

# Clinical Practice Guidelines - 2017 Edition

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## PARAMEDIC





These CPGs are dedicated to the memory of Dr Geoff King, the inaugural Director of the Pre-Hospital Emergency Care Council (PHECC), who sadly passed away in August 2014. Geoff was a true leader who had the ability to influence change through his own charismatic presence, vision and the respect he showed to all who met and dealt with him. He had an ability to empower others to perform and achieve to a "higher standard".

Geoff's message was consistent "If you always put the patient first when making a decision, you will never make the wrong decision".

His immense legacy is without equal.

Ní bheidh a leithéid arís ann.

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## FOREWORD

This Handbook comprises the 2017 Edition Clinical Practice Guidelines (CPGs). These guidelines outline patient assessments and pre-hospital management for responders at Emergency First Responder-Basic Tactical Emergency Care, Emergency First Responder, First Aid Responder and Occupational First Aider levels, and registered practitioners at Emergency Medical Technician, Paramedic and Advanced Paramedic levels, and I am delighted that there are now 386 CPGs to guide integrated care across the six pre-hospital emergency care clinical levels. These CPGs ensure that responders and practitioners are practicing to best international standards and support PHECC's vision that people in Ireland receive excellent pre-hospital emergency care.



I would like to acknowledge the hard work and commitment the members of the Medical Advisory Committee have shown during the development of this publication, guided by Dr Mick Molloy (Chair). I would also like to pay tribute to the Medical Advisory Groups, chaired by Dr Cathal O'Donnell and Dr Zelig Gaffney, for their dedication and expertise in the publication of previous guidelines, during my term as Chair of Council. A special word of thanks goes to Mr Brian Power, PHECC Programme Development Officer, and the PHECC executive, for their continued support in researching and compiling these CPGs.

I recognise the contribution made by many responders and practitioners, whose feedback has assisted PHECC in the continual improvement and development of CPGs, and welcome these guidelines as an important contribution to best practice in pre-hospital emergency care.

A handwritten signature in black ink, appearing to read 'Tom Mooney', written over a horizontal line.

Mr Tom Mooney, Chair, Pre-Hospital Emergency Care Council (June 2008 – June 2016)

## ACCEPTED ABBREVIATIONS

Advanced Paramedic.....	AP
Advanced Life Support.....	ALS
Airway, Breathing & Circulation.....	ABC
All Terrain Vehicle.....	ATV
Altered Level of Consciousness.....	ALoC
Automated External Defibrillator.....	AED
Bag Valve Mask.....	BVM
Basic Life Support.....	BLS
Blood Glucose.....	BG
Blood Pressure.....	BP
Basic Tactical Emergency Care.....	BTEC
Capillary Refill Time.....	CRT
Carbon Dioxide.....	CO <sub>2</sub>
Cardiopulmonary Resuscitation.....	CPR
Cervical Spine.....	C-spine
Chronic Obstructive Pulmonary Disease.....	COPD
Clinical Practice Guideline.....	CPG
Continuous Positive Airway Pressure.....	CPAP
Degree.....	°
Degrees Centigrade.....	°C
Dextrose 10% in water.....	D <sub>10</sub> W
Dextrose 5% in water.....	D <sub>5</sub> W
Do Not Resuscitate.....	DNR
Drop (gutta).....	gtt
Electrocardiogram.....	ECG
Emergency Department.....	ED
Emergency Medical Technician.....	EMT
Endotracheal Tube.....	ETT
Foreign Body Airway Obstruction.....	FBAO
Fracture.....	#
General Practitioner.....	GP
Glasgow Coma Scale.....	GCS
Gram.....	g
Intramuscular.....	IM
Intranasal.....	IN
Intraosseous.....	IO
Intravenous.....	IV
Joules.....	J
Kilogram.....	Kg
Laryngeal Mask Airway.....	LMA

## ACCEPTED ABBREVIATIONS Continued

Mean Arterial Pressure .....	MAP
Milligram .....	mg
Millilitre .....	mL
Millimole .....	mmol
Minute .....	min
Modified Early Warning Score .....	MEWS
Motor Vehicle Collision .....	MVC
Myocardial Infarction .....	MI
Milliequivalent .....	mEq
Millimetres of mercury .....	mmHg
Nasopharyngeal airway .....	NPA
Nebulised .....	NEB
Negative decadic logarithm of the H <sup>+</sup> ion concentration .....	pH
Orally (per os) .....	PO
Oropharyngeal airway .....	OPA
Oxygen .....	O <sub>2</sub>
Paramedic .....	P
Peak Expiratory Flow Rate .....	PEFR
Per rectum .....	PR
Per vagina .....	PV
Percutaneous Coronary Intervention .....	PCI
Personal Protective Equipment .....	PPE
Pulseless Electrical Activity .....	PEA
Pulseless Ventricular Tachycardia .....	pVT
Registered Medical Practitioner .....	RMP
Registered Psychiatric Nurse .....	RPN
Respiration rate .....	RR
Return of Spontaneous Circulation .....	ROSC
Revised Trauma Score .....	RTS
Saturation of arterial Oxygen .....	SpO <sub>2</sub>
ST Elevation Myocardial Infarction .....	STEMI
Subcutaneous .....	SC
Sublingual .....	SL
Supraventricular Tachycardia .....	SVT
Systolic Blood Pressure .....	SBP
Therefore .....	∴
Total body surface area .....	TBSA
Ventricular Fibrillation .....	VF
Ventricular Tachycardia .....	VT
When necessary (pro re nata) .....	prn



## ACKNOWLEDGEMENTS

The process of developing CPGs has been long and detailed. The quality of the finished product is due to the painstaking work of many people, who through their expertise and review of the literature, ensured a world-class publication.

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## INTRODUCTION

Welcome to the 2017 edition of the Clinical Practice Guidelines for pre-hospital care in Ireland. The field of pre-hospital care is still in its infancy and rapidly developing, as is evident from the 386 Clinical Practice Guidelines covering both responder and practitioner levels from Cardiac First Responder to Advanced Paramedic level.

A number of CPGs have been updated to reflect the 2015 guidelines from the International Liaison Committee on Resuscitation (ILCOR).

I would like to thank the focus groups for the substantial work they have completed on spinal injury management, which is reflected in the updated guidance on appropriate use of spinal motion restriction. Pain management has also been enhanced with the addition of Methoxyflurane and Ketamine, which will substantially improve management of pain for certain groups of patients.

We have developed a robust Delphi process for development and review of CPGs thanks to the work of Brian Power. This process prioritises those issues that are clinically important and likely to impact the widest group of patients. I would like to thank all the members of the Medical Advisory Committee for their work on this edition of the CPGs and on the Delphi process; without their input it would not have been possible to complete this body of work. It is our intention to develop or update guidelines which provide an effective and efficient practice of pre-hospital care. Feedback is welcomed on this edition and on issues you feel are not addressed but encountered in your pre-hospital practice.



Dr Mick Molloy, Chair, Medical Advisory Committee (May 2013 – June 2016)

Feedback on the CPGs may be sent to [CPG-feedback@phecc.ie](mailto:CPG-feedback@phecc.ie)

## IMPLEMENTATION

### Clinical Practice Guidelines (CPGs) and the practitioner

CPGs are guidelines for best practice and are not intended as a substitute for good clinical judgment. Unusual patient presentations make it impossible to develop a CPG to match every possible clinical situation. The practitioner decides if a CPG should be applied based on patient assessment and the clinical impression. The practitioner must work in the best interest of the patient within the scope of practice for his/her clinical level on the PHECC Register. Consultation with fellow practitioners and or medical practitioners in challenging clinical situations is strongly advised.

