Medical Emergencies in General Practice.

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Heartsaver Instructor Course
Aims of talk

• General update on resuscitation guidelines

• Pre Hospital Emergency Care in Ireland in 2014

• What might we encounter in General Practice?

• Are we ready???
Who sets the Guidelines?

- ILCOR = ERC and AHA and others
- Irish Heart Foundation
- Pre Hospital Emergency Care Council
- NICE
G 2010

Produced by the Advanced Cardiac Life Support Council of the Irish Heart Foundation
May 2012
2014 Edition Clinical Practice Guidelines

The Council Policy for implementation time frames of Clinical Practice Guidelines require that within 18 months of release of new CPGs that they are implemented fully.

All examinations at EMT and Paramedic level will continue with the 2012 CPGs until November 30th 2014, the 2014 standard will come into effect for these examinations on December 01st 2014.

The latest edition of CPGs takes precedent over the 2012 editions which are available below.

1. 2012 Advanced Paramedic
2. 2012 Paramedic
3. 2012 Emergency Medical Technician
4. 2012 Responder (CFR, OFA, & EFR)
5. 2011 PHECC Field Guide
An extremely general practitioner
What you want and what you might have!
Types of Medical Emergency

- Meningitis
- Hypoglycemia
- Convulsion
- Burn
- Anaphylaxis
- FBAO
- ACS
- Cardiac arrest
Observations of the acutely sick patient

• Assess clinical progress by monitoring vital signs
  • respiratory rate, heart rate, blood pressure,
  • conscious level [Glasgow Coma Scale and/or APVU],
  • temperature,
  • capillary refill time, and oxygen saturations
  • At least one blood sugar.

• Carry out and *record* observations at least half hourly.
<table>
<thead>
<tr>
<th>Age</th>
<th>Heart Rate (bpm)</th>
<th>Respiratory Rate (bpm)</th>
<th>Systolic Blood Pressure (mm Hg)</th>
<th>Diastolic Blood Pressure (mm Hg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Newborn</td>
<td>90-180</td>
<td>30-50</td>
<td>60 ± 10</td>
<td>37 ± 10</td>
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<tr>
<td>1-5 months</td>
<td>100-180</td>
<td>30-40</td>
<td>80 ± 10</td>
<td>45 ± 15</td>
</tr>
<tr>
<td>6-11 months</td>
<td>100-150</td>
<td>25-35</td>
<td>90 ± 30</td>
<td>60 ± 10</td>
</tr>
<tr>
<td>1 year</td>
<td>100-150</td>
<td>20-30</td>
<td>95 ± 30</td>
<td>65 ± 25</td>
</tr>
<tr>
<td>2-3 years</td>
<td>65-150</td>
<td>15-25</td>
<td>100 ± 25</td>
<td>65 ± 25</td>
</tr>
<tr>
<td>4-5 years</td>
<td>65-140</td>
<td>15-25</td>
<td>100 ± 20</td>
<td>65 ± 15</td>
</tr>
<tr>
<td>6-9 years</td>
<td>65-120</td>
<td>12-20</td>
<td>100 ± 20</td>
<td>65 ± 15</td>
</tr>
<tr>
<td>10-12 years</td>
<td>65-120</td>
<td>12-20</td>
<td>110 ± 20</td>
<td>70 ± 15</td>
</tr>
<tr>
<td>13+ years</td>
<td>55-110</td>
<td>12-18</td>
<td>120 ± 20</td>
<td>75 ± 15</td>
</tr>
</tbody>
</table>

*Adapted from: Silverman BK. Practical Information. In: Textbook of Pediatric Emergency Medicine, ©2006. Also: Jorden RC. Multiple Trauma. In: Emergency Medicine: Concepts and Clinical Practice, ©1990. All rights reserved. See References 94 and 95, respectively.*
Meningitis

Meningitis Baby Watch

- Tense or bulging soft spot
- High temperature
- Very sleepy/staring expression/too sleepy to wake up
- Vomiting/refusing to feed
- Irritable when picked up, with a high pitched or moaning cry
- Breathing fast/difficulty breathing
- Blotchy skin, getting paler or turning blue
- External shivering
- "Pin prick" rash marks or purple bruises anywhere on the body
- Sometimes diarrhea
- Cold hands and feet

Symptoms of Meningitis

Central
- Headache
- Altered mental status

Ears
- Phonophobia

Eyes
- Photophobia

Neck
- Stiffness

Systemic
- High fever

Trunk, mucus membranes, extremities (if meningococcal infection)
- Petechiae
How common is it?

