



Ymddiriedolaeth GIG
Gwasanaethau Ambiwylans Cymru
Welsh Ambulance Services
NHS Trust

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Welsh Ambulance Services NHS Trust

Community First Responder Initial Training
Day Three Lesson Plan

Tutor: Jon Johnston	Session: Day One	Date: TBC	Time: TBC
Student Population:	Venue: TBC	Duration: 7.5 hours	Entry Behaviour: New entry volunteers
Equipment Required: Laptop, training package, group work laminates, Manual handling equipment Responder bags and airway manikins			
Paperwork required. Sign off forms, online register to be completed.			

Location Facilities Requirements Risk assessed training environment. Appropriate facilities to enable learning. Facilitated by one instructor.	
	Risk Assessment: Low COVID-19 Risk Assessment: Low

Session Aims: To increase confidence in your clinical scope of practice and your self-confidence to discharge duties on behalf of the Welsh Ambulance Service NHS Trust. Learning Outcomes: By the end of the day volunteers will be able to: • Demonstrate understanding several medical emergencies. • Be able identify several medical emergencies from presenting signs and symptoms. • Demonstrate the effective management of several medical emergencies.	Introduction: (Slide 1 – 3) Self Ground rules – Learner's agreement – Slide 2 - Trust Behaviours Learning outcome for session – Slide 4 Reference JRCALC
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Objective:	Tutor Activity – Focus	Student Activity - Strategy	Equipment
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Welcome all students to the session.	Complete the course online register – Training Website	Provide names and WAST PIN.	Training Website Online Register
Slide 3 – Knowledge Check	Knowledge check completion allocate around 15 mins -Go through assessments, how they work, what we are looking for, and when they will be. Explain the reassessment process. -Knowledge checks. Explain when they will be, marking system and percentage of overall pass mark. -Complete knowledge check for induction, multiple choice	Look, listen, ask questions.	Power Point, V1.
Slide 4-5 – Learning outcomes	Learning Outcomes and reference materials Learning Outcomes: By the end of the day volunteers will be able to: • Demonstrate understanding several medical emergencies. • Be able identify several medical emergencies from presenting signs and symptoms. • Demonstrate the effective management of several medical emergencies.	Look, listen, ask questions, Demonstrate.	Power Point, V1.
Slide 6 - 11 – Sepsis	Explain the signs, symptoms and management of Sepsis condition It's worth elaborating that often causes are seemingly fairly innocuous; a chest infection or UTI that isn't treated can ultimately lead to a dysregulated immune response that can ultimately result in poor oxygen perfusion of organs and organ failure. Establishing a history of primary infection or source of infection is fundamental to effective assessment in Sepsis patients.	Look, listen, ask questions , Demonstrate	Power Point, V1.

	In terms of what's going on the body physiologically, there's excessive immune response "Cytokine" Storm (too much chemical messaging of immune cells) immune cells get recruited all over the body. 2 significant changes 1) histamine causes the gaps/junctions between blood vessels to dilate and we lose plasma and RBCs from the blood into tissue space – this drops blood pressure. Meaning blood and therefore oxygen can't get to the organs and around the whole body as much as is required. In septic shock we also get clots (DIC) forming all over the vessels further compromising the flow of what is already reduced blood. Organs start to fail because lack of blood = lack of O2. Task one – Slide 7 - Obs practice Task. 20 – 30 mins for CFRs to use the enhanced skills bag and take a set of obs on a peer. They should use these obs to calculate a NEWS score. CFRs should swap roles so both have an attempt. In theory all CFRs should score a NEWS of 0. Task Two – Slide 9 - NEWS Task – using the NEWS laminate from the responder bag, CFRs to attempt to calculate NEWS score for the following 3 exemplar patients. This slide is animated. Start with just the obs. Then once they have calculated scores pop the history up and discuss is there cause for concern/potential source of infection. NEWS patient A – Score 9; Has had abdominal surgery in the previous week (Resp rate 22 (+2); Spo2 94% (+1); Pulse rate 96 (+1) Voice on AVPU (+3), Temp 39.1 (+2) = total score of 9 NEWS patient B – Score 0; Generally unwell patient; None of the obs values score any NEWS points.	
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	NEWS patient C – Score 7; patient has arthritis; complaining of joint pain (Resp rate 21 (+2); SPO2 92 (+2); Temp 36.0 (+1); BP 103 (+1); Temp 36(+1) = total score of 7. Additionally it's important to highlight if the obs taken are with O2 therapy or not. If O2 therapy is administered at the time obs are taken then the NEWS total will be 2 points higher. Then give the score answers		
Slide 12-23– Anaphylaxis	Explain the signs, symptoms and management of Anaphylaxis condition Anaphylaxis can present in a number of combinations of Airway, Breathing, Circulatory, Skin or Mucosal changes. It can present with some or all of these issues. Any instance of rapid onset of issues with any of these anaphylaxis should be suspected. Present from slides. Knowing the types are really important; CFRs should be airing on the side of caution with suspected Anaphylaxis. They can easily be caught out by Biphasic where the patient seems to improve but will then deteriorate. Idiopathic where there is no underlying cause the CFRs need to not take for granted. Just because there is no identifiable trigger, it doesn't mean the patient isn't having an anaphylactic reaction. There is potential for a biphasic idiopathic reaction which may seem resolved. Protracted, don't underestimate that symptoms may worsen over coming days		Power Point, V1.

	and the potential impact this might have. Essentially don't get caught out. Use CSD and get guidance.		
Slide 25 – 33 – Diabetes.	Explain the signs, symptoms and management of Diabetes condition Present 2 videos are a great introduction to the both Type 1 and Type 2 and the differences. <u>Task one</u> - BM Practice Stress here that BMs should only be carried on: 1. Known diabetics 2. Those with new confusion or disorientation 3. Unconscious * Unless specifically asked for by a clinician either CSD or road medic. Work with peers can use test fluid and puncture a banana. Highlight the Martin video for further guidance. <u>Task Two</u> - Split the group into 2; one group will research the causes, signs and symptoms of Hypoglycemia and the other the causes, signs and symptoms of Hyperglycaemia. Allocate 10-15 mins to produce a poster on flip chart paper to present back to the other half of the group. Really encourage presenting to the rest of the class and not you as the trainer. Present back. Take questions and tighten up on any inaccuracies or omissions. <u>Hypo signs and symptoms</u>	Look, listen, ask questions Demonstration.	Power Point, V1.