### The CPGs herein may be implemented provided:

1. The practitioner is in good standing on the PHECC practitioner's Register – **Credentialed**.
2. The practitioner is acting on behalf of a licensed CPG provider (paid or voluntary) – **Licensed**.
3. The practitioner is privileged by the licensed CPG provider on whose behalf he/she is acting to implement the specific CPG – **Privileged**.
4. The practitioner has received training on, and is competent in, the skills and medications specified in the CPG being utilised.

The medication dose specified on the relevant CPG shall be the definitive dose in relation to practitioner administration of medications. The principle of titrating the dose to the desired effect shall be applied. The onus rests on the practitioner to ensure that he/she is using the latest versions of CPGs, which are available on the PHECC website [www.phecc.ie](http://www.phecc.ie)

### Definitions

Adult	A patient of 16 years or greater, unless specified on the CPG
Child	A patient between 1 and less than or equal to ( $\leq$ ) 15 years old, unless specified on the CPG
Infant	A patient between 4 weeks and less than 1 year old, unless specified on the CPG
Neonate	A patient less than 4 weeks old, unless specified on the CPG
Paediatric patient	Any child, infant or neonate

### CPGs and the pre-hospital emergency care team

The aim of pre-hospital emergency care is to provide a comprehensive and coordinated approach to patient care management, thus providing each patient with the most appropriate care in the most efficient time frame.

In Ireland today, the provision of emergency care comes from a range of disciplines and includes responders (Cardiac First Responders, First Aid Responders and Emergency First Responders) and practitioners (Emergency Medical Technicians, Paramedics, Advanced Paramedics, Nurses and Doctors) from the statutory, private, auxiliary and voluntary services.

CPGs set a consistent standard of clinical practice within the field of pre-hospital emergency care. By reinforcing the role of the practitioner, in the continuum of patient care, the chain of survival and the golden hour are supported in medical and traumatic emergencies respectively.

## IMPLEMENTATION Continued

CPGs guide the practitioner in assessment, treatment and disposition of patients who present with an acute illness or injury.

CPGs presume no intervention has been applied, nor medication administered, prior to the arrival of the practitioner. In the event of another practitioner or responder initiating care during an acute episode, the practitioner must be cognisant of interventions applied and medication doses already administered and act accordingly.

In this care continuum, the duty of care is shared among all responders/practitioners of whom each is accountable for his/her own actions. The most qualified responder/practitioner on the scene shall take the role of clinical lead. Explicit handover between responders/practitioners is essential and will eliminate confusion regarding the responsibility for care.

When a practitioner of higher clinical level on scene deems it appropriate to take clinical lead he/she should calmly state: **"My name is xx, I am an AP/P/EMT, I am assuming clinical lead."**

If the practitioner of higher clinical level on scene wishes to hand over clinical lead to another practitioner (who may be of equal or lower clinical level), he/she states to the practitioner: **"My name is xx, I am an AP/P/EMT, you are now clinical lead."**

The practitioner acknowledges immediately and accepts clinical lead. **"I am now clinical lead"**

A clinical lead exchange should be recorded on the PCR in the 'continuity of care' section. There should never be any doubt as to who is clinical lead on scene.

In the absence of a more qualified practitioner, the practitioner providing care during transport shall be designated the clinical lead as soon as practical.

### Emergency Medical Technician – Basic Tactical Emergency Care (EMT-BTEC)

EMT-BTEC certifies registered EMTs with additional knowledge and a skill set for providing pre-hospital emergency care in hostile or austere environments. Recognised institutions approved at EMT level may design an EMT-BTEC module to add to new entrant EMT courses or deliver as a CPG education/upskill module to registered EMTs.

### Emergency First Response – Basic Tactical Emergency Care (EFR-BTEC)

The EFR-BTEC is an education and training standard published in 2014. Entry criteria to this course includes the minimum age of 18 and successful completion of a CFR-Advanced course within one calendar year of commencing the EFR-BTEC course. Persons certified at EFR-BTEC learn EFR and the additional knowledge and skill set for providing pre-hospital emergency care in hostile or austere environments.

### First Aid Response

First Aid Response (FAR) is a new education and training standard published in 2014. This standard offers training and certification to individuals and groups who require a first aid skill set, including cardiac first response. This standard is designed to meet basic first aid and basic life support (BLS) requirements that a certified person, known as a 'First Aid Responder', may encounter in their normal daily activities.

## IMPLEMENTATION Continued

### Defibrillation Policy

The Medical Advisory Committee has recommended the following pre-hospital defibrillation policy:

- Paramedics and advanced paramedics should use manual defibrillation for all age groups.
- EMTs and responders shall use AED mode for all age groups.

### Pre-Hospital Spinal Injury Management

The Medical Advisory Committee has recommended that 'spinal motion restriction' shall be used as the preferred terminology in relation to pre-hospital spinal injury management. They further recommend that at paramedic and advanced paramedic levels a 'spinal injury rule in' should apply and not actively performing spinal motion restriction on all trauma patients. Details of all spinal injury management recommendations are available in Appendix 6.



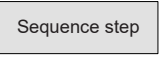
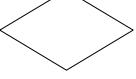
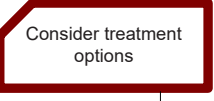




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## CLINICAL PRACTICE GUIDELINES for PARAMEDIC

### (CODES EXPLANATION)

	<b>Emergency Medical Technician</b> (Level 4) for which the CPG pertains		An EMT who has completed Basic Tactical Emergency Care training and has been privileged to operate in adverse conditions
	<b>Paramedic</b> (Level 5) for which the CPG pertains		<b>A parallel process</b> Which may be carried out in parallel with other sequence steps
	<b>Advanced Paramedic</b> (Level 6) for which the CPG pertains		<b>A cyclical process in which a number of sequence steps are completed</b>
	<b>Medical Practitioner</b> (Level 7) for which the CPG pertains		<b>Paramedic or lower clinical levels not permitted this route</b>
	<b>A sequence (skill) to be performed</b>		Transport to an appropriate medical facility and maintain treatment en-route
	<b>A mandatory sequence (skill) to be performed</b>		Transport to an appropriate medical facility and maintain treatment en-route, if having contacted Ambulance Control there is no ALS available
	<b>A decision process</b> The Practitioner must follow one route		<b>An instruction box for information</b>
	Given the clinical presentation consider the treatment option specified		<b>Special instructions</b> Which the Practitioner must follow
	Finding following clinical assessment, leading to treatment modalities		<b>A process or intervention that only pertains to Advanced Paramedic</b>
	Reassess the patient following intervention		<b>Special authorisation</b> This authorises the Practitioner to perform an intervention under specified conditions
	Contact Ambulance Control and request Advanced Life Support (AP or doctor)		Consider requesting a Paramedic response, based on the clinical findings
	Consider requesting an ALS response, based on the clinical findings		Consider medical support
	<b>CPG numbering system</b> 4/5/6 = clinical levels to which the CPG pertains		
	x = section in CPG manual, y = CPG number in sequence mm/yy = month/year CPG published		
	<b>A medication which may be administered by an EMT or higher clinical level</b> The medication name, dose and route is specified		
	<b>A medication which may be administered by a Paramedic or higher clinical level</b> The medication name, dose and route is specified		
	<b>A medication which may be administered by an Advanced Paramedic</b> The medication name, dose and route is specified		
	<b>A direction to go to a specific CPG following a decision process</b> Note: only go to the CPGs that pertain to your clinical level		
	<b>A clinical condition that may precipitate entry into the specific CPG</b>		



## SECTION 1 – Care Principles (Practitioner)

Care principles are goals of care that apply to all patients. Scene safety, standard precautions, patient assessment, primary and secondary surveys and the recording of interventions and medications on the Patient Care Report (PCR) or the Ambulatory Care Report (ACR), are consistent principles throughout the guidelines and reflect the practice of practitioners. Care principles are the foundations for risk management and the avoidance of error.

