment as directed (including the changing of fluid containers).

Select cannulation adjuncts, checking and prepare for use as directed.

Reassure the patient, as far as possible, and explain the intended actions.

Adhere to the safety procedures for sharps at all times during cannulation and fluid administration.

Key learning points

Supporting evidence is required of the students understanding of:

* types of fluid container and procedures for preparation
* safety checks for fluid administration and sharps procedures
* preparation procedure for cannulation site
* infusion preparation procedure
* documentation procedures
* the need for patient sensitivity
* precautions when changing fluid containers.

D8:2 DRUG ADMINISTRATION

The student should be able to;

Select the required drug amount and strength/dilution as directed and ensure safety checks are made during handover to the medical/paramedic personnel.

Prepare ready for use, as directed, any drug, and any ancillary administration equipment.

Select, as directed, the appropriate drug administration equipment and ensure safety checks made during handover to the medical/paramedic personnel.

Prepare, as directed, a suitable site on the patient for drug administration.

Keep the patient fully informed as to what is going to happen and reassured as far as possible.

Adhere to the procedures for safety of sharps at all times during drug administration.

Key learning points

Supporting evidence is required of the students understanding of:

* the importance of following directions and notifying the practitioner/rescuer of any changes in the patients condition

* drug presentations available

* safety checks for drug presentations and procedures

* documentation procedures

* legal responsibilities with reference to the Prescription Only Medicines Act and Patient Group Directions.

D8:3 AIRWAY MANAGEMENT/INTUBATION

The student should be able to;

Clear the airway of any obstructions and maintain adequate oxygenation as directed.

Select and prepare the required equipment for intubation as directed.

Monitor the patients airway continually and any changes notified to the rescuer/practitioner immediately.

Assist in the manipulation of the larynx where necessary.

Assist in the positioning or the repositioning of patients where necessary.

Monitor the patient continually and notify any obvious changes to the practitioner/rescuer immediately.

Seek any clarification of instructions and pass on any wishes of the patient to the practitioner/rescuer immediately.

Secure an endotracheal tube.

Key learning points

Supporting evidence is required of the students understanding of:

* the importance of following directions and notifying the practitioner/rescuer of any changes in the patients condition

* equipment available, use and application.

SECTION D:9 INFANTS AND CHILDREN

D9:1 INFANTS AND CHILDREN

The student should be able to;

Describe, or demonstrate, methods of overcoming problems of dealing with sick children.

Knowledgably discuss relevant aspects of Sudden Infant Death Syndrome (S.I.D.S.).

Key learning points

Supporting evidence is required of the students understanding of:

* ways of reducing a childs fear of the crew and of going to a hospital
* the importance of being honest with a child
* the importance of taking parents to the hospital wherever possible, or finding out how they can be contacted
* why size is an important factor in assessing a childs condition
* the clinical presentation of S.I.D.S
* the importance of caring and tactful management of parents in a case of S.I.D.S. in easing their burden
* the psychological manifestations which may occur in such parents in the future
* the fact that there may be other children in the home to be taken care of
- the effects of stress sometimes apparent in ambulance staff following an incident involving a sick or dead child and what actions to take in these circumstances.

D9:2 CHILD ABUSE

The student should be able to;

Knowledgably discuss the role of the ambulance crew in cases of suspected or confirmed child abuse or non-accidental injury.

Key learning points

Supporting evidence is required of the students understanding of:

* the varying types of abuse to which children may be subjected

* the signs which may indicate the possibility of non-accidental injury (N.A.I.)

* the need for great tact and care when N.A.I. or abuse is suspected

* the correct attitude to adopt if abuse is suspected

* the importance of obtaining as much information as possible about the history and nature of injuries

* observing a childs reaction and responses when approached by adults, particularly its parents

* the fact that a child may be conditioned into giving the same account of an incident as its parents

* not allowing personal feelings to interfere with the correct procedures

* the importance of reporting any suspicions of abuse to appropriate agencies.

E : AMBULANCE TECHNICIAN TRAINING II

E:1 THE NERVOUS SYSTEM

E1:1 ANATOMY AND PHYSIOLOGY

The student should be able to;

State the principle functions of the central nervous system.

Name the components of the nervous system.

Describe the function of the brain, spinal cord and peripheral nerves.

Name and describe the function of the two autonomic nervous systems.

Describe clinical signs indicating altered levels of consciousness.

Key learning points

Supporting evidence is required of the students understanding of:

* the unique characteristics of nervous tissue
* the functions of the meninges and cerebro-spinal fluid
* the relationship of the nervous system with other systems of the body
* the short and long-term implications of spinal cord injury
* the importance of observing and reporting alterations in conscious level.

E:2 NERVOUS DISORDERS

E2:1 EPILEPSY

The student should be able to;

Define the terms 'epilepsy', 'seizure', and 'status epilepticus'.

Describe the clinical presentation of absence ('petit mal') and generalised tonic clonic seizure ('grand mal' seizure).

Demonstrate, in simulated situation, competent management of a patient with a typical tonic clonic seizure.

Describe the actions necessary in a case of infantile (febrile) convulsions.

Key learning points

Supporting evidence is required of the students understanding of:

* the most common known cause of epilepsy
* the main types of epilepsy (absences; tonic clonic seizures)
* the history, clinical signs and symptoms associated with each
* the grave danger of controlled status epilepticus
* the possibility of injury associated with epileptics
* the importance of limiting intervention during a seizure to airway management, oxygenation and prevention of injury
* the medicines commonly carried by an epileptic which may identify him/her as a sufferer
* * the cause and effect of infantile convulsions
* the role of paracetamol in the febrile child
* the importance of cooling an infant following a convulsion
* the need for tact, diplomacy and understanding as a patient recovers from a major seizure
* the importance of taking blood-glucose measurement and subsequent treatment if indicated

Related skills and use of equipment

- glucometry
- use of thermometer

E2:2 CEREBROVASCULAR EVENTS (STROKE)

The student should be able to;

In simulated situations, demonstrative effective management of a patient with clinical signs of a stroke.

Key learning points

Supporting evidence is required of the students understanding of:

* the terms commonly applied to stroke (eg apoplexy, C.V.A.)

* the basic pathophysiology of a stroke

* the history, clinical signs and symptoms commonly associated with a stroke

* the special difficulties experienced by stroke patients, especially in communication, mobility and anxiety

* the importance of reassurance and patience in these cases

* the vital importance, where the patient is unconscious, of effective airway management, correct positioning and oxygenation

* the importance of comprehensive reporting on arrival at the treatment centre to optimise ongoing treatment.

E:3 SKELETAL SYSTEM

E3:1 ANATOMY AND PHYSIOLOGY

The student should be able to;

Describe the main functions of the human skeleton.

Draw a diagram of a typical bone indicating basic anatomical structures.

List and give examples of the five classifications of bone.

On a skeleton or diagram, locate and name various bones (or bone groups).

List and describe examples of various types of joint.

Define and state the function of ligaments.

Key learning points

Supporting evidence is required of the students understanding of:

* the purpose and components of the thoracic cage
* the potential for damage to underlying organs where injuries to bones occur
* the relationship of the skeletal system with other systems, in particular, the muscular, nervous and cardiovascular .

E:4 MUSCULOSKELETAL TRAUMA

E4:1 INJURIES TO BONES, JOINTS, TENDONS AND LIGAMENTS

The student should be able to;

Define the terms 'fracture', 'dislocation', 'sprain', and 'strain'.

List the history, signs and symptoms commonly associated with each.

Key learning points

Supporting evidence is required of the students understanding of:

* the potential effects of poor assessment and handling of such injuries
* the need for reassurance and patient co-operation when dealing with these injuries
* the common types of fracture and damage to organs which may result
* the common causes of injuries to bones, joints and tendons the general rules of treatment of each
* the vital need for early immobilisation of the head and neck in any case of confirmed or suspected spinal injury
* the need to minimise patient movement during treatment to reduce shock and pain
* the need for careful observation for signs of impairment to the circulation, nerves and other underlying structures
* the importance of comprehensive reporting of the circumstances and mechanism of the injury to the treatment centre to optimise ongoing care
* the benefits of a flexible approach to immobilisation and that the provision of comfortable support may be sufficient in certain cases
* methods of immobilisation using the full range of equipment issued in their service, the function and operation of a traction splint
* the value of allowing the patient to assist in their treatment, where appropriate
* the considerations to be made when deciding the level of initial care, e.g. other injuries, distance to treatment centre .

E4:2 INJURIES TO PELVIS AND SPINE

The student should be able to;

List several possible causes of injury to the pelvis, neck and spine.

Demonstrate the 'log roll' method of manipulating a patient for examination and treatment.

In simulated situations, demonstrate competent management of such injuries utilising, where appropriate, the range of equipment issued by his/her service.

Key learning points

Supporting evidence is required of the students understanding of:

* the potentially serious hazards of inadequate assessment and handling of such injuries
* the organs likely to be damaged by trauma of the pelvis and spine
* the history, signs and symptoms commonly associated with such injuries
* the simple test which can be carried out to assess the current degree of nervous system impairment
* the possibility that spinal injury may be masked by other injuries
* the need for early cervical immobilisation in any case of suspected spinal injury
* the general rules of treatment for these injuries
* the need to avoid rotary or angulating strain to the spine
* the vital need for careful handling and support to prevent further damage
* in suspected pelvic injuries , the need to warn the patient not to attempt to pass urine
* the catastrophic internal bleeding possibly associated with pelvic injury, including the dangers of 'springing' the pelvis.

E4:3 IMMOBILISATION AND SUPPORT

The student should be able to;

In simulated situations, demonstrate competent use of the range of immobilisation devices issued to his/her service.

Key learning points

Supporting evidence is required of the students understanding of:

* The general rules of immobilisation and support
* when and how to correct deformities
* the need for constant post-immobilisation checks
* the value of analgesia and patient co-operation prior to immobilisation
* the checks and maintenance procedures for all immobilisation devices issued in his/her service
* the function of and the indications for each device
* the possible complications of splinting and how to avoid these
* the need to maintain immobility until a medical examination is performed.

E4:4 HEAD INJURIES

The student should be able to;

List the common types of head injury.

Describe the history, signs and symptoms commonly associated with each.

Describe the consequences and complications which may be associated with head injuries.

Demonstrate, in simulated situations, the correct principles of assessment and management of head injuries.