	Autonomic – Sweating, trembling/shaking, heart palpitations or pounding, hunger General – Headache, nausea Neuro – poor coordination, confusion, speech difficulty, drowsiness, uncharacteristic behaviour, aggression, unconsciousness. <u>Causes of hypo</u> Having an awareness of these will support assessment.		
Slide 35-41 – Epilepsy	Explain the signs, symptoms and management of Seizures and Epilepsy condition. Main points to get across are that seizures are a disturbance in the normal electrical signalling patterns within the brain. Epilepsy vs Seizures is worth considering. A seizure is a single occurrence, whereas epilepsy is a neurological condition characterized by two or more unprovoked seizures Types of seizure (I probably wouldn't go into much detail here just give a brief overview) Use the slide to discuss and present from. There's a danger of getting bogged down here, CFRs don't need to get to hung up on the types of seizures and how they present. Just talk more generally. Broadly seizures fall into 2 categories:- 1. Generalized seizures; these are where all or the majority of the brain is affected. These include • <u>Absence seizures</u> mainly affect children; they cause the person to lose awareness of their surroundings, usually for up to 15 seconds. The person will seem to stare vacantly into space. Some people will flutter their	Look, listen, ask questions.	Power Point, V1.

		eyes or smack their lips. The person will have no memory of the seizure. They can occur several times a day. • <u>Myoclonic</u> - These types of seizures cause arms, legs or upper body to jerk or twitch, as if they have received an electric shock. They often only last for a fraction of a second, and normally the person will remain conscious during this time. • <u>Atonic</u> - cause all muscles to relax suddenly. There's a chance you may fall and injury. • <u>Tonic</u> - cause all muscles to suddenly become stiff. Can have loss of balance and fall so there is a risk of injury. • <u>Tonic-clonic</u> - convulsions have 2 stages. Body will initially become stiff and then arms and legs will begin twitching. Loss of consciousness and some people will lose bladder and bowel control. Seizures normally last a minute, but can last longer. • <u>Status epilepticus</u> is the name for any seizure that lasts longer than 5 minutes, or a series of seizures where the person does not regain consciousness in between. This is a medical emergency and requires treatment as soon as possible. 1. Focal seizures; these are where only part of the brain is affected. There are further subdivided into 2 categories:- • Focal aware – where the person is conscious and aware • Focal impaired – where the person is unconscious and will be unaware and mostly have no memory of the instance.	
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Slide 42 – 48 – Unconscious	Explain the signs, symptoms, and management of an unconscious patient. . Recap on AVPU Glasgow Coma Scale GCS - Mention that there several Apps out there to aid calculation of GCS. Task - Give the CFRs the GCS laminate from the bags. Give them a set of cards. On one side is a patient scenario on the back should be the score. From the scenario, calculate a score; then flip over the card and see if correct or not. Introduce FISH SHAPED principle – the rationale being to highlight that unconsciousness has many causes and CFRs should explore and consider them. Exploring the cause will help to turn determine the management. Fainting – raise legs to aid circulation Imbalance of heat - Hypothermia – take temp and warm Asphyxia – respiratory arrest? Poisoning – the need for care in the Danger/SCENE survey Epilepsy – Active fitting? Diabetes – the need to take a BM in unconscious	Look, listen, ask questions.	Power Point, V1.
Slide 43	<u>Group work – practise time</u>	Look, listen, ask questions.	Power Point, V1.

Slide 44 – Wellbeing checklist – close	✓ Complete wellbeing checklist	Look, listen, ask questions.	Power Point, V1.
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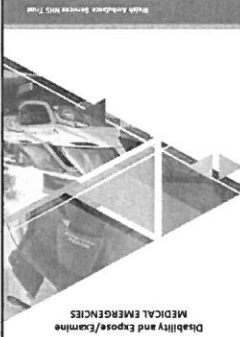

Welcome / Croeso

Community First Responder

Initial Training

Day Three

Disability and Exposure/Examine

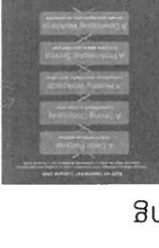


1



Housekeeping

- Welcome
- Introductions
- Fire exits/tests
- Breaks
- Mobiles
- WAST behaviours
- Order of the day

2



CFR Initial Training 2023 – Day 3

Knowledge Check – Day 2



3



Learning Outcomes

Disability and Exposure/Examine

MEDICAL EMERGENCIES

By the end of this session the Community First Responder should be able to:

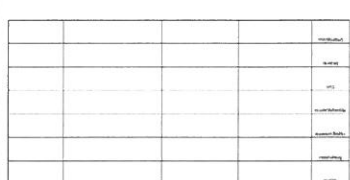
- Understand some common medical emergencies
- Identify some common medical emergencies by the presenting signs and symptoms
- Demonstrate how to manage some common medical emergencies
- Anaphylaxis - Diabetes - Sepsis - CVA - Seizures - Unconsciousness



4



DAY 3: DISABILITY AND EXPOSURE/EXAMINE - MEDICAL EMERGENCIES



5



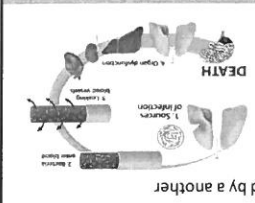
SEPSIS

Sepsis is a life threatening condition that arises when the body's immune response to an infection injures its own tissues and organs.

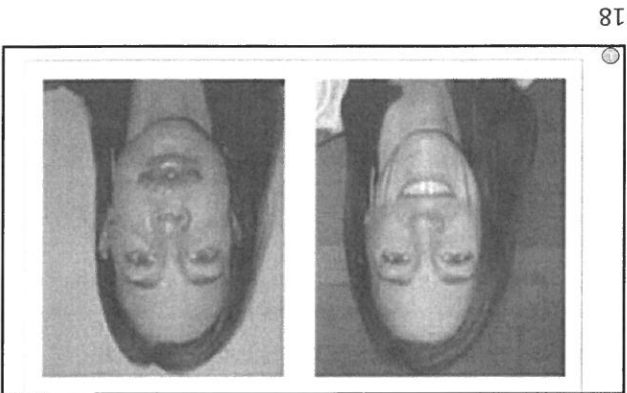
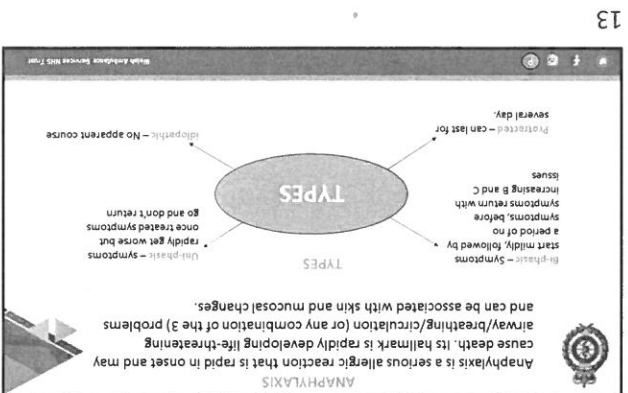
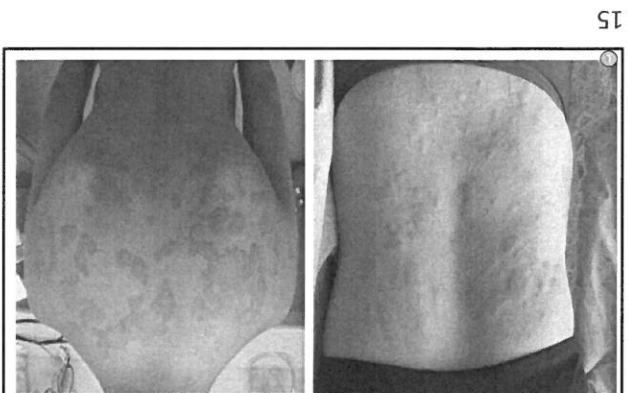
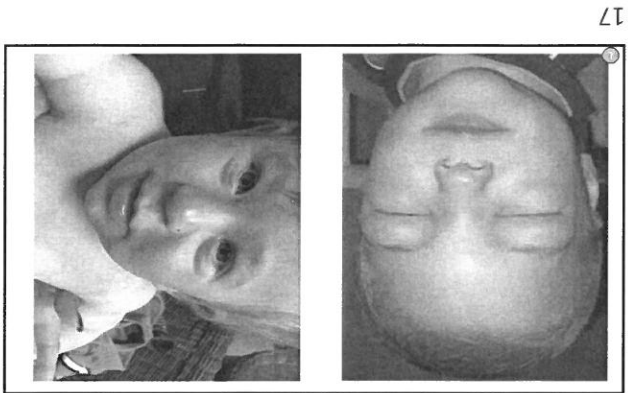
CAUSES

Sepsis doesn't just happen, it is triggered by another infection.