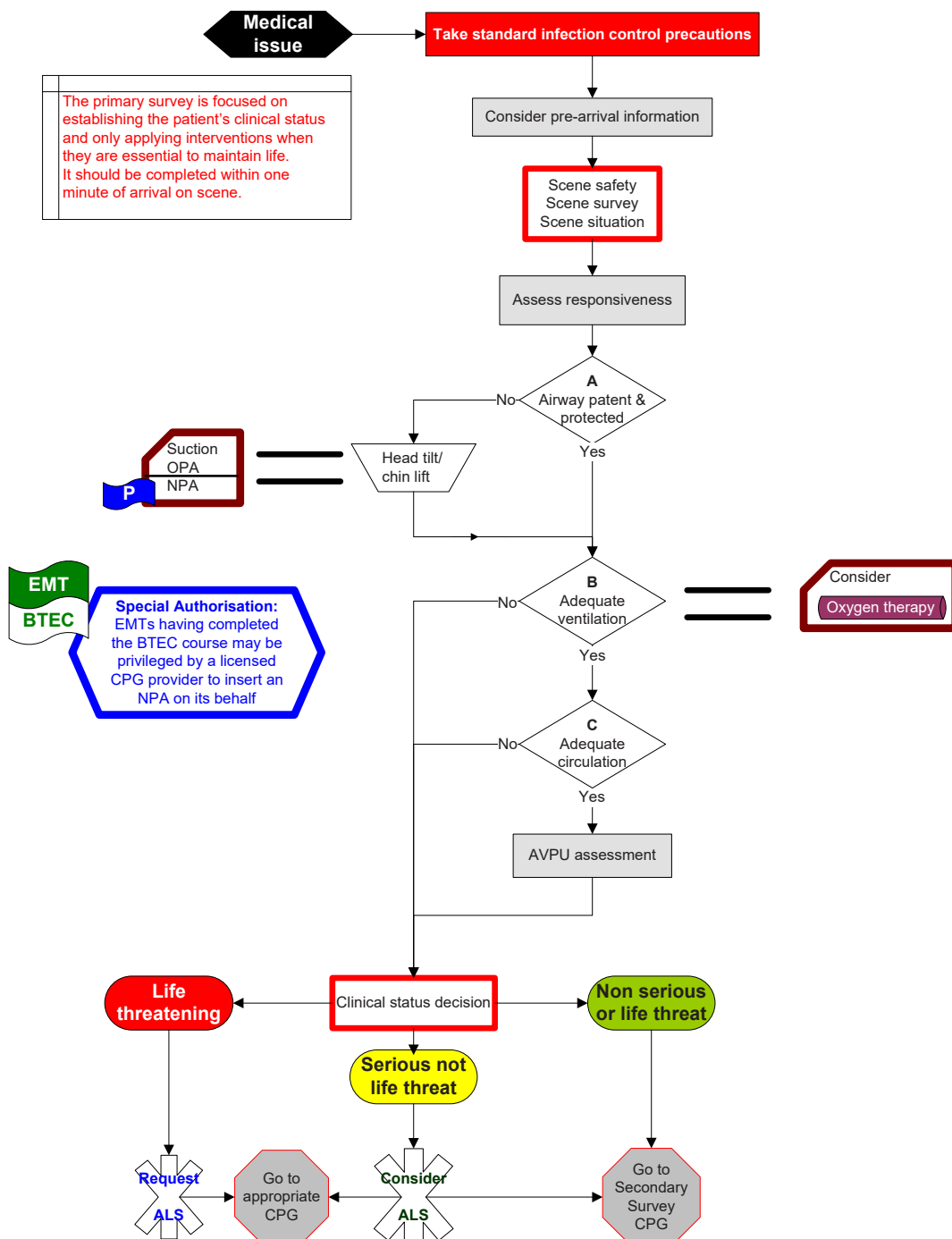
### PHECC Care Principles

1. Ensure the safety of yourself, other emergency service personnel, your patients and the public.
2. A person has capacity in respect to clinical decisions affecting themselves unless the contrary is shown (Assisted Decision-Making (Capacity) Act 2015).
3. Seek consent prior to initiating interventions and/or administering medications.
4. Identify and manage life-threatening conditions.
5. Ensure adequate ventilation and oxygenation.
6. Optimise tissue perfusion.
7. Provide appropriate pain relief within the scope of practice. Pain management;
  - 7.1 should not delay the diagnosis of conditions or injuries
  - 7.2 should be implemented for all relevant patients
  - 7.3 should commence within ten minutes on scene
  - 7.4 goal is to reduce pain to a tolerable level
  - 7.5 to take cognisance of immediate and short term pain management requirements by administering appropriate combinations of analgesia
8. Identify and manage other conditions.
9. Place the patient in the appropriate posture according to the presenting condition.
10. Ensure the maintenance of normal body temperature (unless a CPG indicates otherwise).
11. Provide reassurance at all times.
12. Monitor and record patient's vital observations.
13. Maintain responsibility for patient care until handover to an appropriate practitioner.
14. Arrange transport to an appropriate medical facility as necessary and in an appropriate time frame.
15. Complete a patient care record following an interaction with a patient.
16. Identify the clinical lead on scene; this shall be the most qualified practitioner on scene. In the absence of a more qualified practitioner, the practitioner providing care during transport shall be designated the clinical lead as soon as practical.