Key learning points

Supporting evidence is required of the students understanding of:

* the injury mechanism commonly associated with injury to the head and brain (eg, sudden deceleration)

* the vital need to assess and record information such as history, changes in physiological observations and behaviour

* the possibility of other injuries frequently associated with head trauma and which may mask signs of intracranial damage

* the danger of missing head injuries in patients smelling of alcohol

* the importance of correct patient positioning, especially the unconscious patient

* the likelihood of the patient vomiting and/or fitting at any time

* the seriousness of extradural haemorrhage, its manifestations and the correct actions in these cases

* the painful effect of bright light on some head injury patients

* the vital importance of airway management and adequate ventilation to prevent secondary brain damage through hypoxia

* the need for comprehensive reporting on arrival at hospital to optimise ongoing care

* the calculation and significance of the Glasgow Coma Scale

* the appearance and significance of visible cerebro-spinal fluid

* the presence of shock indicating other injuries.

E4:5 MAXILLO-FACIAL INJURIES

The student should be able to;

In simulated situations, demonstrate effective assessment and management of maxillo - facial injuries.

Key learning points

Supporting evidence is required of the students understanding of:

* the special problems associated with such injuries
* the difficulties in applying conventional methods of resuscitation
* the vital importance of patient positioning for airway drainage
* the almost certain association of other head injuries
* the importance of discouraging the patient from talking unnecessarily
* the importance of taking teeth, dentures, bone fragments, etc, to hospital with the patient
* the nature of leakage of cerebro-spinal fluid in such injuries
* the possibility of re-implantation of teeth in children and young adults
* the use and application of suction for patients with maxillo-facial injuries.

E4:6 REMOVAL OF CRASH HELMET

The student should be able to;

Demonstrate, with assistance, the removal of a variety of crash helmets whilst maintaining manual in-line immobilisation of the head and neck.

Key learning points

Supporting evidence is required of the students understanding of:

* the need to involve another skilled helper
* the importance of maintaining in-line immobilisation at all times during the procedure
* the possibility of cervical and head injury aggravation by rough handling
* what to do if the patient is wearing spectacles
* the particular problems associated with removal of full-face helmets.

SECTION E:5 WOUNDS AND BLEEDING

E5:1 WOUNDS AND BLEEDING

The student should be able to;

State the definition of a wound.

List and briefly describe the five main types of wound.

Describe the appearance and/or effects of various types of bleeding.

Describe in the sequence, the body's response/reaction to uncontrolled blood loss.

Demonstrate techniques of management of external and internal bleeding.

Key learning points

Supporting evidence is required of the students understanding of:

* the types of bleeding ,their source and main complications
* blood volumes, (inc. pregnant patients) and assessment of blood loss
* the factors affecting bleeding and indications of severity
* the dangers of constriction bandages and tourniquets
* the need for aseptic procedures
* when to leave foreign bodies in situ and when to remove them
* the types of internal bleeding
* the importance of adequate examination to detect concealed bleeding
* the dangers of severe blood loss and the priorities when managing multi organ or multi system injury
* the need for early skilled medical attention in cases of uncontrolled severe bleeding
* the need for careful monitoring for evidence of recurrent bleeding
* the common medical terms associated with wounds and bleeding
* the particular characteristics required of a wound dressing
* the location of 'pressure points'.

E5:2 BURNS AND SCALDS

(JRCALC Reference : TR8 & 10)

The student should be able to;

Assess extent of burns using serial halving

State the types of burn (scald, chemical, fire etc)

Describe the effects of burns and time critical features

Demonstrate, in simulated situations, the management of a variety of burns and scalds.

Key learning points

Supporting evidence is required of the students understanding of:

* the types of burns in terms of depth of tissue damage
* the common causes of burns and characteristics of each
* the area of burn considered time critical in adults/children
* the use of serial halving to estimate burn area
* the extent of fluid loss possible from large burns
* the need to minimise the risk of infection and shock
* the grave danger in burns affecting the airway
* acceptable methods of cooling burns
* the aims of treatment for burns
* the importance of comprehensive reporting on arrival at the treatment centre to optimise ongoing care
* the need to avoid self-contamination and danger in dealing with burns.

E5:3 EYE INJURIES

The student should be able to;

Describe the basic management principles for eye injuries.

Key learning points

Supporting evidence is required of the students understanding of:

* the potentially serious implications of even relatively minor eye injuries
* the need to avoid unnecessarily tampering with eye injuries
* the need to avoid contaminating an unaffected eye during irrigation
* the reason for dressing both eyes
* the significant benefits, where possible, of taking the patient directly to an eye hospital's casualty department
* the possibility of displacement of contact lenses
* the significant benefits, where possible, of taking the patient directly to an eye hospital

E5:4 MANAGEMENT OF TRAUMA

The student should be able to;

Describe the principles for managing trauma

Key learning points

Supporting evidence is required of the student's understanding of:

* the need to adopt a systematic approach in the assessment and management of trauma
* the relationship between the mechanism of injury and injury severity
* how to determine mechanism of injury from evidence at the scene and information from the patient and witnesses
* the importance of an early primary survey in identifying potentially serious problems with the airway, breathing, circulatory and nervous systems
* the need to minimise delays at scene with patients who have been subjected to significant forces whether or not they have detectable injuries
* the physiological indicators of shock severity
* how the secondary survey must be appropriate to the circumstances to avoid delays in transferring the patient to a centre for definitive care
* the medical assistance which may be available to attend at the scene and the criteria and procedure for requesting medical support
* the use of the Triage Revised Trauma Score (TRTS) as an indicator of current physiological status
* how to calculate the TRTS from given physiological variables
* local criteria for direct transfer to a specialist trauma centre or hospital department
* the importance of providing the hospital with advanced information on a severe trauma patient's condition prior to arrival to enable preparations to be made
* the vital importance of effective handover of the patient at hospital with a full report and supporting documentation

E:6 INFECTION CONTROL

E6:1 DISEASE INFORMATION

The student should be able to;

List and briefly describe basic characteristics of various types of biological agent

Describe the ways in which disease organisms are transmitted

Define terms commonly used in association with communicable diseases

Use available information on communicable diseases to determine the mode of transmission and the level of infection control precautions necessary

Define infestation and describe the three types of ectoparasite common in the UK

List the blood-borne viruses prevalent in the UK and discuss the risks they pose to healthcare workers

Discuss the nature of methicillin resistant staphylococcus aureus (MRSA) and how infected patients should be managed by ambulance services

Key learning points

Supporting evidence is required of the student's understanding of:

* the characteristics of the following pathogenic agents:
  - bacteria - viruses - pathogenic fungi
  - protozoa - worms - arthropods

* how infectious diseases are passed between individuals

* portals of exit and entry associated with cross-infection

* what is a carrier and some important diseases carriers may spread

* the definition of the following terms:

contacts	endemic	epidemic	fromite	immunity
incubation period	pandemic	quarantine	sporadic	vector

* the characteristics of fleas, lice and scabies infestation and the level of risk of infestation to ambulance staff at work

* the risks to ambulance staff and other healthcare workers from blood-borne viruses

* the ways in which blood-borne viruses are transmitted

* the basic pathology of HIV and AIDS

* the difference between being HIV positive and having AIDS

* the general principles of management of HIV positive and AIDS patients.

* the importance of patient confidentiality for HIV positive and AIDS patients
* the problems posed by MRSA in the hospital setting
* the low level of risk to ambulance staff from MRSA
* when patients with MRSA should be conveyed on their own
* the precautions necessary to prevent the spread of MRSA by ambulance staff

E6:2 PROTECTION FROM INFECTION AND UNIVERSAL PRECAUTIONS

The student should be able to;

Explain the rationale of Universal Precautions and discuss their features in detail

Describe the action to be taken by ambulance staff if they suffer an inoculation injury

Discuss post exposure prophylaxis and the criteria for its administration to ambulance staff

Describe and demonstrate the procedures for the safe handling and disposal of sharps

Discuss how immunisation is an effective infection control factor for ambulance staff

Describe the procedures for disposing of clinical waste

Describe ways of protecting uniform from contact with infective material and local uniform cleaning requirements

Key learning points

Supporting evidence is required of the student's understanding of:

* each element of Universal Precautions
* the importance of handwashing and hand disinfection in preventing the spread of infection
* the procedure for effective handwashing and hand disinfection
* the importance of protecting cracks and lesions on the hands with appropriate dressings
* the hazards posed to ambulance staff by spillages of blood and body fluids
* the procedure and equipment used for cleaning spillages of blood and body fluids
* the risks from chlorine releasing agents if used in confined areas or on large urine spills
* definitions of cleaning, disinfection and sterilisation
* the importance of effective cleaning before disinfection or sterilisation
* the benefits of single-use equipment in reducing cross-infection risks
* the risks from percutaneous and mucocutaneous inoculation injury
* ways in which the risk of inoculation injury can be reduced
* the procedure to be adopted following inoculation injury
* what is post exposure prophylaxis and when it would be administered
  techniques for safe use and disposal of sharps
* the importance of immunisation in reducing risk of infection and for which diseases immunisation is available
* the role of staff Occupational Health Departments in providing advice and immunisation
* the procedures for handling and disposing of clinical waste and contaminated ambulance linen
* the use of aprons in protecting uniform from contact with infective material
* how uniform should be cleaned to neutralise or destroy biological agents

E6:3 CATEGORY III INFECTION CONTROL

The student should be able to;

List the diseases requiring Category III infection control measures

Describe (and where appropriate, demonstrate) procedures for a Category III transfer

Key learning points

Supporting evidence is required of the student's understanding of:

* the infectious diseases which require Category III precautions
* the hazards to healthcare workers associated with Category III diseases
* the relative rarity of cases of Category III diseases in the UK
* the line of authority and responsibility for decisions regarding Category III transfers
* the authority of the Consultant in charge of the High Security Infectious Disease Unit (HSIDU) in determining mode of transfer
* the role of the duty (or escorting) officer, each member of the ambulance crew and Ambulance Control in a Category III transfer
* the preparations necessary for vehicle and crew prior to transfer
* the procedures involved in collecting a patient for transfer
* the role of the ambulance driver and the need for him/her to avoid patient contact
* the need for the crew to remain in the vehicle throughout the journey other than in an emergency
* the need to provide appropriate patient care during the transfer whilst avoiding unnecessary patient contact
* the need to avoid direct oral ventilation if resuscitation is necessary
* the procedure for patient handover on arrival at hospital or HSIDU
* the personal and vehicle decontamination procedures and equipment
* ongoing medical surveillance of the crew following a Category III transfer
* the criteria and procedure for isolator transfers
* the need to report any inoculation injuries immediately
* the importance of effective communication between hospital, ambulance control, crew and escorting officer

F : AMBULANCE TECHNICIAN TRAINING III

F:1 THE DIGESTIVE SYSTEM

F1:1 ANATOMY AND PHYSIOLOGY

The student should be able to;

List the major structures within the abdominal and pelvic cavity.