- Lung/chest infection
- UTI
- Skin infection
- Post surgery infection
- Foreign object- eg tampon



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- 21

- Nettle rash (hives) anywhere on the body (urticaria)
- Itchiness (Pruritis)
- Sense of impending doom
- Swelling of throat, mouth, lips, tongue and other airway structures.
- Difficulty in swallowing or speaking
- Alterations in heart rate
- DIB
- Abdominal pain, nausea and vomiting
- Generalised flushing of the skin
- Sudden feeling of weakness (drop in blood pressure blood pressure)
- Collapse and unconsciousness



WHAT IS WRONG WITH THIS PHOTO?



Epi-Pen ADMINISTRATION PRACTICE

- Diagram illustrating the three steps to remove the Epilife® device from the patient's arm:

 - 1** Form fist around Epilife® and PULL OFF BLUE SAFETY RELEASE
 - 2** Hold still and PLACE ORANGE EHD against outer mid-thigh (with or without clothing)
 - 3** PUSH DOWN HARD until a click is heard or felt and hold in place for 3 seconds
REMOVE Epilife®

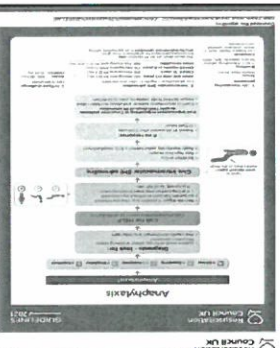


ANAPHYLAXIS

SCENARIO

Can you manage a patient in Anaphylaxis?

Can you manage
a patient in
Anaphylaxis?




A white mug with a black Star of Life symbol on it, with the words "Break Time" written above it.

The image displays two side-by-side screenshots of a web browser. The left screenshot shows a website with the title "What is Type 1 Diabetes?" and a navigation menu. The right screenshot shows a page titled "What is Type 1 Diabetes?" with a sub-header "What causes it | What it is and Type 1 and Type 2." and a paragraph of text.

DIABETIC EMERGENCIES

Blood sugar is normally maintained within a narrow range of 4-5.4mmol/L when fasting and up to 7.8mmol/L 2 hours after eating.

Diabetics are encouraged to maintain a BM of between 4-8mmol/L.

There are two types of diabetic emergencies:

- ✓ Hypoglycaemia.
- ✓ Severe hyperglycaemia, which can be further divided into diabetic ketoacidosis (DKA).

ANTT (ASEPTIC NON-TOUCH TECHNIQUE) IN MEASURING BLOOD GLUCOSE



- Always have sharps bin out before starting
- Always wear gloves when taking BM
- Change gloves between patients
- Never contaminate any parts
- Touch non-ay parts with confidence
- Dispose of sharps in approved sharps bin
- Dispose of contaminated in medical waste
- Cleanll wipe surface of equipment after use



Medisch-Technische Dienstleistungen

ERRORS IN MEASURING BLOOD GLUCOSE?

- Machine not calibrated
- Contamination of test finger e.g sugary food, insufficient drying of finger
- Expired strips or strips stored in extreme cold or hot
- Patient condition e.g. anaemia, hypoxia, shock

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Research signs and symptoms

- Hypoglycaemia
- Hyperglycaemia/DKA

2 groups

What are the causes, signs and symptoms?

Research - produce a poster – present to other half of the group – must include at least 1 picture!

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3 categories

HYPOGLYCAEMIA MANAGEMENT?

- severe (unconscious, GCS less than 8; fitting.)
- Moderate (conscious and able to swallow but may be confused)
- Mild (conscious, orientated and able to swallow)

Unconscious:

- Request immediate backup
- Manage A, B, C;
- Recovery position (monitor closely)
- O2 if hypoxic

Conscious:

- Assist patient to sit comfortably; if they have own medication eg Glucose Gel encourage to take or give 15-20g of glucose, this is available in
- 50ml of Lucozade - 18ml of Ribena (do not use sugar free) - 2 teaspoons of sugar
- Follow up with starchy carb source, e.g. a piece of toast.
- Repeat BM @ 15-20 mins
- CSD call

3 categories

HYPERGLYCAEMIA/DKA MANAGEMENT?

- Request immediate backup
- Airway, Breathing & Circulation.
- Recovery position (monitor closely)
- O2 administration

Conscious:

- Monitor patient.
- CSD call

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HYPERGLYCAEMIA/DKA MANAGEMENT?

- Request immediate backup
- Airway, Breathing & Circulation.
- Recovery position (monitor closely)
- O2 administration

Conscious:

- Monitor patient.
- CSD call

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Out to LUNCH!

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Initial CFR training - Day 3 Medical
Emergencies - Details - Kahoot!
<https://kahoot.it>

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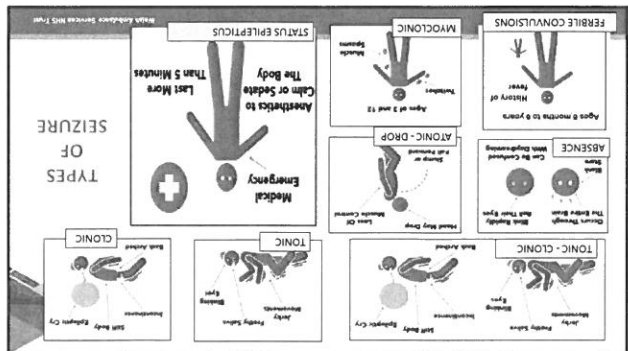
SEIZURES/EPILEPSY

A seizure is a sudden uncontrolled disturbance in the normal electrical signalling of the brain. Epilepsy is a diagnosed condition characterized by history of two or more unprovoked seizures.

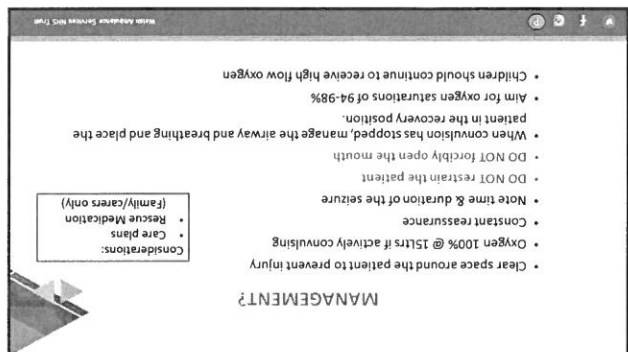
Seizures are caused by abnormal electrical activity in the brain

Generalised seizures
The seizure is bilateral
The patient may have convulsions
The seizure is not confined to any one part of the brain

Focal seizures
The seizure is unilateral
The patient may have convulsions
The seizure is confined to one part of the brain