## SECTION 2 - Patient Assessment

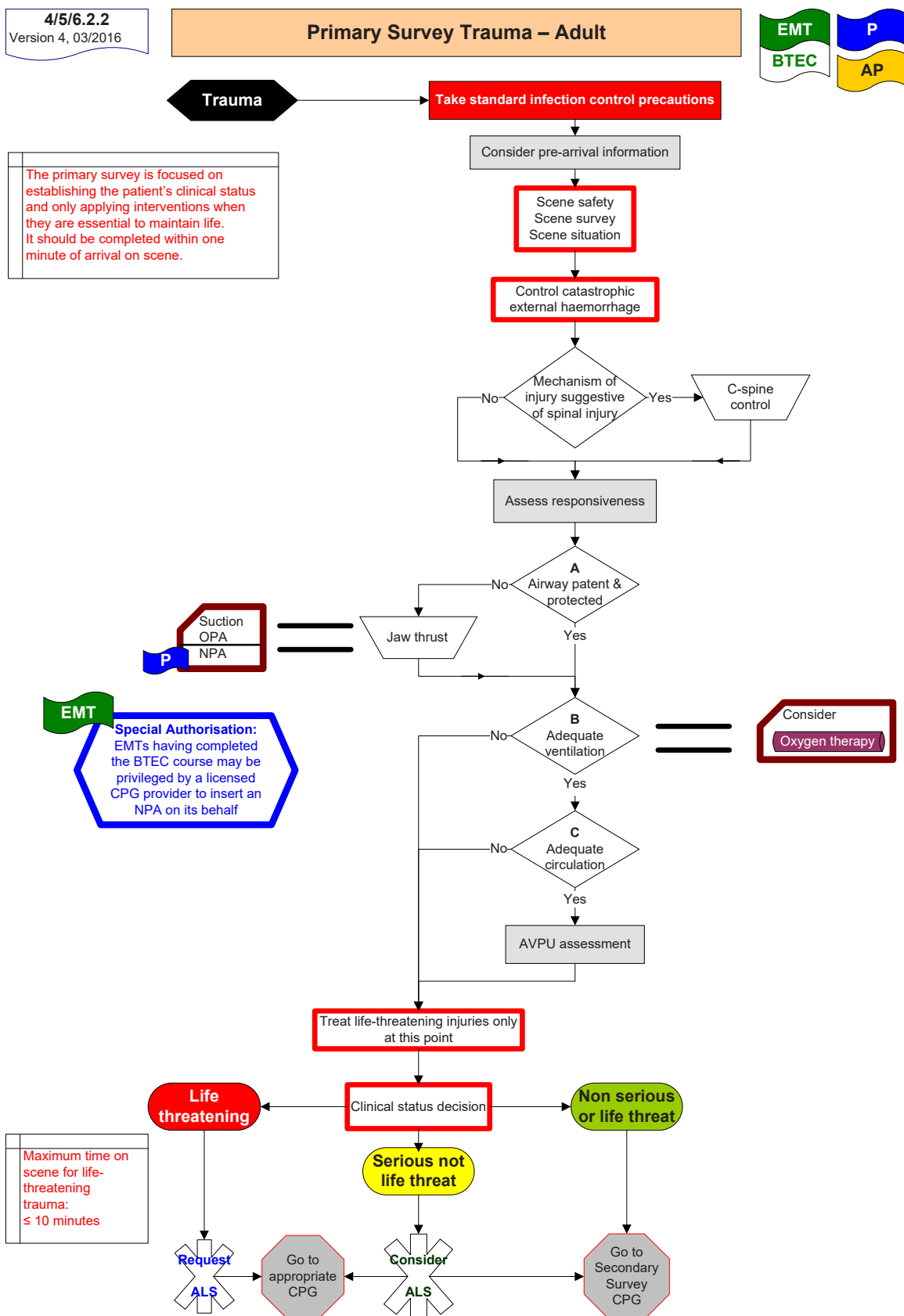
4/5/6.2.1  
Version 4, 03/2016

### Primary Survey Medical – Adult



Reference: ILCOR Guidelines 2015

## SECTION 2 - Patient Assessment

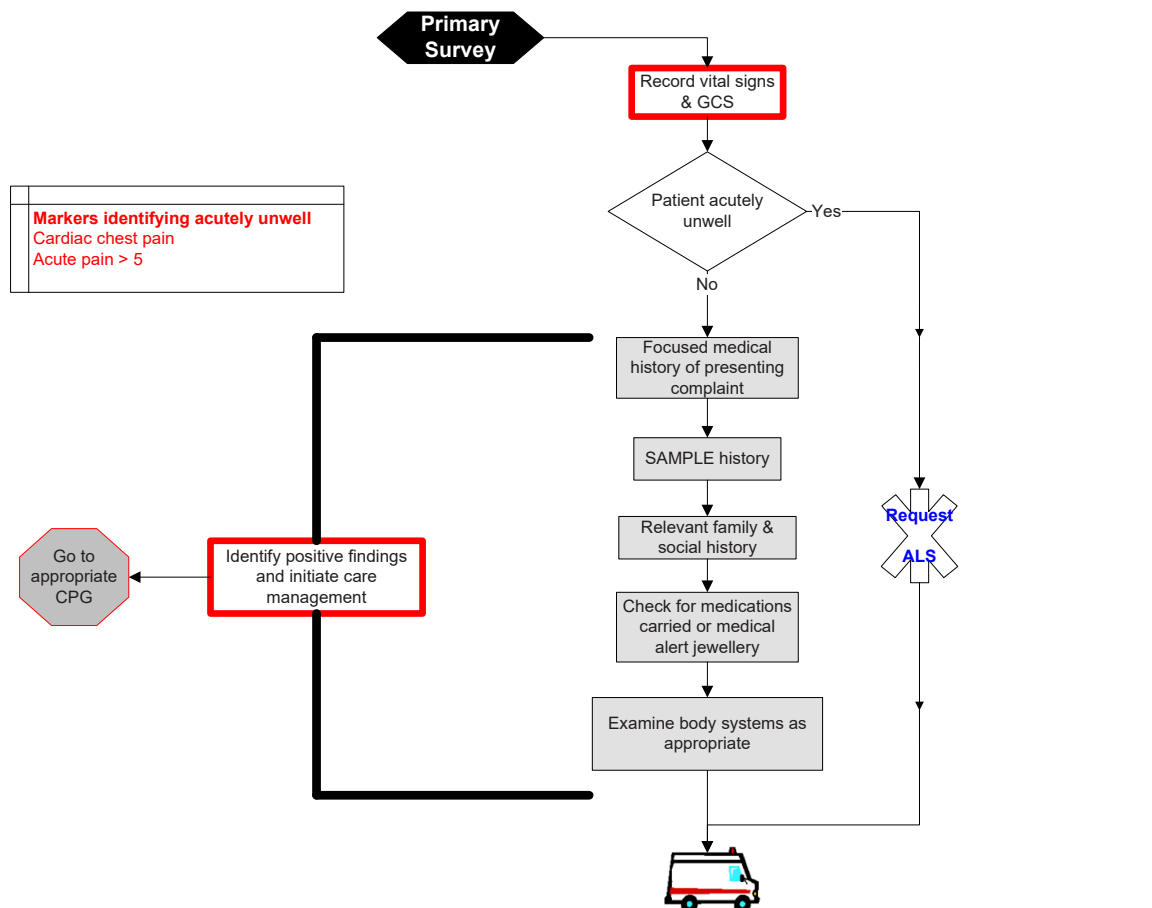


Reference: ILCOR Guidelines 2015

## SECTION 2 - Patient Assessment

**5/6.2.4**  
Version 2, 09/2011

### Secondary Survey Medical – Adult



Reference: Sanders, M. 2001, Paramedic Textbook 2<sup>nd</sup> Edition, Mosby  
Gleadle, J. 2003, History and Examination at a glance, Blackwell Science  
Rees, JE, 2003, Early Warning Scores, World Anaesthesia Issue 17, Article 10