Describe the principle functions of the digestive system.

Locate, name and describe the structure and function of the major parts of the digestive system.

Briefly describe the digestive process.

Locate name and state the function of the renal organs.

Locate, name and state the function of the internal male and female reproductive organs.

Key learning points

Supporting evidence is required of the students understanding of:

* the purpose of the epiglottis and peritoneum
* the meaning of peristalsis
* the relationship between the digestive and the circulatory, respiratory and renal systems
* the effects of sudden stimulus of the sympathetic nervous system due to acute illness or injury on the digestive system.

F:2 DIABETES AND THE USE OF GLUCAGON

F2:1 DIABETES AND THE USE OF GLUCAGON

The student should be able to;

Describe the two main types of diabetes.

In simulated situations, demonstrate techniques for assessing and the correct management of diabetic emergencies, including diabetic coma.

Discuss common types of drugs to maintain homeostasis.

Describe the indications for the use of glucagon.

Prepare an injection ready to deliver the prescribed dose of glucagon.

Discuss the procedure for the administration of glucagon.

Describe the normal range of blood glucose levels, and the significance of variations to these

Key learning points

Supporting evidence is required of the students understanding of:

* the characteristics of the two main types of diabetes
* the function of the pancreas and insulin
* the differences between insulin and non insulin dependant diabetes
* the various methods to control diabetes
* the complications most commonly associated with diabetes
* the importance of a carefully controlled diet
* the definition of hypo and hyperglycaemia
* history, clinical signs and symptoms commonly associated with hypo and hyperglycaemia
* the common causes of a hypoglycaemic episode
* the severe dehydration which may occur in hyperglycaemia
* the normally rapid improvement in hypoglycaemia following treatment
* the vital importance of airway management in unconscious patients
* the importance in ensuring a patient recovering from hypoglycaemia is given carbohydrate to prevent recurrence
* the common types of insulin regimes required
* how to manage unconsciousness in a patient with uncontrolled diabetes
* how to manage diabetic hypoglycaemic coma
* the authorised dosage of glucagon for the range of patients
* the drug routes used for the administration of glucagon
* the ongoing care required when fully conscious.

F:3 LAW AND AMBULANCE STAFF

F3:1 LAW AND AMBULANCE STAFF

The student should be able to;

Discuss the main points of law which affect ambulance staff and their implications for his/her work.

Key learning points

Supporting evidence is required of the students understanding of:

* the meaning of ' duty of care ' and the importance of not exceeding the scope of training
* how to deal with confidential information about patients
* how to deal with patients personal property
* what constitutes a ' dying declaration ' and when it has legal implications
* the legal right to make a forcible entry into private premises and the guidelines for doing so
* the procedure (authorised by his/her service) when a patient refuses to accept ambulance aid
* when a patient may be searched for identification, etc. and the precautions to be taken.

F3:2 SUSPECTED DEATH AND MANAGEMENT OF BODIES

The student should be able to;

List the signs of death.

State the procedure following a suspected death in a public place or in the home.

Describe the procedure when admitting a dead patient to a mortuary.

Key learning points

Supporting evidence is required of the students understanding of:

* who is legally authorised to certify death
* what is meant by 'continuity of evidence'
* the role of the coroner and the 'coroners officer'
* when and why the police should be requested at a death and what should be done to help them
* the need for sympathy, tactful care and understanding of relatives
* what to do if ethnic customs conflict with standard procedure
* the stress felt by some ambulance staff after dealing with a death and counselling or other facilities available to him/her.

F3:3 VIOLENT PATIENTS

The student should be able to;

List several causes of aggression from patients.

Describe and where appropriate, demonstrate, techniques for managing violent patients in a variety of situations.

Key learning points

Supporting evidence is required of the students understanding of:

* the fact that a person refusing to go to hospital is not being violent
* the legal implications of forcibly removing a patient from home unless a section of the Mental Health Act applies
* the value of police assistance in cases where violence may occur
* the need for only minimum force to control a patient
* ways in which a violent patient may be calmed
* general guidelines for dealing with a violent patient
* the serious danger in impeding the patients respiration during restraint
* the information to include in a report of a violent incident.

F3:4 MENTAL ILLNESSES

The student should be able to;

State the two main reasons for ambulance involvement with patients suffering from mental illness.

Describe the most common clinical manifestations of neuroses and psychoses.

List and briefly describe the four forms of treatment for mental illness.

Describe, in detail, the admission and transport procedure in accordance with the Mental Health Act 1983.

Key learning points

Supporting evidence is required of the students understanding of:

* the encouragement, reassurance and help to be given to mentally ill patients
* the aims and implications of the policy of care in the community
* the estimated scale of mental illness
* the meaning of terms such as anxiety, depression, obsession and illness treatment
* the role of an approved social worker
* the requirements of sections 2,3,4,131,135 & 136 of the Mental Health Act (1983)
* the difficulties sometimes associated with a patient who is being admitted under a 'section'.

F:4 MAJOR INCIDENTS

F4:1 MAJOR INCIDENTS

The student should be able to;

Define the term 'major incident' and state the factors to be considered before one is declared.

Describe the role of the first crew to arrive at the scene of a major incident.

State the information which should be included in the first and second radio reports from the scene using the ETHANE format.

Using labels supplied by his/her service, correctly label a number of simulated casualties.

Discuss relevant aspects of the major incident procedure agreed by his/her service and other relevant agencies.

Key learning points

Supporting evidence is required of the students understanding of:

* the differences in the role of first driver and first attendant on scene
* the correct procedure for subsequent ambulance crews
* the five key officer posts
* how to identify various key officers and other personnel
* why strict adherence to instructions and service major incident procedures is essential
* the infinitely variable types of incident.

F4:2 HAZARDOUS SUBSTANCES

The student should be able to;

Briefly describe the nature of chemical, radioactive and biological substances.

Outline the legal requirements of manufacturers who store or transport hazardous substances.

Describe the type of information found in each 'panel' of a UKHIS label and an ADR label.

State the actions to be taken when attending an incident involving hazardous substances.

Key learning points

Supporting evidence is required of the students understanding of:

* the legislation governing the transport and labelling of hazardous substances
* what a 'Hazchem' label shows
* where hazard warning signs are used and what they indicate
* what 'tremcards' are and the information they give
* when and why to seek help from a tanker driver
* what the 'Chemsafe' procedure is
* the aims of the control of Industrial Major Accident Hazard regulations
* the responsibilities of the Ambulance Service in such incidents
* the importance of decontamination of casualties and emergency personnel.

F4:3 CIVIL DISTURBANCES

The student should be able to;

Knowledgeably discuss relevant ambulance service procedures for civil disturbances.

Key learning points

Supporting evidence is required of the students understanding of:

* the fundamental role of the ambulance service during civil disturbances
* the importance of neutrality and the obligations of professional and moral codes of conduct
* the need for protective clothing and the items commonly supplied for this type of incident
* the three main types of civil disorder
* the arrangements for casualties
* the need to remove casualties to a safe area before treatment
* procedure for dealing with the media
* the local arrangements in their service area.

F:5 POISONING

F5:1 POISONING

The student should be able to;

Define the term poison.

Name and list the effects of the five main types of poison.

Describe and demonstrate, in simulated situations, the techniques of management of a variety of types of poisoning.

Key learning points

Supporting evidence is required of the students understanding of:

* the four ways in which a poison may enter the body
* the need to avoid self contamination when treating a poisoned patient
* the absolute priority of ventilating patients who have stopped breathing
* the increase of toxicity of paraquat if the patient is given supplemental oxygen
* the importance of retaining vomit for analysis
* the variation of absorbtion rates of different substances
* the importance of establishing what substance, how much and when it was taken
* the common methods used in deliberate self poisoning
* the psychological state of patients who have deliberately poisoned themselves
* the tact, diplomacy and understanding required when dealing with self poisoning patients
* the danger of inducing vomiting by giving salt solution
* the need, in certain circumstances, to have the vehicle, equipment and crew declared free of contamination before resuming duty
* the function of a national poisons information unit and how to obtain information from one if required
* the importance of comprehensive reporting on arrival at the treatment centre to optimise ongoing treatment.

F5:2 SOLVENT ABUSE

The student should be able to;

Describe the types of person most likely to abuse solvents and the favoured locations for abuse.

List the common products most frequently used for abuse.

Describe the signs and symptoms which may indicate solvent abuse.

List the major hazards to health likely as a result of abuse.

Describe, or demonstrate the techniques of management of a patient suffering the effects of solvent abuse.

Key learning points

Supporting evidence is required of the students understanding of:

* how to recognise the various common methods of inhalation

* the importance, where abuse is suspected, of checking for evidence (eg, polythene bags, containers, etc.)

* the effects on important body organs and systems of abuse

* the danger of hypoxia and the need for oxygen therapy in severe cases

* the possibility of airway obstruction associated with unconsciousness

* the possibility of solvent abuse patients becoming violent or displaying other abnormal behavioural changes.

F:6 EXTREMES OF BODY TEMPERATURE

F6:1 EXTREMES OF BODY TEMPERATURE

The student should be able to;

State the normal body temperature.

Define hypothermia.

Describe the common causes of hypothermia.

Define heat stroke and heat exhaustion.

Describe the history, signs and symptoms commonly associated with hypothermia - heat stroke - heat exhaustion.

List those categories of people most at risk from extremes of body temperature.

Describe the management principles of hypothermia, heat stroke and heat exhaustion.

Key learning points

Supporting evidence is required of the students understanding of:

* the progressive effects of continued drop in the body's core temperature
* the insidious onset in certain types of patient (eg, the elderly)
* the particular techniques for managing immersion hypothermia
* the possibility of being misled by the apparent deathly appearance of such patients
* the prolonged efforts which may be needed to resuscitate profoundly hypothermic patients
* how a thermal blanket should be used
* the extreme danger of heat stroke
* the possibility of hypoglycaemia in hypothermic patients and need to treat accordingly

F:7 MATERNITY

F7:1 MATERNITY

The student should be able to;

Briefly describe the three stages of labour.