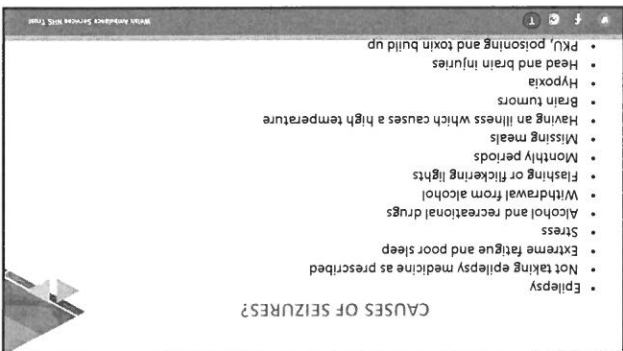
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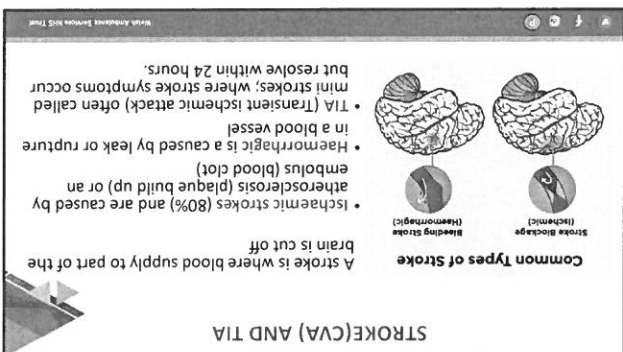
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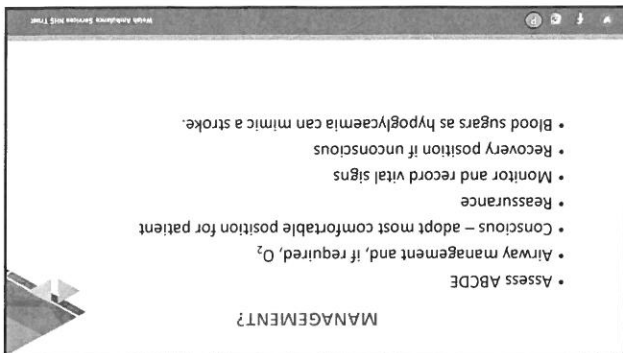
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Level of Response

To rate the LOC we use the acronym **AVPU**.

Level of consciousness

- **A** Alert, the patient looks at you
- **V** Verbal, not fully awake and only responds to verbal stimuli.
- **P** Pain, difficult to rouse and only responds to a painful stimuli.
- **U** Unresponsive, completely unconscious with no response.

AVPU explained - YouTube

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Glasgow Coma Score - GCS

The Glasgow Coma Score assesses the patient's level of consciousness from 3 aspects of the patients behaviour :-

- **Eye Response** (4 down to 1)
- **Verbal Response** (5 down to 1)
- **Motor Response** (6 down to 1)

Highest score is 15 = normal level of consciousness.
Lowest score is 3 = patient will be unconscious.

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GCS ADULT

SCORE	1	2	3	4	5	6
EYE RESPONSE	No response	Eye open to verbal stimuli	Eye open to pain	Eye open to verbal stimuli	Eye open to pain	Eye open spontaneously
BEST VERBAL RESPONSE	No response	Incomprehensible sounds	Words	Coherent	Oriented to person, place and time	Oriented to person, place and time
BEST MOTOR RESPONSE	No response	Abnormal extension (decorticate)	Abnormal flexion (decorticate)	Flexion withdrawal to pain	Withdrawal to pain	Obeys commands

Visual aids showing patient responses for each score are included.

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Glasgow Coma Score - GCS task

• Can you calculate the GCS scores for these patient scenarios?

Visual aids showing patient scenarios for GCS calculation are included.

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UNCONSCIOUS CASUALTY



- Faint
- Imbalance of heat
- Shock
- Head injury
- Stroke / CVA
- Heart attack / MI
- Asphyxia
- Poisoning
- Epilepsy
- Diabetes

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MANAGING AN UNCONSCIOUS PATIENT TASK



Can you effectively manage an unconscious patient?

MANAGEMENT

- Primary assess DRACABCD
- Manage life threatening findings in stepwise approach
- Cat Haem, Airway management? O2 therapy? Assisted ventilation?
- Recovery position
- CSD Call
- Full secondary survey to include full set of obs (additionally blood pressure, BM, Pupil response, Temperature)
- Assess for injury – particularly head
- Obtain as full a history as possible – Environmental cues? Patient warning cards? Alcohol? Drug Paraphernalia/track marks? Patient characteristics – fruity odour on breath, temperature.

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Break Time

Followed by practice time



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At the end of session:

- ✓ Reflect on what went well today:
- ✓ Recognise what was difficult:
- ✓ Check in with the colleagues around you.
- ✓ Reflect for a moment on the difference you made to people and be proud
- ✓ Are you ok? Use support scale below if you're not.
- ✓ Go home: rest, restore and do something you enjoy!

Diolch
Thank You

www.westwarping.com

- Needing a bit down? Not to a colleague
- Needing things offload? Not to the management team
- Needing professional advice? Call Medication Support Service 0800 321 4700
- Don't know what to do? Call the Samaritans

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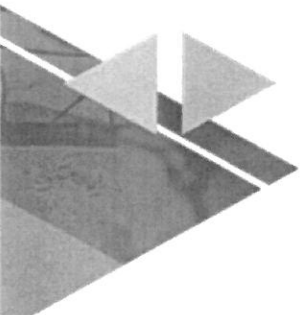


Time	Session	Activity	Equipment
0845-0900	Welcome and refreshments	Welcome	Refreshments Name labels Pens Teas and coffees Milk
0900-0915	Knowledge check 2	• Knowledge check 2	Note pads and pens Desks Chairs Knowledge checks hard copies and QR code linking to Teams
0915-0920	Learning objectives	• Powerpoint • Crib sheets – optional for completion	Powerpoint Conditions crib sheet
0920-1020	Sepsis	• Powerpoint – Q & A • /whiteboard work • Obs practice on peer • NEWS task calculating NEWS scores	Enhanced skills bag NEWS cards from bags
10:20-11:10	Anaphylaxis	• Powerpoint – Q & A / • whiteboard work • Epi-practice • Anaphylaxis scenario	Laminates of signs and symptoms Training epi-pens Task sheet for scenario Response bags
11.10-11.25	BREAK		
1125-1225	Diabetes	• Powerpoint and Q & A / • whiteboard work • BM practice • Research task	BM kits Sharps bin Gloves Hand sanitizer Flip chart paper
1225-1255	LUNCH		
1255-1315	Kahoot quiz	• Kahoot	CFRs own phones
1315-1345	Seizures	• Powerpoint and Q & A / • whiteboard work • Sticky post-it activity for causes	Sticky post-its
1345-1415	CVA	• Powerpoint and Q & A / • whiteboard work • FAST test practice	
1415-1515	Unconscious casualty	Powerpoint and Q & A and Whiteboard work Scenario task	(Pairs) practice Manniquin or volunteer as unconscious pt
1515 to close	BREAK and practice time	CFRs to take tea/coffee on the go. The purpose of the remainder of the day is to	(Group task – 1 role play scenario) 3 x CFRs to manage GCS 3 + seizure pt (Trainer as pt) others observe, then debrief & reflect



Sign offs:

Pre-learning knowledge check	Sepsis and NEWS Anaphylaxis Diabetes and BM Seizures CVA Managing unconscious casualty	O2 practical aspect of sign off
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Initial CFR 5 day training course

Trainer notes: Day 3 – Disability and Expose/Examine

RED = to complete/needs discussion or attention

Black = Important info

Grey = background and extension info

Overview

Focus of the day is Disability and Expose/Examine aspects of DRABCDE. Essentially though we will be exploring a range of medical emergencies (Anaphylaxis, Diabetes, Sepsis, CVA, Seizures, Hypothermia, Hyperthermia, Unconscious). Varied day with tasks, discussion, quizzes, Q and A, scenarios, practice of obs and more.