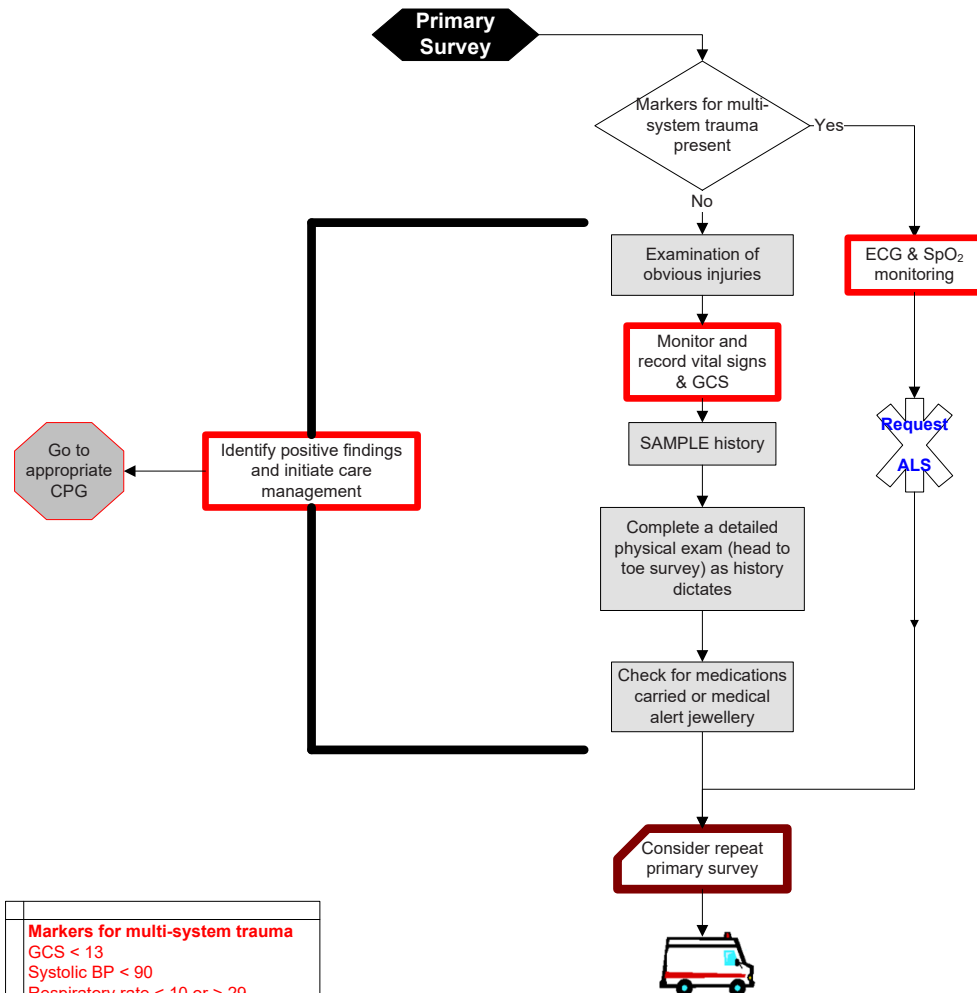
## SECTION 2 - Patient Assessment

**5/6.2.5**  
Version 2, 01/2013

### Secondary Survey Trauma – Adult

P

AP

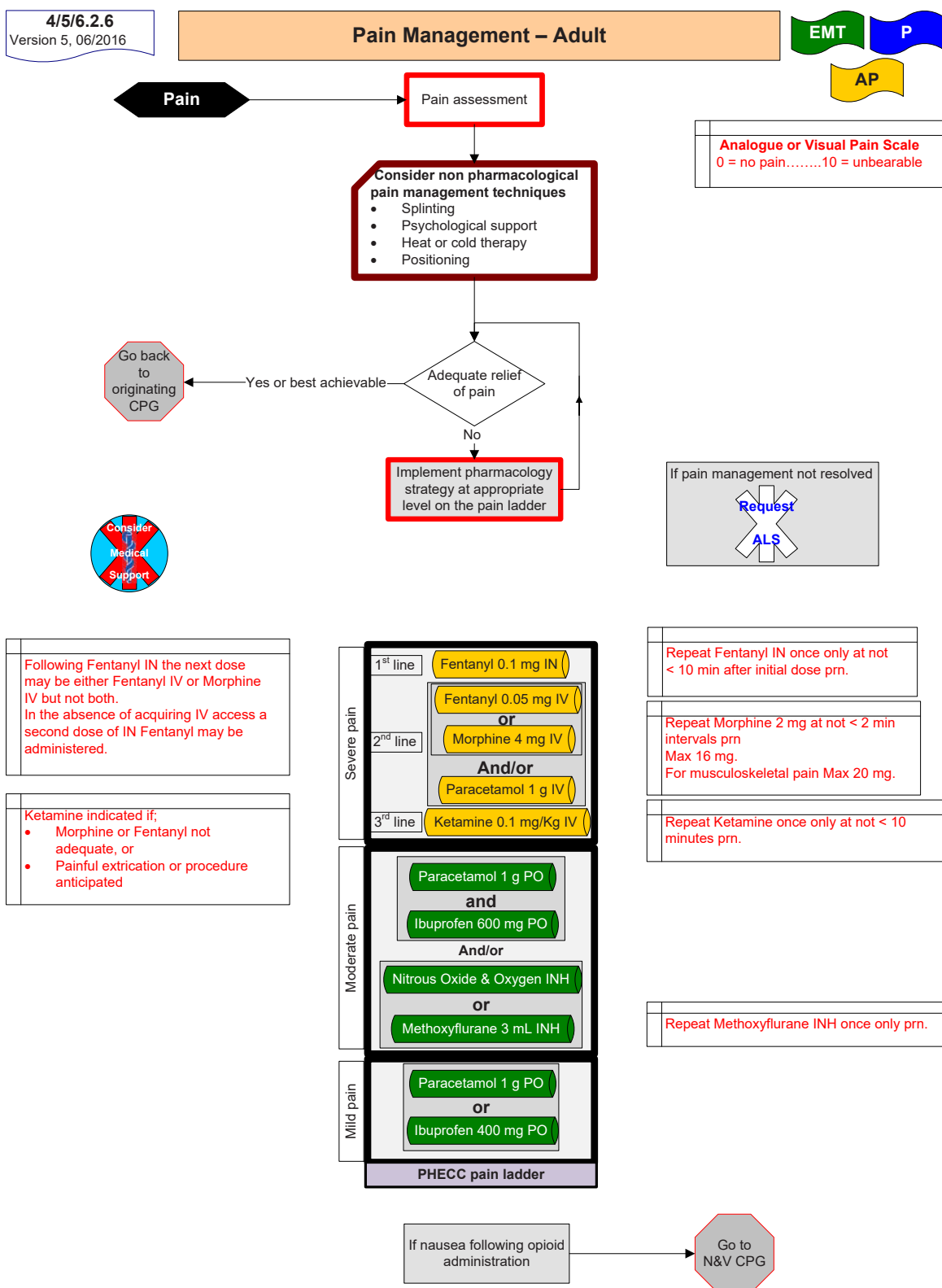


**Markers for multi-system trauma**  
GCS < 13  
Systolic BP < 90  
Respiratory rate < 10 or > 29  
Heart rate > 120  
Revised Trauma Score < 12  
Mechanism of Injury

Revised Trauma Score	
Respiratory Rate	10 – 29 4
	> 29 3
	6 – 9 2
	1 – 5 1
	0 0
Systolic BP	≥ 90 4
	76 – 89 3
	50 – 75 2
	1 – 49 1
	no BP 0
GCS	13 – 15 4
	9 – 12 3
	6 – 8 2
	4 – 5 1
	3 0
RTS = Total score	