Describe the management techniques for normal and abnormal cases.

Describe the complications and management of relevant dangers of pregnancy and labour.

Key learning points

Supporting evidence is required of the students understanding of:

* what happens during each stage of labour
* the considerations when deciding whether to transport a patient in labour
* the actions necessary when assisting a normal birth
* the guidelines for the specific situations covered by this unit
* the altered blood volume of a pregnant patient and the significant asymptomatic blood loss which can occur
* how to manage haemorrhage during pregnancy
* how to manage umbilical cord emergencies
* how to manage haemorrhage after birth
* what is meant by 'eclampsia', its clinical presentation and management
* the management principles for a breech delivery
* the importance of ensuring and maintaining a clear airway in a newborn child
* all aspects of the maternity checklist
* the local resources available in obstetric emergencies (eg, EDOS 'flying squad')
* the indications for summoning a maternity 'flying squad' or midwife
* the difficulties and drawbacks of delivery in an ambulance
* the need to keep a neonate warm
* the procedure for severing an umbilical cord.

F7:2 PREMATURE BABIES AND INCUBATORS

The student should be able to;

Define the term 'premature' when applied to a baby.

Describe relevant aspects of Ambulance management of a premature baby during transport.

State the functions of an incubator.

Describe, or demonstrate, the checks to be made of an incubator prior to transportation.

Key learning points

Supporting evidence is required of the students understanding of:

* the particular problems and needs of premature babies
* the fact that trained medical and/or nursing personnel will normally accompany the crew
* the special physical and health characteristics of premature babies
* (where relevant) the type of incubator used in his/her service and how to operate it
* the importance of bringing the incubator up to the correct temperature before use
* the special importance of strict hygiene procedures.

F:8 HAEMODIALYSIS

F8:1 HAEMODIALYSIS

The student should be able to;

Briefly describe the purpose of haemodialysis.

List the potential problems a patient may experience during home dialysis and which may require Ambulance Service attendance.

Describe the process of continuous ambulatory peritoneal dialysis.

Describe, or demonstrate, the process of removal of a patient from a home dialysis machine.

Describe the procedure to be followed if a C.A.P.D. patient develops medical problems during dialysis.

Key learning points

Supporting evidence is required of the students understanding of:

* what an arteria-venous fistula is

* who, besides the patient, is trained to operate a home-dialysis machine

* how to deal with hypotension

* the procedure for : leaking fistula
trained relative or patient taken ill during home dialysis

* the cause of serum hepatitis

* the precautions to avoid contracting serum hepatitis

* the need for strict hygiene procedures

F:9 ACUTE ABDOMINAL PROBLEMS

F9:1 ACUTE ABDOMINAL PROBLEMS

The student should be able to;

State the cause of abdominal pain.

Carry out a physical assessment of abdominal pain, including history take.

State the considerations in the management of a patient with acute abdominal problems.

Key learning points

Supporting evidence is required of the students understanding of:

* organ systems involved when considering non-traumatic abdominal problems
* importance of history taking
* physical assessment
* causes of abdominal pain
* management of the patient with abdominal pain.

PARAMEDIC TRAINING

MODULE G:1 RESPIRATORY SYSTEM

G1.1 STRUCTURE OF THE RESPIRATORY SYSTEM

The student should be able to:

list and describe the anatomy of the facial bones

describe the location, structure and function of the three sections of the pharynx
- naso-pharynx
- oro-pharynx
- laryngo-pharynx

describe in detail the location, structure and function of the larynx; trachea and bronchi

describe in detail the structure, function and location of :
- the lungs, lobes and fissures
- visceral and parietal pleura

differentiate between the bronchial and pulmonary circulation

describe briefly the function of the lymphatic system in relation to the lung tissue

Underpinning knowledge and key learning points

- location, structure and function of sinuses; adenoids, tonsils, eustachian tubes
- describe the structure of the upper airway
- number of cartilaginous rings in the trachea; describe in detail the carina
- trachea, carina, primary and secondary bronchi, terminal / respiratory bronchioles; alveolar ducts and alveoli sacs
- potential space, serous fluid
- circulatory function of the bronchial and pulmonary system

Related skills and use of equipment

G1.2 MECHANISM OF THE RESPIRATORY SYSTEM

The student should be able to:

describe the nervous and chemical control of respiration including hypoxic drive and the role of CO_2

describe the mechanics of respiration

describe the significance of volumetric lung capacities in relation to pulmonary volumes

Underpinning knowledge and key learning points

- partial pressures in relation to the respiratory gases
- diffusion gradients
- tidal, reserve and residual volumes
- inspiratory and expiratory reserve volumes
- inspiratory capacity, vital capacity and functional residual capacity
- describe the location, structure and function of :
  - apneustic and pneumotaxic centre
  - medullary rhymicity centre
  - chemo – receptors; aortic and carotid bodies

Related skills and use of equipment

- use and interpretation of pulse oximetry equipment
- use and interpretation of end tidal CO2 equipment (qualitative and quantitative)

G1.3 NORMAL / ABNORMAL CONDITIONS OF THE RESPIRATORY SYSTEM

The student should be able to:

recognise and manage the following medical conditions

- acute respiratory obstruction
- asthma
- chronic obstructive airway disease
- pneumonia
- pulmonary embolism
- pulmonary oedema
- OTHER : drug effects
  CVA etc

Underpinning knowledge and key learning points

- anatomy and physiology of the respiratory system
- respiratory depressant effects to include opiates, benzodiazepines and others
- hypoxia / hypercapnea / hypoventilation / hyperventilation
- aetiology of the above
- time critical features of respiratory conditions

Related skills and use of equipment

- assessment and evaluation of respiratory function
- airway management with supportive oxygen therapy
- nebulisation therapy
- related drug therapy
- IV cannulation
- Intermittent positive pressure ventilators

G1.4 TREATMENT / MANAGEMENT OF CONDITIONS OF THE RESPIRATORY SYSTEM

(JRCALC References : MED A1, A3, T2, T4, T12, T13)

The student should be able to:

describe in detail the application of oxygen therapy in the following procedures:
- treatment of medical conditions
- treatment of trauma

describe in detail nebulisation therapy in relation to:
- acute asthmatic attack
- left ventricular failure
- smoke inhalation

describe in detail the indications, equipment, procedures and complications of endotracheal intubation

describe in detail the indications, equipment, procedures and complications for inserting a laryngeal mask

describe in detail the indications, equipment, procedures and complications of mechanical ventilation (IPPV)

describe in detail the procedure for respiratory assessment of rate; rhythm; volume; visualise for symmetry; auscultate; palpate; percussion

describe the indications and correct procedure for crycothyroidotomy

describe the indications and correct procedure for needle thoracocentesis

describe the management of severe respiratory depression/respiratory arrest, including related drug therapy as per JRCALC National Clinical Guidelines (DRUGS 18 &19)

Underpinning knowledge and key learning points

- anatomical landmarks and difficulties in the use of airway adjuncts
- consideration of hypoxic drive and hypoxia
- indications / contra-indications and the risk of equipment above
- knowledge of the function and use of equipment
- drug doses in relation to nebulisation and oxygen therapy
- other complications
- anatomical landmarks and difficulties in performing crycothyroidotomy
- abnormal lung sounds
- drug administration in relation to life threatening asthma (DRUGS 1, 12, 19 & 21)
- drug administration in relation to pulmonary oedema secondary to LVF (DRUGS 8)

Related skills and use of equipment
- oropharyngeal and nasopharyngeal airways
- laryngeal mask airways (LMA)
- endotracheal intubation and extubation
- bag valve mask and in-line nebulisation
- ventilators
- capnography
- nebulisation mask and acorns
- oxygen equipment
- crycothyroidotomy
- needle thoracocentesis

G2 THE CARDIOVASCULAR SYSTEM

G2.1 STRUCTURE OF THE CARDIOVASCULAR SYSTEM

The student should be able to:

describe the compositions and functions of blood

describe the relationship between intracellular and extracellular fluids and their effects on homeostasis

describe the five major types of blood vessel

describe the location, structure and function of the heart

describe the relationship between blood volume and blood pressure

Underpinning knowledge and key learning points

- the anatomical location of the heart including paediatric and adult variances
- the gross anatomy of the heart including
  - size, shape and weight
  - structure and function of the pericardium, myocardium, endocardium
  - four chambers of the heart and associated structures
  - blood flow and coronary circulation
  - paediatric and adult variances
- structure and function of:
  - systemic circulation
  - pulmonary circulation
- the composition of blood to include the characteristics; formed elements; fluid elements
- the functions of blood to include transportation; regulatory; protection; buffer systems and clotting process
- structure and function of blood vessels
- blood volumes for adults, children and pregnant women
- factors necessary to maintain normal blood pressure including contractility; viscosity; cardiac output; venous return; peripheral resistance; and blood volume
- interpretation of findings of a blood pressure reading (systolic, diastolic, pulse pressure)

Related skills and use of equipment

- use of stethoscope for breath sounds after intubation and for taking blood pressures
- blood pressure equipment (manual and automatic)

G2.2 MECHANISM OF THE CARDIOVASCULAR SYSTEM

The student should be able to:

describe the location, structure and function of the electrical conduction system of the heart

describe the electrical conductive pathway of the heart in relation to the normal sinus electro-cardiograph

describe the cardiac cycle

explain the normal sinus rhythm

describe the chemical and nervous control of the cardiovascular system

Underpinning knowledge and key learning points

- chemical control of the cardiovascular system (chemo receptors, hypoxia, acidosis, alkalosis, hormones, ions, age/gender/physical fitness/body temperature)
- nervous control of the cardiovascular system (cardiac centre, lymbic system, sympathetic, parasympathetic and neurotransmitters)
- electrical conduction system (SA node, AV node, Bundle of His, left and right bundle branches, Purkinje fibres, intrinsic firing rates, adult/paediatric variations)
- timings of cardiac cycle and mechanical events
- ECG complex (P wave, P-R interval, Q-R,S complex, S-T segment, T wave, U waves, timings, adult/paediatric variations)
- knowledge of thrombolytic therapy – including the use of aspirin and thrombolytic agents

Related skills and use of equipment

G2.3 SHOCK

(JRCALC References : MED A1, T1)

The student should be able to:

Describe the causes and management of severe hypotension

Describe the symptoms and management of severe allergic reactions and anaphylaxis

Underpinning knowledge and key learning points

- compensatory mechanisms
- considerations for managing bleeding per rectum and vagina (non – obstetric)