HONESTLY, MY DAY HAS BEEN AN ABSOLUTE NIGHTMARE TO PREP FOLKS. IT'S REALLY DISJOINTED AND ATTEMPTING TO TRY AND ESTABLISH ANY FLOW TO IT HAS BEEN REALLY DIFFICULT. IT'S NOT BEEN HELPED BY THE PREVIOUS POWERPOINTS IN THAT DISABILITY AND EXPOSE/EXAMINE WERE ALL CLUMPED INTO ONE POWERPOINT AND THERE WAS ALL THESE OTHER CONDITIONS THAT NEEDED COVERING UNDER MEDICAL EMERGENCIES. I GET THE DRABCDE STRUCTURE AND PARTICULARLY FOR ABC I THINK ITS IMPORTANT. SO, ESSENTIALLY, IT'S JUST A DAY OF MEDICAL EMERGENCIES. IT FLOWED BETTER WITH MEDICAL EMERGENCY STUFF BEFORE DISABILITY AND EXPOSE AND EXAMINE BUT THIS CAN BE CHANGED IF REQUIRED. OWEN HAS TAKEN THE HYPOTHERMIA AN HYPERTHERMIA ASPECTS.

I'M ALSO NOT SURE ABOUT THE LEARNING OBJECTIVES AT ALL FOLKS. WHAT I HAVE DONE HERE IS PULLED FROM A COMBINATION OF THE OLD POWERPOINTS AND THE RELEVANT SIGN OFFS FROM THE MOST RECENT BARRY AND TY ELWI NEW COURSES. I DON'T LIKE THEM AT ALL. THE FIRST SET FOR ANAPHYLAXIS, SEPSIS ETC ARE REALLY SPECIFIC THEN THE DISABILITY ONES I DON'T THINK ARE ALL THAT APPROPRIATE. I THINK THE WHOLE LOT COULD BE LOOKED AT.

I DON'T THINK THEY NECESSARILY TO BE SHARED WITH THE RESPONDERS ETC – IT COULD BE OVERKILL FOR MY DAY, BUT MORE FOR OUR POINT OF REFERENCE REALLY. IN THE POWERPOINT I HAVE SIMPLIFIED MASSIVELY ON SLIDE 2. (MORE ABOUT THIS LATER)

Below the previous objectives (black = covered in the materials; Red = not covered notes provided why; Blue = from previous practical sign offs)

- Explain the term 'anaphylaxis' and its common causes.
- Describe signs and symptoms that a patient with anaphylaxis may present with.
- State the management of anaphylaxis including the administration of adrenaline using the patients own auto-injector.

- Be able to manage a patient with anaphylaxis

- Explain what sepsis and septic shock are and how they occur.

- State how you would recognise a patient with sepsis or septic shock.

- Describe the out of hospital management of shock – I THINK WE SHOULD FOCUS ON SEPSIS MORE AS WE NEED TO MANAGE ALL SEPSIS, SEPTIC SHOCK DEVELOPS FROM SEPSIS

- Describe the relevant anatomy and physiology of the endocrine system.

- Describe the types and causes of diabetes.

- Describe the two diabetic emergencies. THIS COULD BE WORKED ON AS AN OBJECTIVE.

- Explain how to record a blood sugar measurement.

- State the functions of the nervous systems – NO NEED FOR ALL THAT HEAVY PHYSIOLOGY IT ISN'T GOING TO BENEFIT THEM AT ALL.

- Describe the anatomy and physiology of the nervous system – AS ABOVE NOT HELPFUL

- Explain the pathophysiology relating to a range of neurological disorders – ONLY TOUCHED ON WITH CVA AND SEIZURES VERY BRIEFLY IT'S NOT GOING TO HELP AND IS GOING OVER THEIR HEADS.

- Describe the management of a range of neurological disorders.

- List several common causes of coma – I THINK WE SHOULD JUST USE TERM UNCONSCIOUS HERE.

- Be able to manage and unconscious patient

Objectives

Covered on PowerPoint slide 2. Alternatively write on the whiteboard.

By the end of day 3 they should:-

- Understand a number of medical emergencies
- Be able identify a number of medical emergencies from presenting signs and symptoms
- Be able to effectively manage a number of medical emergencies

And that encompasses; Anaphylaxis, Diabetes, Sepsis, CVA, Seizures, Unconsciousness.

The day should help to give CFRs a basic knowledge and understanding of what the conditions are, how they effect the body and their causes. Emphasis should be on a basic understanding; the goal is to aid identification and support their management.

It should build understanding of the signs and symptoms which will aid their assessments. Recognition is vital. This will include observations. It should result in CFRs being able to manage the conditions effectively.

Kahoot quiz

A quick icebreaker to get CFRs thinking from the outset. They're generally well received; a bit of competition and fun to kick the day off. I have a quiz pre-set up. To access my Kahoot account go to [Kahoot! | Learning games | Make learning awesome!](#) My account login details are:-

username/login: iandavidthomasidtg@gmail.com

Password: Daisy16!

Quiz here: [Initial CFR training - Day 3 Medical Emergencies - Details - Kahoot!](#)

Patient Obs practice

15-20 mins of peer observations using grey bag equipment. At this point leave BM for diabetes section. I will knock up some "HOW TO" TEACHING CARDS WHICH CAN BE USED BY CFRs. PRETTY MUCH THE ONLY BIG THING I HAVE LEFT TO DO ON THIS DAY NOW.

Crib sheet

Summary; aide memoir for the various conditions. Something for students to take notes on throughout the day. No requirement to complete allow it to be optional. I JUST THOUGHT HERE DIFFERENT LEARNING STYLES VAK ETC AND WRITING SOMETHING DOWN WOULD REINFORCE LEARNING AND GENERATE SOMETHING FOR THEM TO GO BACK AND LOOK OVER. BE INTERESTED IF YOU THINK THIS IS A GOER OR NOT AND WHETHER WE SHOULD BOTHER OR BIN THIS OFF

Sepsis

About, causes

A brief explanation of what the condition is and what causes it is provided on slide 3. Its worth elaborating that often causes are seemingly fairly innocuous; a chest infection or UTI that isn't treated can ultimately lead a dysregulated immune response that can ultimately result in poor oxygen perfusion of organs and organ failure. Establishing a history of primary infection or source of infection is fundamental to effective assessment in Sepsis patients.

Pathophysiology

Sepsis pathophysiology Simplification. Normal inflammatory response 5 stages – 1 – infection enters the body and is recognized; chemical messengers (cytokines and inflammatory mediators) messages are sent out, 2 - immune cells and white cells get called into action travel through body to site of infection, 3 - blood vessels at the site widen so that

white cells can leak out into and attack the bacteria. 4 Platelets go to work and form a plug seal.

Where does sepsis come in - Sepsis dysregulated/poorly regulated/overwhelming immune system reaction to an infection.