- Bacterial meningitis 15%
- Septicemia 20%
- Combination of both 60%

Most cases occur under five years of age and most commonly in first year of life, smaller peak between 14-19 years but remember 30% occur in adults.
Signs and Symptoms

- Fever, vomiting, neck stiffness, irritability, upper respiratory tract infection, photophobia
- In small children, bulging fontanella, high pitched cry. Irritable when moved. Quiet when not touched.

NB Petechial rash often a late sign!!!
Septic shock

- Capillary refill time more than 2 seconds
- Unusual skin colour
- Tachycardia and/or hypotension
- Respiratory symptoms or breathing difficulty
- Leg pain
- Cold hands/feet
- Toxic/moribund state
- Altered mental state/decreased conscious level
- Poor urine output
Treatment

• IV or IM Parental antibiotics
  ▪ 1,200mgs  Adults and > 8 years
  ▪ 600mgs  1-8 years
  ▪ 300mgs < 1 year.
• Fluids
  ▪ 250-500mls aliquots adults 20ml/kg children
• Frequent observations
• Rapid transfer to hospital
Anaphylaxis

• Rapid onset and progression

• Airway breathing or circulation compromise

• Skin and mucosal changes (although not always present)

The following supports the diagnosis:

   Exposure to a known allergen for the patient
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When skills and equipment available:

- Establish airway
- High flow oxygen
- IV fluid challenge
- Chlorphenamine
- Hydrocortisone

Monitor:

- Pulse oximetry
- ECG
- Blood pressure

1. Life-threatening problems:
   - Airway: swelling, hoarseness, stridor
   - Breathing: rapid breathing, wheeze, fatigue, cyanosis, \( \text{SpO}_2 \) < 92%, confusion
   - Circulation: pale, clammy, low blood pressure, faintness, drowsy/coma

2. Adrenaline (give IM unless experienced with IV adrenaline)
   IM doses of 1:1000 adrenaline (repeat after 5 min if no better)
   - Adult: 500 micrograms IM (0.5 mL)
   - Child more than 12 years: 500 micrograms IM (0.5 mL)
   - Child 6-12 years: 300 micrograms IM (0.3 mL)
   - Child less than 6 years: 150 micrograms IM (0.15 mL)

   Adrenaline IV to be given only by experienced specialists
   Titrate: Adults 50 micrograms; Children 1 microgram/kg

3. IV fluid challenge:
   - Adult: 500 – 1000 mL
   - Child: crystalloid 20 mL/kg

   Stop IV colloid if this might be the cause of anaphylaxis

4. Chlorphenamine
   (IM or slow IV)
   - Adult or child more than 12 years: 10 mg
   - Child 6-12 years: 5 mg
   - Child 6 months to 6 years: 2.5 mg
   - Child less than 6 months: 250 micrograms/kg

5. Hydrocortisone
   (IM or slow IV)
   - Adult: 200 mg
   - Child: 100 mg
   - Child: 50 mg
   - Child: 25 mg

March 2008
Anaphylaxis kits Always have 2!

- Adrenaline 1mg (2 amps)
- 1 ml syringe (2)
- Blue needles (2) Green Needles (2) Orange (1)
- Hydrocortisone 100mgs (2)
- Water for injection 20mls (2)
- 10 ml syringe (2)
- Chlorphenamine 10mgs (1)
Hypoglycemia

• If blood sugar < 4mmols
  Very sweet drink
  Glucose gel 10-20g buccal
  Glucagon 1mg IM
  Dextrose 10% 250mls IV

• If 5 minutes later blood sugar <4mmols repeat
• Refer for diabetic management assessment
Burns

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Convulsion

- Protect from harm
- Consider causes: Meningitis, Head Injury, Hypoglycemia, Eclampsia, Fever, Poisons, Alcohol/Drug withdrawal

- Midazolam 10mgs buccal
- Midazolam 5mgs nasally or IM
- Midazolam 2.5mgs IV
Intranasal device
FBAO
What next?
Acute Coronary Syndromes
Signs and Symptoms

- Chest pain
- Nausea/vomiting
- Weakness
- Cold sweat

*More likely if risk factors or PMH history positive.*
Which is it?