Related skills and use of equipment

- assessment and observations
- oxygen therapy
- intravenous cannulation
- fluid replacement as per JRCALC National Clinical Guidelines (TR1; DRUGS 22 & 23)
- associated drug therapy as per JRCALC National Clinical Guidelines (MEDT1; DRUGS 1; DRUGS 5; DRUGS 12; DRUGS 19; DRUGS 21)

G2.4 NORMAL / ABNORMAL CONDITIONS OF THE CARDIOVASCULAR SYSTEM

(JRCALC References : MED A1, A4, T3, T13, CAA1 – CAA5)

The student should be able to:

list the risk factors associated with the development of coronary artery disease

describe the pathology and aetiology of coronary artery disease

recognise and manage angina

recognise and manage myocardial infarction

recognise and manage left ventricular failure

differentiate between pain of cardiac and non-cardiac origin

arrythmias – recognise and interpret the significance of:

- sinus rhythms
- supra ventricular arrythmias
- ventricular arrythmias
- bradycardias, heart blocks and bundle branch block
- cardiac arrest arrythmias

Underpinning knowledge and key learning points

- chemical control of the cardiovascular system (chemo receptors, hypoxia, acidosis, alkalosis, hormones, ions, age/gender/physical fitness/body temperature)
- nervous control of the cardiovascular system (cardiac centre, lymbic system, sympathetic, parasympathetic and neurotransmitters)
- electrical conduction system (SA node, AV node, Bundle of His, left and right bundle branches, Purkinje fibres, intrinsic firing rates, adult/paediatric variations)
- timings of cardiac cycle and mechanical events
- ECG complex (P wave, P-R interval, Q-R,S complex, S-T segment, T wave, U waves, timings, adult/paediatric variations)

Related skills and use of equipment

G2.5 TREATMENT / MANAGEMENT OF CONDITIONS OF THE CARDIOVASCULAR SYSTEM

(JRCALC References : MED A1, A4, T3, T13, CAA1 – CAA5)

The student should be able to:

demonstrate ALS to UK Resuscitation Council guidelines using the equipment provided

demonstrate in simulated conditions the defibrillation procedures as per UK Resuscitation Council guidelines – semi-automatic and manual

demonstrate the use of cardiac drugs as listed in JRCALC National Clinical Guidelines (DRUGS 1, 2, 3, 11, 14, 19 & 25)

demonstrate the effective management of cardiac arrythmias as listed in the JRCALC National Clinical Guidelines eg, carotid sinus massage, Valsalva manoeuvre for SVT (SECTION CAA1 – CAA5)

secure routes for drug/fluid administration as per JRCALC National Clinical Guidelines, to include :

- intravenous cannulation
- external jugular vein cannulation
- intra-osseus access

describe the general guidelines for personal protection from blood borne diseases

describe local procedures for recognition of death and subsequent management

Underpinning knowledge and key learning points

- considerations of CPR for adults, pregnant women, infants, children (to include trauma, mega code, one and two person CPR procedures and associated scene management)
- drowning and near drowning
- Health & safety considerations as applied to defibrillation (to include use of drugs)
- cardiac drugs, doses, preparation, routes and administration for infants/children/adults as per JRCALC National Clinical Guidelines
- circulatory support and infusion
- pharmacology of cardiac drugs
- indications for infusion
- anatomical landmarks for inserting an intra-osseus needle
- identification of need for fluid administration
- identification of fluid types; fluid volumes and flow rates for fluid administration
- hazards and complications of infusion
- Health and safety considerations as applied to infusion and documentation
- infusion adjuncts
- blood borne diseases, including needle stick injury procedure
- significance of hypothermia in cardiac arrest
- service policies and procedures in respect of blood borne diseases, including
  - personal protection equipment
  - occupational health procedures
  - immunisation policies
  - recording / counselling
  - HIV & AIDS awareness

Related skills and use of equipment

- 3 and 12 lead ECG for rhythm recognition and interpretation
- ECG rulers, analysis and plans
- observation and assessment using associated diagnostic equipment
- related drug therapy including pain relief and aspirin as per JRCALC National Clinical Guidelines
- CPR on infants/children/adults manikins
- airway management
- intravenous access, including
  - intravenous cannulation
  - external jugular vein cannulation
- intra-osseus infusion
- circulatory support – infusion (to include consideration of site, preparation of patient and equipment, venepuncture technique, hazards and complications for infusion)
- manual and automated external defibrillation (AED) procedures for infants/children/adults
- drug therapy, including pain relief as per JRCALC National Clinical Guidelines (DRUGS 1, 2, 3, 7, 11,14, 15,16, 17, 19 & 25)
- patient observation and assessment (to include use of diagnostic equipment)
- blood sampling as per local procedure
- preparation and use of infusion equipment
- patient reporting
- fluid warmers

G3 NERVOUS SYSTEM, OBSERVATION AND ASSESSMENT

G3.1 STRUCTURE OF THE NERVOUS SYSTEM

The student should be able to:

describe the structure and function of the brain and brain stem

understand the importance of pupillary reactions

describe the structure and functions of:
- spinal cord
- meninges
- cerebro-spinal fluid

explain the operation of the peripheral nervous system

briefly describe the action of neurotransmitters

explain the spinal and autonomic reflexes

describe the function of the vagus, glossopharyngeal and occulomotor and optic nerves

describe the structure and function of the spinal nerves

Underpinning knowledge and key learning points

- the three basic functions of the nervous system in maintaining homeostasis (sensory, motor, integrative)
- the central and peripheral divisions of the nervous system
- the structure and function of the cerebrum; cerebellum; thalamus; hypothalamus; mid-brain; pons varolli; medulla oblongata
- the location, structure and function of the spinal cord
- the structure and function of the dura mater; arachnoid mater and pia mater
- the composition, function and circulation of cerebrospinal fluid
- the transmission of nerve impulses

Related skills and use of equipment

G3.2 OBSERVATION AND ASSESSMENT

(JRCALC References : MED A1, A3, A7, T5, T14)

The student should be able to:

Carry out relevant neurological assessment

Underpinning knowledge and key learning points

- the use of A.V.P.U. in initial response
- the Glasgow Coma Scale
- the three tests used to assess neurological status (tone, power and sensation)
- pupillary assessment in relation to the occulomotor nerve (Pupils Equally Reactive to Light)
- the effects of occulomotor nerve damage
- the effects on papillary reactions in relation to head injuries and bleeds
- the assessment of passive lateral eye movement

Related skills and use of equipment

- the appropriate use of neurological assessment and triage skills

G3.3 TREATMENT AND MANAGEMENT OF DISORDERS OF THE NERVOUS SYSTEM

(JRCALC References : MED A1, A3, A7, T5, T14)

The student should be able to

recognise and manage patients suffering from

- stroke
- transient ischaemic attack
- meningitis/meningococcal septicaemia
- convulsions and fits

Underpinning knowledge and key learning points

- cerebral blood flow to include the circle of Willis
- functional areas of the brain
- meninges
- decerebrate / decorticate posturing
- causes of convulsions, including epilepsy
- categories of stroke

Related skills and use of equipment

- observations and assessment
- related drug therapy
- supportive management including the use of oxygen therapy
- glucometry
- assessment of temperature

H1 TRAUMA

H1.1 MECHANISMS OF TRAUMA

(JRCALC References : TR1)

The student should be able to:

define the term mechanism of injury, and describe the principles of kinetic energy transfer in relation to the three ‘impacts’

list the major causes of cardiac arrest in trauma

Underpinning knowledge and key learning points

- velocity, acceleration, deceleration, kinetic energy and gravity

Related skills and use of equipment

H1.2 ASSESSMENT AND EXAMINATION OF TRAUMA

(JRCALC References : TR1)

The student should be able to:

perform a primary survey and prioritise patient management as necessary

perform a secondary survey as appropriate

perform continual re-assessment

Underpinning knowledge and key learning points

- safety of self, patient and scene
- primary survey
- secondary survey (including revised Trauma Score)
- principles of triage (sieve and sort)
- understand the need for specialist assistance
- major incidents

Related skills and use of equipment

H1.3 PRINCIPLES OF TRAUMA MANAGEMENT

(JRCALC References : TR1)

The student should be able to:

identify and prioritise patient treatment according to the five stages of pre-hospital management

- primary assessment and resuscitation
- secondary survey
- notification / communication
- serial management
- documentation

knowledge of analgesia (including some knowledge of opiates)

Underpinning knowledge and key learning points

- management of the trauma patient

Related skills and use of equipment

- airway management
- spine immobilisation
- oxygenation
- management of haemorrhage
- circulatory support, use and limitations of intravenous therapy
- appropriate immobilisation and transportation
- hospital notification / patient handover / documentation
- appropriate drug therapy

H1.4 MANAGEMENT OF THE TRAUMA PATIENT

(JRCALC References : TR1)

The student should be able to:

identify and treat the trauma patient according to the mechanisms involved

H1.4.1 HEAD INJURIES

(JRCALC References : TR2

Underpinning knowledge and key learning points

- mechanism of injury and causative effect
- pathophysiology of injury
- importance of oxygen therapy
- recognition of associated injury

Related skills and use of equipment

- primary / secondary survey
- airway management
- oxygen therapy
- IV cannulation
- appropriate fluid therapy as per JRCALC National Clinical Guidelines (TR2; DRUGS 22)
- assessment of AVPU and Glasgow Coma Score
- patient monitoring, including pulse oximetry
- appropriate equipment:
  - semi rigid collars
  - spinal boards
  - splintage

H1.4.2 THORACIC TRAUMA

(JRCALC References : TR4)

Underpinning knowledge and key learning points

- mechanisms of injury and causative effects to include specific blunt and penetrating trauma
- pathophysiology of injury
- importance of oxygen therapy
- recognition and management of
    - tension pneumothorax
    - open pneumothorax
    - flail chest
    - haemothorax
    - cardiac tamponade

Related skills and use of equipment

- primary / secondary survey
- airway management
- oxygen therapy
- needle thoracocentesis
- IV cannulation
- fluid replacement
- patient monitoring
- appropriate equipment:
    - semi rigid collars
    - spinal boards
    - splintage

H1.4.3 ABDOMINAL / PELVIC TRAUMA

(JRCALC References : TR5

Underpinning knowledge and key learning points

- mechanisms of injury and causative effects
- pathophysiology of injury
- importance of oxygenation