Cytokine storm; chemical messengers overreact; this causes more white blood cells and immune cells than we need to be recruited, which causes even more chemical messages to be sent out which recruits even more immune cells which causes even more chemical

messages to be sent out.....you get the picture. The issue becomes systemic (all over the body). A big player here is histamine; it causes widening of blood vessels (capillaries) which increases their permeability or more simply ow much they leak. This causes not just white blood cells, but fluid and even red blood cells to leak out of the vessels; such a wide systemic leakage causes drop in blood pressure; additionally we also start to get clots formed within the bloodstream and blood vessels which obstructs and reduces blood flow. So great are these reactions that blood pressure drops so significantly to the point that we end up with which organs aren't perfused and start to shut down. We end up with multiple organ failure.....kidneys, liver, lungs, etc. THIS IS MY VERSION OF THE PATHOPHYS BTW

News

Have NEWS cards with you; also mention NEWS card in the responder bag. Have a copy of the written PCR with you – discuss the limitations of the paperwork form and adding sufficient observations, only one side scanned, how paperwork goes on and where it can be stored. Discuss use of the gloves to write obs and solo responding. DOES THE NEW OBS SHEET IMPACT WHAT IS WRITTEN HERE. WILL THIS HAVE BEEN ROLLED OUT BY THE TIME THESE NEW COURSE RESPONDERS ARE ON THE ROAD?

Hand out 3 NEWS Score task laminates; allow 5 or so minutes to calculate scores. Gauge scores. Use the patient history to highlight further that underlying primary infection that they should be looking for in their assessments of potential sepsis and in fact all patients.

NEWS scenario 1 – Score 9; Has had abdominal surgery in the previous week.
 NEWS scenario 2 – Score 0; Generally unwell patient.
 NEWS scenario 3 – Score 7; patient has arthritis; complaining of joint pain.

Management of sepsis

Q and A; encourage the responders to come up with the solutions to how they would manage and then just fill in the gaps or clarify.

Anaphylaxis

Definition and types

Present from slides. Knowing the types are really important; CFRs should be airing on the side of caution with suspected Anaphylaxis. They can easily be caught out by Biphasic where the patient seems to improve but will then deteriorate. Idiopathic where there is no underlying cause the CFRs need to not take for granted. Just because there is no identifiable trigger, it doesn't mean the patient isn't having an anaphylactic reaction. There is potential

for a biphasic idiopathic reaction which may seem resolved. Protracted, don't underestimate that symptoms may worsen over coming days and the potential impact this might have. Essentially don't get caught out. Use CSD and get guidance.

Causes

Good opportunity for Q and A.

The common causes of anaphylaxis include foods sources such as peanuts, tree nuts, milk, eggs, shellfish, fish and sesame seeds, although many other foods have also been known to trigger anaphylaxis. Some people can react to even tiny amounts of the food.

Non-food causes include wasp or bee stings, natural latex (rubber), and certain drugs such as antibiotics. In some people exercise can trigger a serious allergic reaction – either on its own or in combination with other factors such as food or drugs (for example, aspirin).

Sometimes the cause of the reaction is not found. This is called "idiopathic anaphylaxis.

Pathophysiology

Anaphylaxis doesn't generally occur on first exposure to an allergen. You can have a severe reaction to things on first exposure. But, generally with anaphylaxis it's a 2 stage process.

Firstly we have a period called sensitization. Foreign object enters the body via injection, ingestion, inhalation, absorption into either tissues or blood. The foreign object will have antigens on its surface (these are markers which lie on the surface of cells giving them identity). Body's immune cells recognize antigens as foreign. As a result we start producing a whole bunch of antibodies. These are proteins. They do 2 things – firstly they attach to the antigens on the surface of the foreign cells and attack and neutralize these cells. Secondly they attach themselves to mast cell which are a type of white blood/immune cell that is found in connective tissues all through the body, especially under the skin, near blood vessels and lymph vessels, in nerves, and in the lungs and intestines. When attached the mast cells are said to be primed. Mast cells are full of chemical messengers called cytokines which are used to signal to and call other immune cells into action. They are also full of histamine which acts on capillary walls causing little junctions.

Stage 2 is our secondary exposure to the allergen. Again, it enters body by one of the four routes. The antigen attaches itself to antibodies on the surface of the mast cells.

Sign and symptoms

Slides 11-20 of the PowerPoint, I plan on printing out and laminating; For this section I would likely do some white board work and Q and A, but pass these around the group to add to the discussion on the signs and symptoms. I'M NOT ALL THAT HAPPY WITH THESE; THEY ARE GOOD IMAGES, BUT JUST THE QUALITY WHEN MADE BIGGER IS QUITE POOR.

Anaphylaxis should be suspected where 1) Sudden onset and rapid progression of symptoms; 2) Life threatening Airway; Breathing; Circulation changes; 3) Skin and mucosal changes (flushing, urticaria, angioedema).

Diagnosis is supported if patient has been exposed to know allergen.

The majority of signs and symptoms are covered on the PowerPoint. Nettle rash (hives) anywhere on the body (urticaria); Itchiness (Pruritis); Sense of impending doom; swelling of throat, mouth, lips, tongue and other airway structures; Difficulty in swallowing or speaking; Alterations in heart rate, DIB, Abdominal pain, nausea and vomiting, Generalised flushing of the skin, Sudden feeling of weakness (drop in blood pressure blood pressure), Collapse and unconsciousness

Incorrect epi-pen administration

Either another laminate or use the PowerPoint slide. Where possible the patient themselves or a family member trained in administering an epi-pen Discussion – what is wrong with administration of the epi-pen in the photo?

Wrong part of thigh should be anterolateral aspect not anterior.

Blue safety cap hasn't been removed from the end of the epi-pen.

Thumb is over the end of the pen which wouldn't allow release even if the cap was removed.

They may raise that the person is wearing trousers – technique wise this is ok, ideally skin contact to get the right level of depth. Needle Length and Dosing of Epi Auto-Injectors: Experts Weigh In (allergicliving.com) Epi-pens have fatal flaws, says Pret A Manger death coroner | The Times

HOW LONG PAST EXPIRY DATE IS SOMETHING I NEED TO LOOK UP.

CHECK ON NICE GUIDELINES Adult dose of 1 in 1000 is 500mg, 5 mins apart, no limit on number of doses. Own epi pens are 300mg – child 300mg as adult (6-12) under 6 150mg

Further in terms of assessment, those with allergic asthma (particularly poorly controlled) and eczema are at more risk of developing anaphylaxis. Look for a medi alert bracelet; previous anaphylaxis should all carry 2 epi pens

Epi-pen practice

In pairs have several goes at administering training epi-pen.

Anaphylaxis Scenario task

Group off into 3's. One to act as CFR, one to act as patient and one to have assessment task sheet. I've created a task card here that can be laminated, marked on with a board pen and used to give feedback. I have also created a scenario sheet for the patient to help the scenario run better. The idea is that one of the CFRs assesses and manages and anaphylaxis scenario and get feedback that all can learn from.