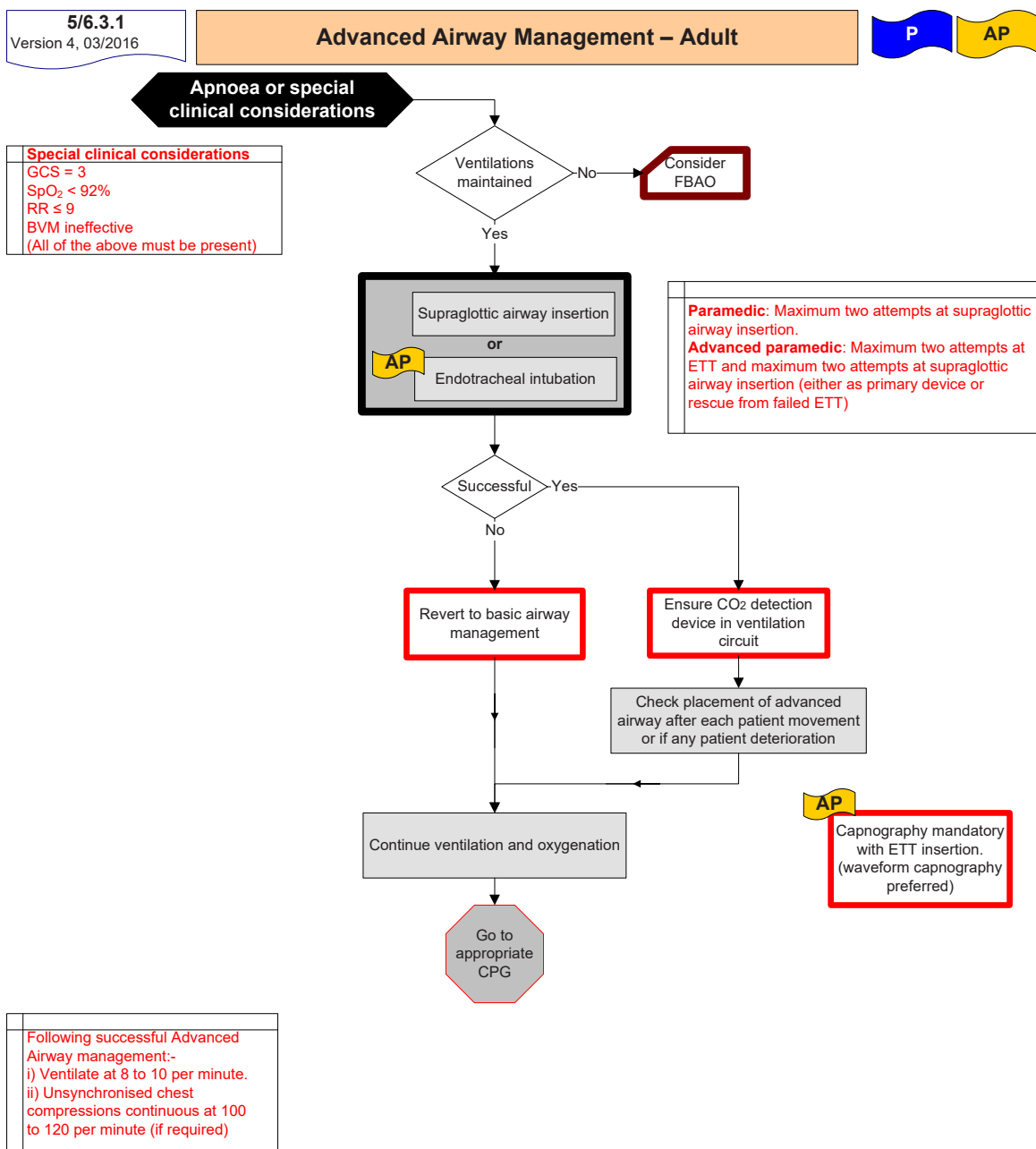
Reference: McSwain, N. et al, 2011, PHTLS Prehospital Trauma Life Support, 7<sup>th</sup> Edition, Mosby

## SECTION 2 - Patient Assessment

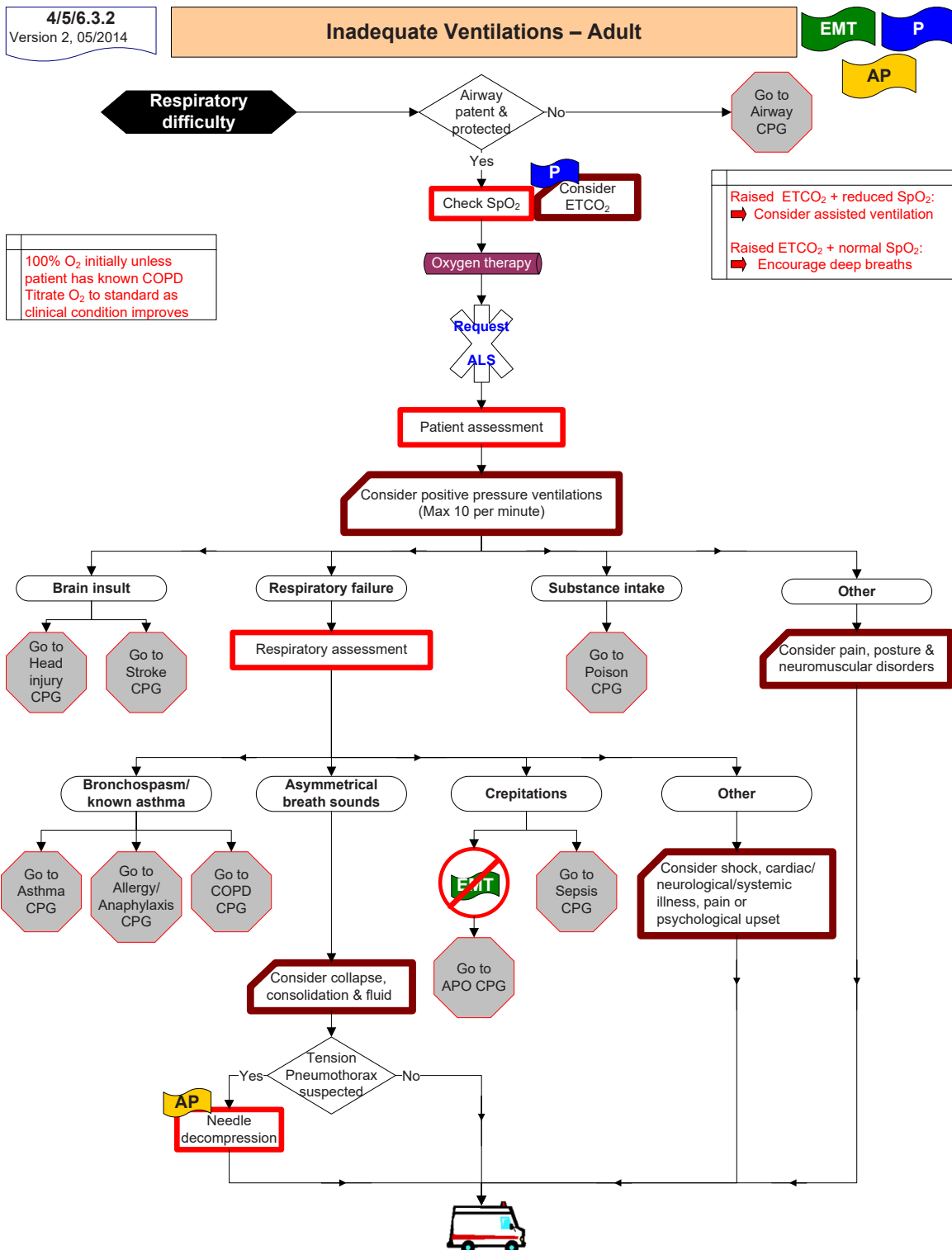


Reference: Coffey, F., et al. (2014). "STOP!: a randomised, double-blind, placebo-controlled study of the efficacy and safety of methoxyflurane for the treatment of acute pain." *Emerg Med J* 31(8): 613-618  
Jennings, P. A., et al. (2011). "Ketamine as an analgesic in the pre-hospital setting: a systematic review." *Acta Anaesthesiol Scand* 55(6): 638-643  
Park, C. L., et al. (2010). "Prehospital analgesia: systematic review of evidence." *J R Army Med Corps* 156(4 Suppl 1): 295-300  
Leung, L. (2012). "From ladder to platform: a new concept for pain management." *J Prim Health Care* 4(3): 254-258