Related skills and use of equipment

- primary / secondary survey
- airway management
- oxygen therapy
- IV cannulation
- fluid replacement (with caution) as per JRCALC National Clinical Guidelines (TR5; DRUGS 22 & 23)
- pain relief (with caution) as per JRCALC National Clinical Guidelines (DRUGS 7, 15, 16 & 17)
- patient monitoring
- appropriate equipment:
  - semi rigid collars
  - spinal boards
  - splintage

H1.4.4 SPINAL TRAUMA

(JRCALC References : TR3)

Underpinning knowledge and key learning points

- mechanisms of injury and causative effects
- pathophysiology of injury
- recognition of spinal shock
- importance of oxygenation

Related skills and use of equipment

- primary / secondary survey
- airway management with cervical spine immobilisation
- oxygen therapy
- intravenous cannulation
- drug and fluid therapy as per JRCALC National Clinical Guidelines (TR 3; DRUGS 3, 19, 22 & 23)
- patient monitoring
- immobilisation / transportation
- appropriate equipment:
  - semi rigid collars
  - spinal boards
  - splintage

H1.4.5 EXTREMITIES TRAUMA

(JRCALC References : TR6)

Underpinning knowledge and key learning points

- mechanisms of injury and causative effects
- pathophysiology of injury
- importance of oxygenation

Related skills and use of equipment

- primary / secondary survey
- airway management
- oxygen therapy
- intravenous cannulation
- fluid replacement as per JRCALC National Clinical Guidelines (TR6; DRUGS 22 & 23)
- pain relief as per JRCALC National Clinical Guidelines (TR6; DRUGS 7, 15, 16 & 17)
- assessment of neuro-vascular status of limb
- immobilisation
- patient monitoring
- transport
- appropriate equipment:
  - semi rigid collars
  - spinal boards
  - splintage (to include traction splints)

H1.4.6 TRAUMA IN PREGNANCY

(JRCALC References : TR7)

Underpinning knowledge and key learning points

- anatomical and physiological changes during pregnancy
- mechanisms of injury and causative effects
- pathophysiology of injury
- importance of patient positioning
- importance of oxygen therapy

Related skills and use of equipment

- primary / secondary survey
- airway management
- oxygen therapy
- IV cannulation
- fluid replacement as per JRCALC National Clinical Guidelines (TR7; DRUGS 22 & 23)
- pain relief as per JRCALC National Clinical Guidelines (TR7; DRUGS 7)
- patient monitoring and recognition of additional support
- appropriate equipment:
  - semi rigid collars
  - spinal boards
  - splintage

H2 THERMAL INJURIES

H2.1 RECONITION AND MANAGEMENT OF THERMAL INJURIES

(JRCALC References : TR8)

The student should be able to:

assess a thermal injury, obtain a detailed history, treat according to the mechanisms involved and describe in detail associated problems and complications

assess a hypothermic patient, obtain a detailed history, treat according to the mechanisms involved and describe in detail associated problems and complications

Underpinning knowledge and key learning points

- mechanism of injury
- burn assessment using serial halving
- hypothermic assessment
- the complications of thermal injuries and time critical features for adults and children
- initial and ongoing management of thermal injuries
- inhalation injuries

Related skills and use of equipment

- primary survey and resuscitation
- airway management
- oxygen therapy
- intravenous cannulation
- fluid replacement as per JRCALC National Clinical Guidelines (TR8; DRUGS 22 & 23)
- pain relief as per JRCALC National Clinical Guidelines (TR8; DRUGS 7, 15, 16 & 17)
- structure of dermis / epidermis
- consideration of sepsis
- consideration of nebulisation for inhalation injuries (DRUGS 21)
- consideration of hypothermia

H3 MEDICAL CONDITIONS

H3.1 DIABETES MELLITUS

(JRCALC References : MED A1, A7, T7)

The student should be able to:

describe the pathophysiology of diabetes mellitus and define those conditions requiring immediate paramedic interventions

describe the normal range of blood glucose levels, and the significance of variations to these

Underpinning knowledge and key learning points

- types of diabetes mellitus
- common drugs used for the treatment of diabetes (oral hypoglycaemic agents and insulin)
- therapies used to treat hypoglycaemic conditions
- management of diabetic emergencies
- the complications of diabetes mellitus

Related skills and use of equipment

- primary survey / secondary survey
- oxygen therapy
- intravenous cannulation
- fluid therapy
- drug therapy
- intramuscular / subcutaneous routes for injections
- use of glucometry

H3.2 DRUG OVERDOSE / POISONING

(JRCALC References : MED T11)

The student should be able to:

describe in detail the principles of assessment and management of drug overdose / poisoning, including alcohol

Underpinning knowledge and key learning points

- personal safety
- primary / secondary survey, including blood glucose monitoring
- airway management
- indications and contra-indications for oxygen therapy
- history taking
- pharmacology (common poisons) – paracetamol; tricyclics; opiates (including heroin)~~heroin~~; amphetamines; barbiturates; methadone
- use of charcoal preparations in cases of suspected poisoning

Related skills and use of equipment

- primary / secondary survey
- IPPV as appropriate
- oxygen therapy as appropriate
- cardiac monitoring
- IV cannulation
- appropriate drug therapy
- fluid therapy
- obtaining medical history
- glucometry

H3.3 CONVULSIONS / FITS

(JRCALC References : MED T5)

The student should be able to:

describe the causes, signs, symptoms and management of convulsions / fits

Underpinning knowledge and key learning points

- aetiology of convulsions to include:
  - epilepteform
  - hypoxic
  - febrile (refer to H4.4)
  - intracerebral insult / head injury
  - hypoglycaemic (refer to H3.1)
  - drug related
  - eclampsia
- complications associated with the above
- specific management of a patient suffering from convulsions and fits

Related skills and use of equipment

- primary / secondary survey
- oxygen therapy
- IV cannulation
- fluid therapy
- drug therapy
- patient monitoring

I1 PAEDIATRIC CARE

I1.1 ANATOMICAL AND PHYSIOLOGICAL DIFFERENCES BETWEEN ADULTS AND CHILDREN

The student should be able to:

describe the anatomical and physiological differences between adults and children

Underpinning knowledge and key learning points

- anatomy and physiology of the respiratory system
- anatomy and physiology of the cardiovascular system
- specific differences in anatomy and physiology:
  - age related parameters – weight, heart rate, respiratory rate, blood pressure
  - thermo-regulation
  - skeletal system in relation to trauma
  - hypoglycaemia
  - intra-abdominal organs

I1.2 PAEDIATRIC ASSESSMENT & EXAMINATION AND RECOGNITION OF THE SERIOUSLY ILL OR DETERIORATING CHILD

(JRCALC References : PAED 1)

The student should be able to:

perform a primary survey

perform a secondary survey as required

continually re-assess patient condition

recognise a seriously ill or deteriorating child

identify and use paediatric equipment appropriately

communicate with and involve parents as appropriate

Underpinning knowledge and key learning points

- developmental milestones
- communication techniques and approaches to children of different ages
- anatomical and physiological differences in children
- identification of an obstructed airway
- importance of minimising delays in admission
- recognition and management of shock
- recognition and management of convulsions (febrile and afebrile)
- recognition and management of meningococcal septicaemia as per JRCALC National Clinical Guidelines (MEDT10; DRUGS 4)
- recognition and management of diabetes and hypoglycaemia
- recognition and management of anaphylaxis
- management of poisoning
  - opiates/carbon monoxide/tricyclics/solvents/alcohol
- reporting and handover

I1.2 PAEDIATRIC ASSESSMENT & EXAMINATION AND RECOGNITION OF THE SERIOUSLY ILL OR DETERIORATING CHILD (**continued**)

Related skills and use of equipment

- primary survey:
  - airway/breathing/circulation (inc capillary refill location points)/disability/exposure
- signs of abnormal respiration including those detected by auscultation
- identification of an obstructed airway
- secondary survey
- estimation of weight - (age+4)x2
- recognition of the need for specialist assistance (eg Doctor)
- history taking
- serial observation and documentation
- pulse oximetry; cardiac monitor; temperature; **sphygmomanometer #**
- use of modified and standard Glasgow Coma Scales
- recognition and assessment of:
  - upper airway obstruction
  - foreign body/croup/epiglottitis
  - lower airway obstruction
  - asthma/bronchiolitis

 # emphasise difficulties in young children

I1.3 MANAGEMENT OF THE SICK CHILD (AND PARENTS)

(JRCALC References : PAED 1)

The student should be able to:

manage, according to need

- airway
- breathing
- circulation
- disability/neurological status
- exposure/environment/thermo-regulation

identify and use paediatric equipment appropriately

communicate with and involve parents as appropriate

Underpinning knowledge and key learning points

- importance of oxygenation
- anatomical and physiological differences in children
- pharmacology and administration of relevant drugs
- importance of double checking paediatric drug dosages prior to administration
- assessment principles for:
  - upper airway obstruction
  - foreign body/croup/epiglottitis
  - lower airway obstruction
  - asthma/bronchiolitis
  - shock
  - convulsions (febrile and afebrile)
  - meningitis
  - diabetes and hypoglycaemia
  - sepsis syndrome (including meningococcal disease)
  - anaphylaxis
  - poisoning
  - opiates/carbon monoxide/tricyclics/solvents/alcohol
- indications for pain relief
- anatomical landmarks for inserting an intra-osseus needle
- importance of parental involvement

Related skills and use of equipment

- AIRWAY MANAGEMENT
  - manual methods (no finger sweep/positioning/back slaps/chest & abdominal thrusts appropriate to age)
  - suction
  - oropharyngeal and nasopharyngeal airways
  - laryngeal mask (LMA)
  - endotracheal intubation/extubation

- BREATHING
  - bag/valve/mask ventilation and in-line nebulisations
  - mouth to mouth and mouth to mouth & nose ventilation
  - oxygen therapy

- CIRCULATION
  - intravenous access
  - intra-osseus access
  - fluid replacement
  - drug therapy
  - endotracheal drug administration

- pain relief as per JRCALC National Clinical Guidelines (DRUGS 7 & 17)

- drug administration in relation to life threatening asthma as per JRCALC National Clinical Guidelines (T2; DRUGS 1, 12, 19 & 21)

- drug administration in relation to meningococcal septicaemia as per JRCALC National Clinical Guidelines (PAEDS 9; DRUGS 4).