The main points really in terms of assessment are be systematic; however early recognition of the signs and symptoms of anaphylaxis and administration of epi-pen are the first line treatment; ordinarily we would oxygenate first. The CFR should understand that self-

administration of epi-pen is not always reliable and should not assume self-administered epi-pen has been successful. Time of epi-pen use should be recorded. They should lie patient flat (potentially elevate legs or not); consider sitting position if it makes breathing easier. If pregnant they should lay on left side. High flow oxygen should be administered and monitored throughout. At 5 mins if there is not improvement there should be a repeat dose of adrenaline. If after second dose of adrenaline fails to improve patient condition, then condition should be treated as refractory anaphylaxis and adrenaline should be administered every 5 minutes alongside high flow oxygen, however it is highly unlikely that any patient will carry more than 2 epi-pens

Diabetes

Introduction

The 2 videos are a great introduction to the both Type 1 and Type 2 and the differences.

Diabetic emergencies

Cover Hypos and Hypers.

Hypoglycaemia is where are blood glucose levels are too low; less than 4mmol/L in a diabetic / less than 3mmol/L in a non-diabetic patient. Causes are varied, but can include not enough carbohydrates in diet, skipping meals, excessive exercise, illness and alcohol intake. It is worth know that we categorize as severe (unconscious; GCS less than 8; fitting,) Moderate (conscious and able to swallow but may be confused) Mild (conscious, orientated and able to swallow). The category of the hypo should determine the management actions taken.

Hyperglycaemia is where blood glucose levels are too high; usually above 7mmol/L before eating and above 8.5mmol/L 2 hours after eating. A test at any other time that reads 11mmol/L or more is also a hyper.

In diabetic patients levels can fluctuate and often be too high; Raised blood glucose is not a medical emergency unless DKA is present. but not within the – can be too high and ok (thirst, tiredness, blurred vision and weakness, weight loss) – not normally serious, chronic long term, nerve damage, heart issues, vision issues. CFRs

Diabetic ketoacidosis (DKA) is a life-threatening problem that affects people with diabetes. In DKA so severe is the lack of insulin the body can't use sugar for energy. Instead it starts to use fats for energy. During this process chemicals called ketones are released into the blood. Blood becomes acidic – can lead to acidosis. Heart, respiratory failure and coma. Blood PH is kept within a tight PH - 7.35-7.45. Below 7.35 acidosis starts to occur.

ANTT

Prior to BM practice ANTT should be considered fully. BM is probably the only invasive procedure that CFRs will carry out fairly regularly. Here I'd probably just pop up the slide and get the CFRs to read and raise any questions if there are any points that aren't clear. I've tried to keep it really simple.

- Always wear gloves when taking BM

- Change gloves between patients
- Never contaminate key parts
- Touch non-key parts with confidence
- Wash hands with good technique
- Dispose of sharps in approved sharps bin
- Dispose of contaminants in medical waste
- Clineil wipe surface of equipment after use

BM practice

Stress here that BMs should only be carried on:

- 1) Known diabetics
- 2) Those with new confusion or disorientation
- 3) Unconscious

*** Unless specifically asked for by a clinician either CSD or road medic.**

Work with peers can use test fluid and puncture a banana. AGAIN MAY WELL PRODUCE AN INSTRUCTION SHEET HERE.

Highlight the Martin video for further guidance. Monitors should be recalibrated **every** **week** 3 month expiry on quality solution, CFRs should date their pots.

Errors in taking BM

CFRs should be made aware that errors can produce inaccurate results. Common faults which are on the PowerPoint include....

- Machine not calibrated or not calibrated properly for reasons such as out of date test solution.
- Contamination of test finger eg sugary food, insufficient drying of finger
- Expired strips or strips stored in extreme cold or hot
- Patient condition e.g. anaemia, hypoxia, shock

Poster work/research task on signs and symptoms of hypoglycaemia and hyperglycaemia

Divide the class up into 2 groups. One group should research the causes and signs and symptoms of hypoglycaemia and the other DKA before each presenting back to the other half of the group.

Hypo signs and symptoms – having and awareness of these will aid recognition

Autonomic – Sweating, trembling/shaking, heart palpitations or pounding, hunger

General – Headache, nausea

Neuro – poor coordination, confusion, speech difficulty, drowsiness, uncharacteristic behaviour, aggression, unconsciousness.

Causes of hypo Having an awareness of these will support assessment.

- Taking too much insulin
- Not eating enough carbs
- Too much physical activity
- Drinking alcohol.
- Hot and humid weather.
- Going through puberty.
- Menstruation.
- Illness and infection

Signs and symptoms of DKA – again having an awareness will aid CFRs recognition.

These should include the classic hyper symptoms such as:-

- Polyuria – excessive/frequent urine output
- Polydipsia – excessive thirst
- Weight loss
- Lethargy
- Frequent infections such as thrush
- Fruity odour (ketones on breath) – not everyone can detect this
- Presence of ketones in urine or blood
- Hyperventilation

As well as the more classic DKA symptoms

- Vomiting
- Abdominal pain
- Confusion
- Dehydration
- Loss of consciousness
- Kussmaul's breathing

Causes of DKA

Typical causes of DKA include

- Illness and infection eg influenza, UTI, surgery and injury
- growth spurt or puberty; periods
- Not properly managing insulin

Management of Diabetic emergencies

Again, here I would us the slides from the PowerPoint and discuss, Q and A.

Hypo

Again having an awareness of the categories may be useful. Essentially, patient will fall into 2 categories: those who are conscious and those who are unconscious which will impact how they are managed.

Unconscious

- Request immediate backup
- Manage A, B, C;
- Get a BM value
- Recovery position (monitor closely)
- O2 if hypoxic

Conscious

- Get an accurate BM value
- Assist patient to sit comfortably; if they have own medication eg Glucose Gel encourage to take or give 15-20g of glucose, this is available in 55ml of Lucozade - 18ml of Ribena (do not use sugar free) - 2 teaspoons of sugar Follow up with starch source, e.g. a piece of toast.
- Repeat BM @ 15-20 mins
- CSD call

DKA

Again consciousness is going to play a big factor.

Unconscious

- Request immediate backup
- Airway, Breathing & Circulation.
- Recovery position (monitor closely)
- O2 administration

Conscious

- Monitor patient.
- CSD call

Seizures

Introduction

Again a complex topic, which we want to avoid CFRs becoming bogged down in. Main points to get across are that seizures are a disturbance in the normal electrical signalling patterns within the brain.

Epilepsy vs Seizures is worth considering. A seizure is a single occurrence, whereas epilepsy is a neurological condition characterized by two or more unprovoked seizures.

From there CFRs should be aware that seizures can present in many different ways. Its worth noting that seizures have 3 phases, aura phase, ictal phase and the post-ictal phase – all 3 phases will see changes in behaviour.

The active or ictal phases of seizures can present in different ways. The main point I guess to get across is that CRs shouldn't be misled if a seizure doesn't present in full blown tonic-clonic fashion.

Types of seizure

Use the slide to discuss and present from. There's a danger of getting bogged down here, CRs don't need to get to hung up on the types of seizures and how they present. Just talk more generally. Broadly seizures fall into 2 categories:-

1) Generalized seizures; these are where all or the majority of the brain is affected.