## SECTION 3 - Respiratory Emergencies

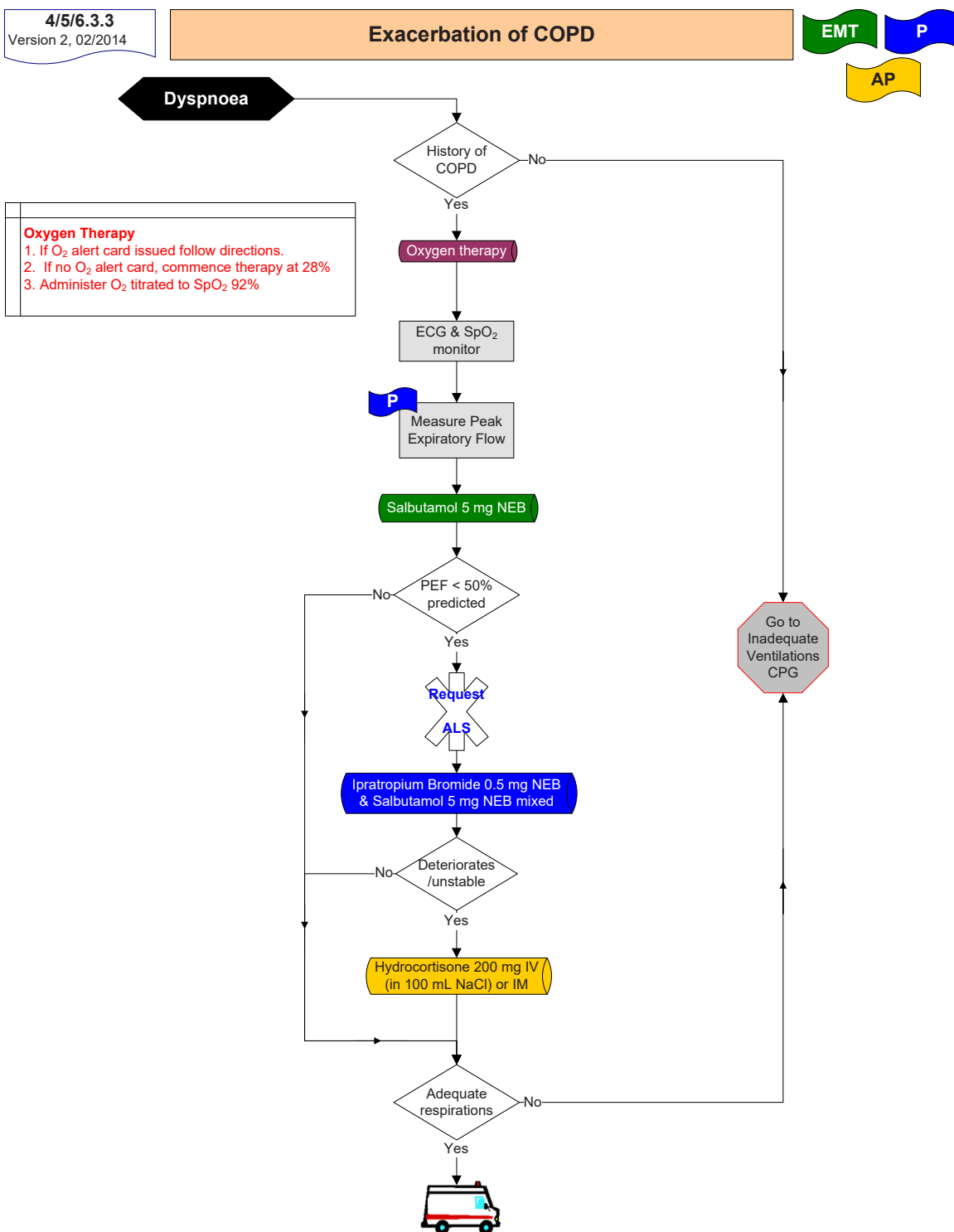


## SECTION 3 - Respiratory Emergencies



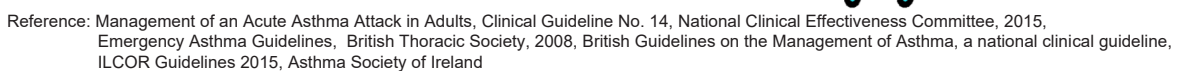


## SECTION 3 - Respiratory Emergencies



**An exacerbation of COPD is defined as;**

An event in the natural course of the disease characterised by a change in the patient's baseline dyspnoea, cough and/or sputum beyond day-to-day variability sufficient to warrant a change in management. (European Respiratory Society)