I1.4 PAEDIATRIC TRAUMA AND THERMAL INJURIES

(JRCALC References : PAED 2)

The student should be able to:

describe the mechanisms of injury which commonly affect children

describe appropriate management of injuries in children

assess the severity of and manage thermal injuries affecting children

take appropriate action where non-accidental injury is evident or suspected

Underpinning knowledge and key learning points

- anatomical and physiological differences in children
- the mechanisms of injury which commonly involve children
- specific physiological responses to trauma
  - softer bones and increased chest pliability lead to more severe internal injury
  - increased likelihood in children of multi-organ injury following trauma
  - greater ability of child's vascular system to compensate for blood loss and the rapid deterioration which may follow if untreated
  - hypotension is a late sign
  - poorer dissipation of forces
  - implication of rib fractures
- the needs of the injured child
  - vital importance of adequate ventilation and oxygenation in prevention of secondary brain injury
  - rapid transfer to Hospital/treatment Centre with appropriate medical expertise
  - importance of careful basic and serial monitoring
- signs of inadequate ventilatory effort in children
- identification of shock
- small amount of blood loss can be significant in the child
- indications of non-accidental injury
- agencies involved in child protection
- procedure for dealing with incidents involving suspected non-accidental injury
- common causes and characteristics of burns in children
- formula for calculating body surface area – serial halving
- safe cooling and treatment of burns
- time critical features of burns in children
- landmarks for performing needle cricothyroidotomy

Related skills and use of equipment

- primary and secondary surveys

- AIRWAY MANAGEMENT
  - manual methods (no finger sweep/positioning/back slaps/chest & abdominal thrusts appropriate to age)
  - suction
  - oro-pharyngeal airways/naso-pharyngeal airways
  - laryngeal mask
  - endotracheal intubation and extubation

- BREATHING
  - assessment of respiration
  - bag/valve/mask and mechanical ventilation
  - oxygen equipment and administration
  - needle cricothyroidotomy

- CIRCULATION
  - assessment of circulation
  - intravenous cannulation
  - intravenous infusion
  - intra-osseus access

- disability
  - neurological assessment

- burns assessment using serial halving

- immobilisation techniques and equipment

- methods of cooling (avoiding the risk of hypothermia) and dressing burns

- pain relief as per JRCALC National Clinical Guidelines (DRUGS 7 & 17)

- parental involvement

I1.5 MANAGEMENT OF CARDIAC ARREST IN NEONATES, INFANTS AND CHILDREN

(JRCALC References : PAED 3. 4 5 & 6)

The student should be able to:

describe the pathophysiology of cardiac arrest in the child

perform effective resuscitation procedures for neonates, infants and children in line with current recommendations of the European Resuscitation Council/ILCOR

Underpinning knowledge and key learning points

- anatomical and physiological differences in children
- the pathophysiology of cardiac arrest in children
- the influence of early intervention on outcome following cardiac arrest
- identification of cardiac arrest and associated arrhythmias
- drugs used in cardiac arrest
- importance of ventilation and oxygenation
- basic and advanced life support algorithms
- defibrillation power settings
- defibrillation paddle placement
- prevention of body heat loss during resuscitation
- post resuscitation management
- when to stop resuscitation
- early and rapid transfer to Hospital improves outcome – limited role of ALS in very young (<1 year)

Related skills and use of equipment

- estimation of child's weight (formula and use of tapes such as Broselow)

- AIRWAY MANAGEMENT
  - manual methods (no finger sweep/positioning/back slaps/chest & abdominal thrusts)
  - suction
  - oropharyngeal and nasopharyngeal airways
  - laryngeal mask
  - endotracheal intubation and extubation

- BREATHING
  - bag/valve/mask and mechanical ventilation
  - oxygen equipment

- CIRCULATION
  - chest compression technique
  - defibrillation technique and equipment
  - intravenous cannulation
  - intravenous infusion
  - endotracheal drug administration

- disability
  - neurological assessment

- drug/fluid administration as per JRCALC National Clinical Guidelines (PAED 4; DRUGS 1 & 22)

I1.6 RESUSCITATION OF THE BABY AT BIRTH (common element with I2.7)

(JRCALC References : PAED 5)

The student should be able to:

describe the pathophysiology of cardiac arrest in the baby at birth
perform effective resuscitation procedures for baby at birth in line with current advisory guidelines of the European Resuscitation Council/ILCOR

Underpinning knowledge and key learning points

- normal physiological parameters of the baby at birth
- role of the midwife and ambulance crew in resuscitation
- the pathophysiology of cardiac arrest in the baby at birth
- relationship between gestational age and viability
- procedure for assessing the newborn baby, to include APGAR scoring
- the effect of manual stimulation by drying and wrapping the baby
- ratio of chest compression to ventilation (3:1 at a rate of 120 chest compressions per minute
- importance of adequate ventilation and oxygenation
- life support algorithm
- prevention of body heat loss during resuscitation
- treatment of hypoglycaemia
- hazards and removal of meconium
- involving and caring for the parents
- criteria and procedure for transferring baby to hospital
- when to stop resuscitation

Related skills and use of equipment

assessment technique for the baby at birth
stimulation technique

AIRWAY MANAGEMENT

- manual methods
- suction
- oropharyngeal airway

BREATHING

- bag/valve/mask ventilation
- mouth to mouth and mouth to mouth & nose ventilation
- oxygen equipment

CIRCULATION

- chest compression techniques (two fingers and encircling thumbs methods)
- intravenous
- drug administration via indwelling tracheal tube and umbilical vein

methods of conserving the baby's body heat

I2.1 GENERAL AND LOCAL ORGANISATION OF OBSTETRIC AND GYNAECOLOGY SERVICES

The student should be able to:

describe the local arrangements for hospital and domicilliary obstetric and gynaecology services, including lines of communication, phone numbers of Obstetric units and direct lines

describe relevant aspects of their Service's protocols and policies for out-of-hospital obstetric and gynaecological cases

Underpinning knowledge and key learning points

- organisation of obstetric and gynaecology services within the student's operational area
- roles of the midwife, doctor and ambulance crew at an obstetric or gynaecological incident
- the role of the paramedic as a primary responder to a obstetric or gynaecological incident where midwifery assistance is not immediately available
- Service protocols and procedures relating to obstetrics and gynaecology
- procedure for summoning midwifery assistance to an incident
- common causes of mortality and morbidity associated with childbirth
- evolution of the paramedic syllabus in obstetrics and gynaecology
- admission procedures for women with obstetric or gynaecological disorders
- concept of patient choice in childbirth and how this may impact on decisions at an incident
- potential for litigation associated with incidents involving childbirth

Related skills and use of equipment

Nil

References

Cumberledge Report: "Changing Childbirth"
Relevant local Service Policies and Procedures

I2.2 ANATOMICAL, PHYSIOLOGICAL AND PATHOLOGICAL CHANGES DURING PREGNANCY

The student should be able to:

describe anatomical, physiological and pathological changes during pregnancy

Underpinning knowledge and key learning points

- normal changes during pregnancy and limits beyond which they become pathological
- normal and pathological changes in anatomy and physiology relating to:
  - airway
  - breathing
  - circulation
  - genital tract
  - gastrointestinal function
- definitions and consequences of postural and supine hypotension
- changes in and resulting from pre-existing diseases, including asthma, diabetes, heart disease and hypertension
- potential consequences of trauma during pregnancy, including:
  - seat belt injury
  - domestic violence

Related skills and use of equipment

Nil

I2.3 ASSESSMENT AND EXAMINATION OF THE PREGNANT WOMAN

(JRCALC References : OBS/GY 1)

The student should be able to:

appropriately assess and examine a pregnant woman and relate the findings to the gestational period

Underpinning knowledge and key learning points

- terminology associated with pregnancy and childbirth
- information available in the patient held record and standard terms and abbreviations used
- importance of ensuring patient held record accompanies the patient to hospital
- primary and secondary surveys
- anatomy and physiology of pregnancy according to gestational age
- vaginal examination by ambulance staff is inappropriate in any circumstances
- inspection of the vulva is appropriate only in specific and limited circumstances (usually only in the 2nd and 3rd stage of labour), requires patient's consent and needs to take account of cultural issues
- systolic blood pressure is measured using the simplest and most reproducible way possible (note: automated blood pressure monitors should not normally be used)
- systolic blood pressure of <90mmHg (not 100) is indicative of shock if other signs are present
- value of pulse oximetry and its limitations in carbon monoxide poisoning and other circumstances
- relationship between position of the fundus and gestational age

Related skills and use of equipment

- history taking
- primary and secondary surveys
- patient monitoring
- measurement and recording of systolic blood pressure
- pulse oximetry
- examination of the abdomen (under supervision)
- explanation of procedures to the patient

I2.4 NORMAL LABOUR

(JRCALC References : OBS/GY 2)

The student should be able to:

describe the normal stages of labour

facilitate a normal delivery

Underpinning knowledge and key learning points

- the stages of labour
- physiology of labour
- care of the perineum
- need for all dressings, swabs, etc to be retained for inspection by midwife or at hospital (in clinical waste bag)
- physiology of the umbilical cord and maternal/baby circulation after birth
- use of Entonox and oxygen in labour
- importance of saving the placenta for examination by midwife or doctor
- normal and pathological levels of blood loss during childbirth
- all cases where the baby is born out of hospital must be seen by a midwife or admitted to hospital

Related skills and use of equipment

- primary and secondary surveys
- patient monitoring
- pulse oximetry
- patient positioning
- administration of analgesia (Entonox)
- administration of oxygen
- clamping and cutting the umbilical cord
- examination of the abdomen
- care of the perineum
- maintenance of baby's body heat
- removal of fluid from the baby's mouth and nose

I2.5 ABNORMALITIES IN PREGNANCY AND LABOUR

(JRCALC References : OBS/GY 3, 4 & 5)

The student should be able to:

define, recognise and provide appropriate care for abnormalities of early and late pregnancy, during labour and postpartum, including:

Early pregnancy

- haemorrhage
- ectopic pregnancy
- miscarriage
- cervical shock

Late pregnancy

- pre-eclampsia/eclampsia
- pre-term labour
- postural and supine hypotension
- haemorrhage
- placental abruption
- placenta previa

Intra-partum

- malpresentations
- multiple pregnancies
- obstructed labour
- supine hypotension
- shoulder dystocia
- umbilical cord complications including short cord and prolapsed cord
- amniotic fluid embolus
- excessive haemorrhage

Postpartum

- excessive haemorrhage
- inversion of the uterus
- cord rupture
- uterine atony
- perineal tears

At any time during pregnancy

- trauma
- pulmonary embolus
- other disorders such as hyper- and hypoglycaemia and epilepsy