Clinical features of acute coronary syndrome

Aspirin & analgesia

ECG

ST elevation or new LBBB or true posterior MI

Normal

Consider alternative diagnoses

ST depression or T inversion

No

Raised troponin?

Yes

STEMI

Unstable angina

NSTEMI
Management

• Obs including O2 Sats  consider oxygen therapy

• ECG

• IV access

• GTN unless SBP <90

• Aspirin =/- Antiplatelet

• Morphine

Rapid transport to the right place
What is Cardiac Arrest?

• The abrupt loss of heart function, caused by a malfunction in the electrical system of the heart.

• Death occurs within minutes of the heart stopping.

• CPR and use of an AED may reverse this catastrophic situation.
Epidemiology

• 1800 cases per annum of OHCA attended by Emergency Services

• Mean age 69 yrs. 67% Male 33% Female

• 76% occur in the home or residential institutions
Statistics!

• 2012 data: 5.2% survival.
• 80% of survivors have good neurological outcomes.
• 50% still alive at 10 years.
• 24% of Irish population have had CPR training in the past 5 years.
• 45% of EMS attended OHCA receive bystander CPR prior to EMS arrival.
• Survival for those who receive bystander CPR plus defibrillation is 13.4% compared to 5.5% for bystander CPR alone and 4.0% for EMS only resuscitation.
KEY FACTORS survival from OCAR

• Time to CPR Initiation

• Time to defibrillation

• Initial cardiac rhythm
When it goes wrong!

Ventricular Fibrillation

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AEDs

There are dozens of AEDs out there!
Considerations when purchasing an AED

- Easy of use
- Ease of downloading event
- Robust construction
- Life of batteries and pads
- Supplier support/customer service
- Cost
AED Cabinets

Inside

Outside

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CPR

• Check for scene safety
• Check for signs of life
• Call EMS and start CPR
• 30:2 adults and children whilst alone 15:2 if child/infant and 2 HCPs
• Use Compression only CPR if necessary
• Turn AED as soon as it arrives and attach to patient.
• Press shock button if instructed by device to do so.
• Resume CPR immediately and AVOID interruptions to CPR
Correct pad placement.

Pad’s must be placed correctly in order to deliver a shock effectively.

All pads have a diagram of correct pad position on the body.

If the child is small, pads can be placed anterior and posterior (front & back).

For an adult or child pads should be placed as shown.
2010 guidelines for AED’s.
Regarding usage of adult and child pads.

**Remember**

- **Adult age 8 years and over.** Use adult pads.
- **Child age 1 to 8 years.** Use child pads
- **Infant 0 to 1 year.** Use child pads

Children and infants should ideally be defibrillated using a manual defibrillator. If you have to use an AED on a child or infant and there are no child pads or a paediatric key or switch available, use adult pads and deliver the adult dose.
Can I be Sued?

• ‘There is no statutory obligation imposed on any person to use the defibrillator, but if they do so, the Civil Law Act 2011 provides that a ‘Good Samaritan’ who intervenes to provide assistance, including resuscitation, will not be liable in negligence in any act done in an emergency unless it was done in bad faith or with gross negligence.’
Duty of Care where AED housed.

• The proposed act will exempt from the owner of a designated place where a defibrillator is made available as long as they properly maintain said defibrillator.
Mechanical CPR
Post Resuscitation Management