These include

- Absence seizures mainly affect children; they cause the person to lose awareness of their surroundings, usually for up to 15 seconds. The person will seem to stare vacantly into space. Some people will flutter their eyes or smack their lips. The person will have no memory of the seizure. They can occur several times a day.
- Myoclonic - These types of seizures cause arms, legs or upper body to jerk or twitch, as if they have received an electric shock. They often only last for a fraction of a second, and normally the person will remain conscious during this time.
- Atonic - cause all muscles to relax suddenly. There's a chance you may fall and injury.
- Tonic - cause all muscles to suddenly become stiff. Can have loss of balance and fall so there is a risk of injury.
- Tonic-clonic - convulsions have 2 stages. Body will initially become stiff and then arms and legs will begin twitching. Loss of consciousness and some people will lose bladder and bowel control. Seizures normally last a minute, but can last longer.
- Status epilepticus is the name for any seizure that lasts longer than 5 minutes, or a series of seizures where the person does not regain consciousness in between. This is a medical emergency and requires treatment as soon as possible.

2) Focal seizures; these are where only part of the brain is affected. There are further

subdivided into 2 categories:-

- Focal aware – where the person is conscious and aware
- Focal impaired – where the person is unconscious and will be unaware and mostly have no memory of the instance.

Causes

Sticky post-it activity. CRs to write one cause per post it; see how many they can come up with. Follow this up with presenting of slide for them to compare. Point to get across is that there are multiple causes.

Management

Q and A and whiteboard work. CRs in the field will be faced with 2 types of seizure scenarios. Either actively seizing patients or post seizure patients.

- They should ensure the patient is as safe and protected as possible by clearing space around them to prevent injury.

- Oxygen 100% @ 15Ltrs
- Constant reassurance
- Note time & duration of the seizure
- **DO NOT restrain the patient**
- **DO NOT forcibly open the mouth**
- When convulsion has stopped, manage the airway and breathing and place the patient in the recovery position.
- Aim for oxygen saturations of 94-98%
- Children should continue to receive high flow oxygen

CVA

Introduction

A stroke is where blood supply to part of the brain is cut off. 3 types to consider:-

- 1) **Ischaemic strokes** (80%) and are caused by atherosclerosis (plaque build up) or an embolus (blood clot).
- 2) **Haemorrhagic** is a caused by leak or rupture in a blood vessel.
- 3) **TIA (Transient ischaemic attack)** often called mini strokes; where stroke symptoms occur but resolve within 24 hours.

Signs and Symptoms

Q and a and whiteboard work. See what the CFRs can come up with. CVA or TIA should be suspected in patients with sudden onset in any of these signs and symptoms. The number which present will vary from patient to patient.

- Facial weakness limb weakness, loss of fine finger movement especially one side
- Altered sensation: numbness, tingling, hemisensory loss
- Disturbance of level of consciousness
- Speech and language changes
- Personality changes
- Severe headache
- Memory loss
- Disturbance of hearing
- Loss of balance, vertigo
- Loss of vision
- Nausea, vomiting

Management

Q and A and whiteboard work. Highlight 4 hour stroke window for thrombolysis.

- Assess ABCDE
- Airway management and, if required, O₂
- Conscious – adopt most comfortable position for patient
- Reassurance
- Loosen clothing
- Monitor and record vital signs
- Recovery position if unconscious
- Blood sugars as hypoglycaemia can mimic a stroke.

Unconscious casualty

Introduce FISH SHAPED principle – the rationale being to highlight that unconsciousness has many causes and CFRs should explore and consider them.

Practical activity managing unconscious

Use this as an opportunity to pull the whole day together. Present the entire group with one unconscious casualty either a mannequin or volunteer. As a group they should attempt to manage the patient in a stepwise fashion. For each step they take, get one of the group to act as scribe writing the step they took on individual card. At the end of the task CFRs should then lay the cards out on the floor in the order they performed each step, give feedback and use slide 39 to support this. CFRs can rearrange order and add additional cards so that they have a full structured sequence of how to manage an unconscious patient.

They should follow a DR CABCDE approach, get support from CSD, intervention eg oxygen treat as they go along.

Paracetamol

Do I need to build in here – Owen had asked can I include, but not had a chance to discuss with him and struggling to see where it fits as its part of pain relief ladder. Should it not sit with trauma?

GCS - 12

Eye - 2

Verbal - 5

Motor - 5

GCS - 11

Eye - 2

Verbal - 4

Motor - 5

GCS - 3

Eye - 1

Verbal - 1

Motor - 2

GCS - 14

Eye - 4

Verbal - 4

Motor - 6

GCS - 15

Eye - 4

Verbal - 5

Motor - 6

GCS - 13/14

Eye - 4

Verbal - 3

Motor - 6

A young female has fallen while rock climbing. When you apply a physical stimulus to her shoulders, she extends her arms and legs but is showing no other response.

You are treating an intoxicated patient who appears struggling to maintain an airway. When you attempt to insert a nasal airway he opens his eyes, slaps your hand away, curses at you but unsure where he is, and sits up. When you stop, he lays down on the stretcher.

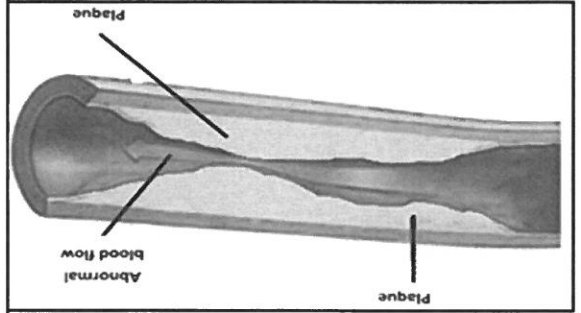
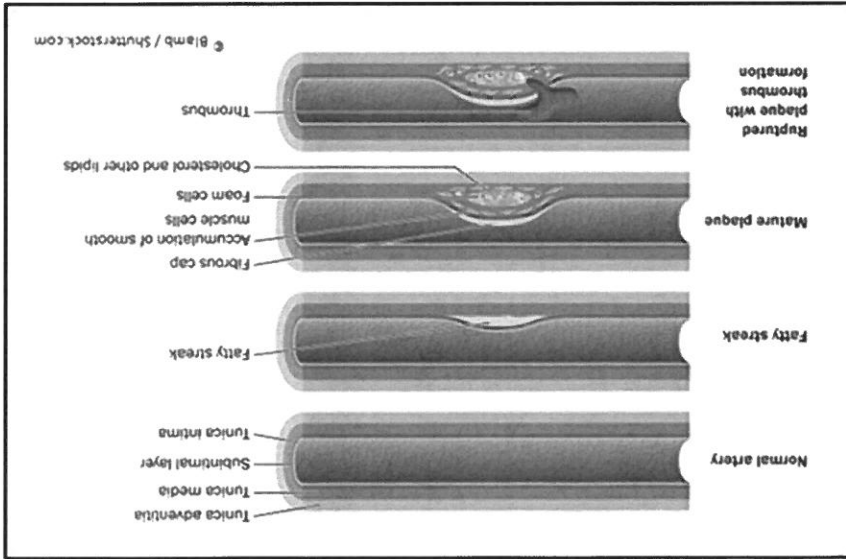
A man is found on the ground outside a homeless shelter. When you give his shoulders a light squeeze, his eyes open, he tells you to go away, and pushes your hand away.

A 73-year-old female possible stroke patient looks at you spontaneously when you speak to her. When you ask her the date, she says "blue." You note left-sided weakness when she grips your fingers.

A 75-year-old male rubs his chest and tells you it really hurts. He tells you he wants to go to the hospital, and you help him walk to the stretcher.

An elderly female in a nursing home is walking around her room and greets you when you enter. She speaks clearly but her answers are confusing.

Coronary Artery Disease (CAD)



Blocked Artery & Cardiac Stent Insertion