Underpinning knowledge and key learning points

- anatomy and physiology of pregnancy according to gestational age
- information which should be reported to other healthcare professionals and the procedure for contacting them
- primary and secondary surveys
- indications and causes of obstructed labour
- cord rupture, short cord and prolapsed cord
- McRobert's position
- indications for rapid admission for specialist assistance
- older obstetric patients who haemorrhage have a higher mortality
- causes of haemorrhage during pregnancy and postpartum
- uterine atony is a principle cause of primary postpartum haemorrhage
- drug management of postpartum haemorrhage (DRUGS 24)
- on-scene times should be limited where possible to a maximum of 10 minutes with bleeding in late pregnancy
- risk of abruption in trauma
- pulmonary embolism is the most common cause of maternal death
- hypertensive disorders, ectopic pregnancy and complications of miscarriage are the main causes of maternal death after pulmonary embolism
- 'miscarriage' is preferred to the term 'abortion'
- features of pre-eclampsia and eclampsia
- sedative therapy for eclampsia (OBS/GY 4; DRUGS 6)
- causes of inversion of the uterus and how to avoid it
- management of perineal tears

Related skills and use of equipment

- primary and secondary surveys
- patient monitoring
- administration of analgesia (Entonox)
- administration of oxygen
- administration of syntometrine~~ergometrine*~~
- administration of diazepam
- clamping and cutting the umbilical cord
- examination of the abdomen
- intravenous cannulation
- intravenous fluid infusion
- pulse oximetry
- patient positioning including McRobert's position
- reporting information to other healthcare professionals
- care of the perineum
- maintenance of baby's body heat
- removal of fluid from the baby's mouth and nose

I2.6 RESUSCITATION IN PREGNANCY

The student should be able to:

describe the aetiology of cardio-respiratory arrest in pregnancy

discuss the special considerations in the management of cardiac arrest in pregnancy

Underpinning knowledge and key learning points

- normal and pathological changes in anatomy and physiology relating to:
  - airway
  - breathing
  - circulation
- basic principles of airway management and cardiopulmonary resuscitation are similar but some modifications may be necessary
- priority is in treating the mother
- where the mother suffers irreversible cardiac arrest or injuries incompatible with life, resuscitation should continue until medical opinion is sought
- aspects of resuscitation which may be affected by pregnancy (eg endotracheal intubation)
- increased likelihood of passive regurgitation or vomiting and increased morbidity make early intubation advisable
- importance of patient positioning and uterine displacement in avoiding aortocaval occlusion
- where indicated, defibrillation should be performed in the normal way
- importance of high concentrations of oxygen therapy
- management of severe haemorrhage
- rapid transfer to hospital may be necessary

Related skills and use of equipment

- basic airway management with and without adjuncts
- insertion of laryngeal mask
- endotracheal intubation
- bag/valve/mask and mechanical ventilation techniques
- chest compression
- uterine displacement technique
- use of longboard at left lateral tilt to relieve caval compression
- intravenous cannulation
- intravenous fluid administration
- administration of cardioactive drugs

I 2.7 RESUSCITATION OF THE BABY AT BIRTH **(common element with I1.6)**

(JRCALC References : PAED 5)

The student should be able to:

describe the pathophysiology of cardiac arrest in the baby at birth

perform effective resuscitation procedures for baby at birth in line with current advisory guidelines of the European Resuscitation Council/ILCOR

Underpinning knowledge and key learning points

- normal physiological parameters of the baby at birth
- role of the midwife and ambulance crew in resuscitation
- the pathophysiology of cardiac arrest in the baby at birth
- relationship between gestational age and viability
- procedure for assessing the newborn baby
- the effect of manual stimulation by drying and wrapping the baby
- ratio of chest compression to ventilation (3:1 at a rate of 120 chest compressions per minute)
- importance of adequate ventilation and oxygenation
- life support algorithm
- prevention of body heat loss during resuscitation
- treatment of hypoglycaemia
- hazards and removal of meconium
- involving and caring for the parents
- criteria and procedure for transferring baby to hospital
- when to stop resuscitation

Related skills and use of equipment

- assessment technique for the baby at birth
- stimulation technique
- AIRWAY MANAGEMENT
  - manual methods
  - suction
  - oropharyngeal airway
- BREATHING
  - bag/valve/mask ventilation
  - mouth to mouth and mouth to mouth & nose ventilation
  - oxygen equipment
- CIRCULATION
  - chest compression techniques (two fingers and encircling thumbs methods)
  - drug administration
- methods of conserving the baby's body heat

GOOD PRACTISE 1 : INDUCTION

The suggested Core Induction programme is organisational based and should be delivered to any new employee. The time spent should be sufficient to enable the service to implement their own specific training based on their own needs as well as the areas listed below. Assessment will be accomplished locally if required.

SECTION GP:1 INDUCTION - ORGANISATION AND MANAGEMENT

GP1:1 THE NATIONAL HEALTH SERVICE

The student should be able to;

State in his/her own words the three main aims of the NHS.

Describe the basic organisation and structure of the NHS.

Key learning points

Supporting evidence is required of the students understanding of:

* the aims of the NHS Act 1946 & subsequent re-organisational Acts
* the objectives of the reorganised NHS
* the current NHS organisational structure & the role of relevant departments & boards
* the geographical location of Strategic Health Authorities
* the role of ...

  Primary Health Care Trusts
  Community Health Councils
  Commission for Health Improvement

GP1:2 THE AMBULANCE SERVICE

The student should be able to;

Describe the historical evolution of the modern Ambulance Service.

Describe its current role, organisation and rank structures.

Demonstrate a clear understanding of the range of training in Ambulance work.

Key learning points

Supporting evidence is required of the students understanding of:

* the current organisational management of the Ambulance Service
* the two key roles of an Ambulance Service and the various categories of work
* the ways in which an Ambulance Service is involved with other health service departments and staff
* the rank/management titles and insignia (where appropriate) of officers /managers/supervisors in their service
* the grades/categories of ambulance staff & other personnel
* the main types of training available & additional specialist training
* the opportunities and criteria for progression within the Service
* how individual Service managers should be addressed and their areas of responsibility.

GP1:3 NHS WHITLEY COUNCILS

The student should be able to;

Describe in simple terms, the origins, function and composition of the Whitley Councils.

Key learning points

Supporting evidence is required of the students understanding of:

* the relationship between the Whitley Councils & the Secretary of State for Health

* the practical implications of the Ambulance Council on relevant areas of working practice (e.g. expenses & allowances).

GP1:4 CODE OF CONDUCT

The student should be able to;

Give pertinent examples of the public's expectations of Ambulance staff and in particular the public image required.

Conduct him/herself, in terms of personal standards, integrity and behaviour at work, in accordance with Service requirements.

Key learning points

Supporting evidence is required of the students understanding of:

* the purpose of the code of conduct
* the meaning of integrity as applied to the Ambulance Service
* the importance of maintaining high personal standards
* the need to develop self-discipline
* the disciplinary & grievance procedures of his/her service
* the importance and scope of confidentiality
* the effects of stress and anxiety in patients & others and the conduct expected of staff towards the public, patients and others
* the need to represent the service in a professional and competent manner
* the importance of carrying out operational instructions without dissent
* the relationships with other disciplines & members of other emergency services
* the implications of consuming alcohol on or before duty
* the need to preserve the correct image of the service by not entering public houses in uniform except in response to a call.

GP1:5 HEALTH AND SAFETY AT WORK

The student should be able to;

Discuss relevant aspects of the Health and Safety at Work Act (1974).

List several key duties placed by this Act on employers.

List the three key duties of employees under the Act.

Key learning points

Supporting evidence is required of the students understanding of:

* the scope of the Health and Safety at work Act and why it was needed
* how the Act is administered and enforced
* the three levels of duty under the Act
* the role of safety representatives and safety committees
* why accidents must be reported
* the procedure for reporting accidents at work and the location of the Accident book at his/her station
* the significance of removal of crown immunity from health authorities/trusts.

GP1:6 HYGIENE AND PHYSICAL FITNESS

The student should be able to;

State aspects of physical fitness and hygiene which are of particular relevance to Ambulance personnel.

Key learning points

Supporting evidence is required of the students understanding of:

* the rules of personal hygiene listed in this unit
* the basic factors involved in physical fitness
* the reasons for high standards of hygiene and fitness
* the need to safeguard patients, self and others from the hazards associated with poor levels of fitness and hygiene
* the importance of mental alertness whilst on duty.

GP1:7 PATIENT CONSENT

The student should be able to;

State the considerations to be made when seeking patient consent.

State the circumstances under which refusal to allow treatment need to be respected

State the exceptions to informed patient consent

State the age groups considered able to give informed consent

Key learning points

Supporting evidence is required of the students understanding of:

* the component parts of patient consent
* a patients right to refuse treatment
* ages of consent
* circumstances under which refusal can be overruled

GP1:8 PERSONNEL PROTECTION

The student should be able to;

State common causes of violence

State the considerations when assessing personal risk

Describe the communication skills to be adopted to minimise the risk of violence when dealing with potentially violent patients or bystanders

Describe the signs associated with potential escalation of difficult situations into violence

Demonstrate safe 'break away' techniques

Key learning points

Supporting evidence is required of the students understanding of:

* causes of violence
* powers available under the Mental Health Act 1983 for the remove a person forcible
* communication skills and approaches
* attitude lock-in (Bataris box)
* the law on self-defence
* the importance of posture and need to work as a team when seeking defuse difficult situations
* procedures for reporting of incidence involving violence

GOOD PRACTISE 2 : EMPLOYER P.T.S. TRAINING

This section is intended to promote specific/specialised training given to non-emergency (Patient Transport Service) staff. It may include:

- oxygen therapy
- multi-posture cot
- vehicle/equipment functioning
- use of Entonox
- automated external defibrillation
- use of suction equipment
- skid training
- night driving
- automatic gearbox.

Training and assessment can be accomplished locally according to need.

GOOD PRACTISE 3 : EMPLOYER SPECIFIC TECHNICIAN TRAINING

This Section is intended for training which is to be determined by the employing service, in addition to the training provided in sections D, E and F of this document; it may include specific local policies and procedures not necessarily covered in the principles taught in these sections.

In addition, the following list provides some examples of what this training may include:

- pulse oximetry
- intubation
- use of laryngeal masks
- defibrillation
- motorway procedures
- emergency service liaison
- control and communications
- local major incident plans
- stress management