• Targeted temperature control

• Intensive sugar, infection and blood gasses control

• Accurate prognostication
Pack Kit list

- ACS
- Anaphylaxis
- Meningitis
- Glucose problem
- Fits
- Cardiac arrest
<table>
<thead>
<tr>
<th>Essentials</th>
<th>IV access</th>
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<tbody>
<tr>
<td>AED</td>
<td>Butterfly needles (2)</td>
</tr>
<tr>
<td>2 set pads and shears, razor and cloth</td>
<td>IV cannula 20,18,16</td>
</tr>
<tr>
<td>Oxygen cylinder (CD)</td>
<td>Giving set (2)</td>
</tr>
<tr>
<td>100% O2 Mask Adult and Child</td>
<td>0.9 Saline 500ls</td>
</tr>
<tr>
<td>Nasal Prongs (2)</td>
<td></td>
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<tr>
<td>Nebuliser Mask</td>
<td></td>
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<tr>
<td>SpO2 Sats Prob</td>
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<tr>
<td>Suction device</td>
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<table>
<thead>
<tr>
<th>Airway</th>
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<tbody>
<tr>
<td>Pocket Face mask (Adult) (Child)</td>
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<tr>
<td>Oropharangeal Airways (1-4)</td>
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<tr>
<td>I Gel Advanced Airways (3-5)</td>
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<tr>
<td>Disposable BVM Adult, Infant, Child (1 of each)</td>
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<tr>
<td>Bandage to secure</td>
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<tr>
<td>Paediatric Magills forceps</td>
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<tr>
<td>Laryngoscope with size 2,3 and 4 blade</td>
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<table>
<thead>
<tr>
<th>Anaphylaxis Kit</th>
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<tbody>
<tr>
<td>Adrenaline 1mg (2)</td>
<td></td>
</tr>
<tr>
<td>Hydrocortisone 100mgs (2)</td>
<td></td>
</tr>
<tr>
<td>Piriton 10mgs (2)</td>
<td></td>
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<tr>
<td>1 ml syringe (2)</td>
<td></td>
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<tr>
<td>5 ml Syringe (2)</td>
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<tr>
<td>Water for inj 10mls (2)</td>
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<table>
<thead>
<tr>
<th>Meningitis Kit</th>
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<tbody>
<tr>
<td>BensilPenacillin 600mgs (2)</td>
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<tr>
<td>Water for Inj 10mls (2)</td>
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<tr>
<td>10 ml Syringe (2)</td>
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<tr>
<td>Blue needles (2)</td>
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<thead>
<tr>
<th>ACS</th>
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<tbody>
<tr>
<td>Apirin 300mgs</td>
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<tr>
<td>Clopidagrel 75mgs (8) Ticagralor 90mg (2)</td>
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<tr>
<td>GTN Spray</td>
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<th>Hypoglycemia</th>
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<tr>
<td>Glucose Gell</td>
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<td>Glucagon</td>
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<th>Diagnostic</th>
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<td>Pen Torch</td>
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<tr>
<td>Glucometer</td>
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<tr>
<td>Thermometer</td>
<td></td>
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<tr>
<td>Stethoscope/Sphyg</td>
<td></td>
</tr>
<tr>
<td>Small sharps box</td>
<td></td>
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<tr>
<td>Gloves</td>
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<table>
<thead>
<tr>
<th>IV Fluids</th>
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<tbody>
<tr>
<td>Saline 0.9% 1000mls (2)</td>
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<tr>
<td>Giving sets (2)</td>
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<tr>
<td>IV cannula 20, 18, 16 (2 each)</td>
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<table>
<thead>
<tr>
<th>Burns Kit</th>
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<tr>
<td>Watergel dressings, Large, Med, Small</td>
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<tr>
<td>Watergel gel bottle</td>
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<tr>
<td>Cling film</td>
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<table>
<thead>
<tr>
<th>Obstetric kit</th>
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<tbody>
<tr>
<td>Neonatal BVM</td>
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<tr>
<td>Delivery set</td>
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<table>
<thead>
<tr>
<th>Trauma Dressings</th>
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<tbody>
<tr>
<td>Dressings</td>
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</tr>
<tr>
<td>Bandages</td>
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<tr>
<td>Suture material if required</td>
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<table>
<thead>
<tr>
<th>Cardiac Arrest</th>
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</thead>
<tbody>
<tr>
<td>Adrenaline 1mg (5)</td>
<td></td>
</tr>
<tr>
<td>Atropine 1mg (2) (Symptomatic bradycardia)</td>
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</tr>
<tr>
<td>Water for injection 10mls (5)</td>
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</tr>
<tr>
<td>10mls syringes (2)</td>
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<tr>
<td>Green needles (2)</td>
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</table>
Training

• BLS for HCP

• Anaphylaxis Training

• Practice Preparedness sessions

• PHECC CPGs
Resources

• PHECC

• UK Resus Council

• Irish Heart Foundation

• Fiona@acutemedicaltraining.com
Summary

Fail to prepare, prepare to FAIL!

- Plan your equipment
- Plan your response
- Don’t keep it to yourself!!!!!
Questions?
Thank you