## SECTION 3 - Respiratory Emergencies

**5/6.3.5**  
Version 1, 12/2013

### Acute Pulmonary Oedema – Adult

P

AP

**Respiratory distress  
with Congestion /  
crepitations**

Oxygen therapy

SpO<sub>2</sub>, ECG & BP  
monitoring

12 Lead ECG

STEMI

Go to  
ACS CPG

Pulmonary  
oedema

No

Go to  
Inadequate  
Respirations  
CPG

Yes

GTN 0.8 mg SL  
Repeat x 1 pm

Reassess

Meets criteria  
for CPAP

No

Yes

Apply Continuous Positive Airway  
Pressure (CPAP) device

Oxygen  
Adequate flow to drive CPAP

Systemic fluid  
retention

Yes

Furosemide 40 mg IV

No

Bradycardia

Yes

Atropine 0.6 mg IV  
Repeat to Max 3 mg pm

No



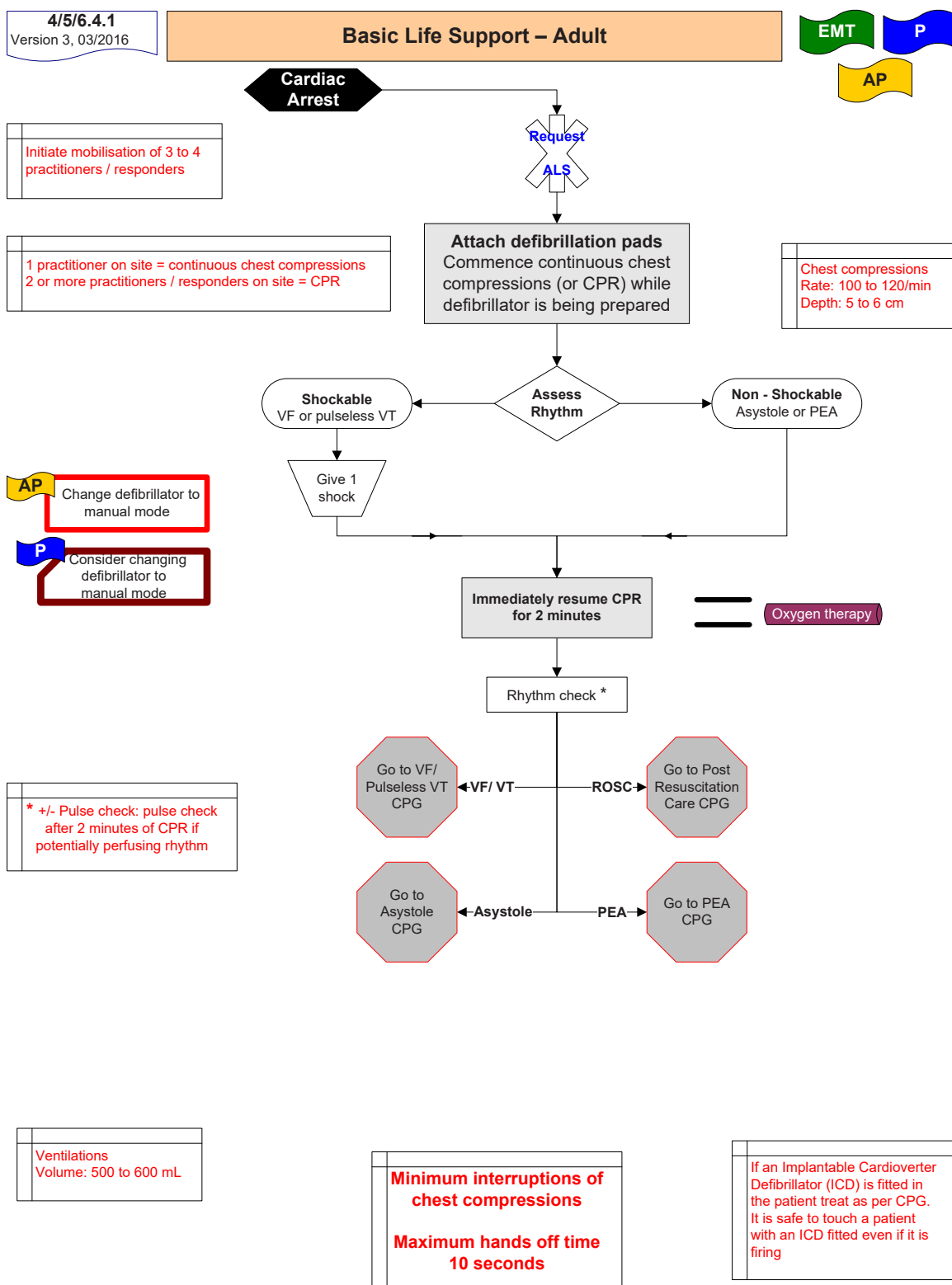
**Criteria for CPAP**  
Clinical signs of APO  
RR > 25 per min  
SpO<sub>2</sub> < 90%

**Exclusion Criteria**  
COPD / Asthma  
Inability to sit up  
Pneumothorax  
Need for immediate intubation  
SBP < 100 mmHg / cardiovascular collapse  
Life-threatening arrhythmia  
Reduced GCS (AVPU < V)  
Unable to tolerate CPAP  
Vomiting

**CPAP**  
Commence with 5 cm H<sub>2</sub>O  
Titrate up to 10 cm H<sub>2</sub>O as tolerated  
Monitor clinical response  
Titrate O<sub>2</sub> to maintain SpO<sub>2</sub> > 95%

Reference: Williams, B et al 2013, When Pressure is Positive: A Literature Review of the Prehospital Use of Continuous Positive Airway Pressure. Prehosp Disaster med, 1-10.

## SECTION 4 - Medical Emergencies

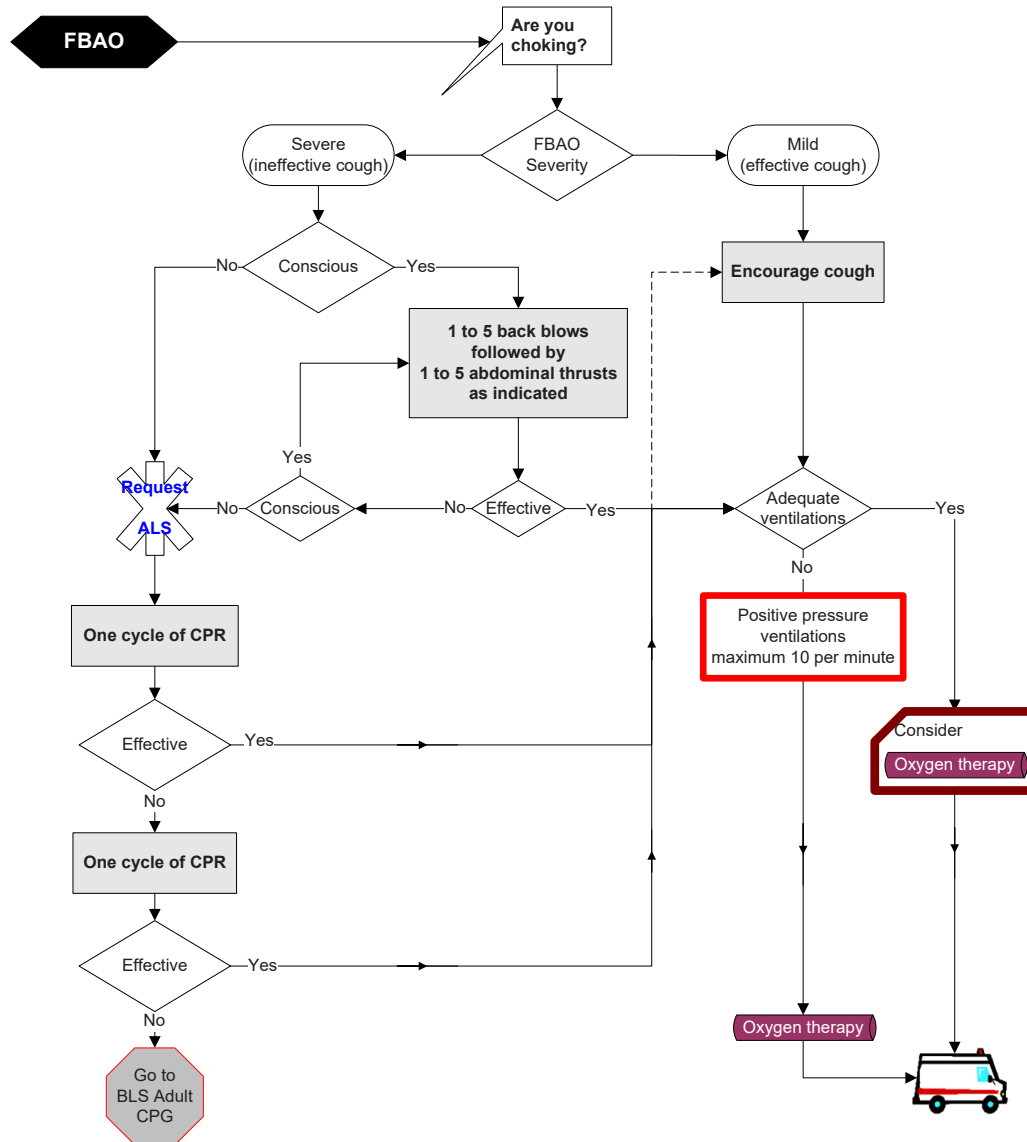


Reference: ILCOR Guidelines 2015

## SECTION 4 - Medical Emergencies

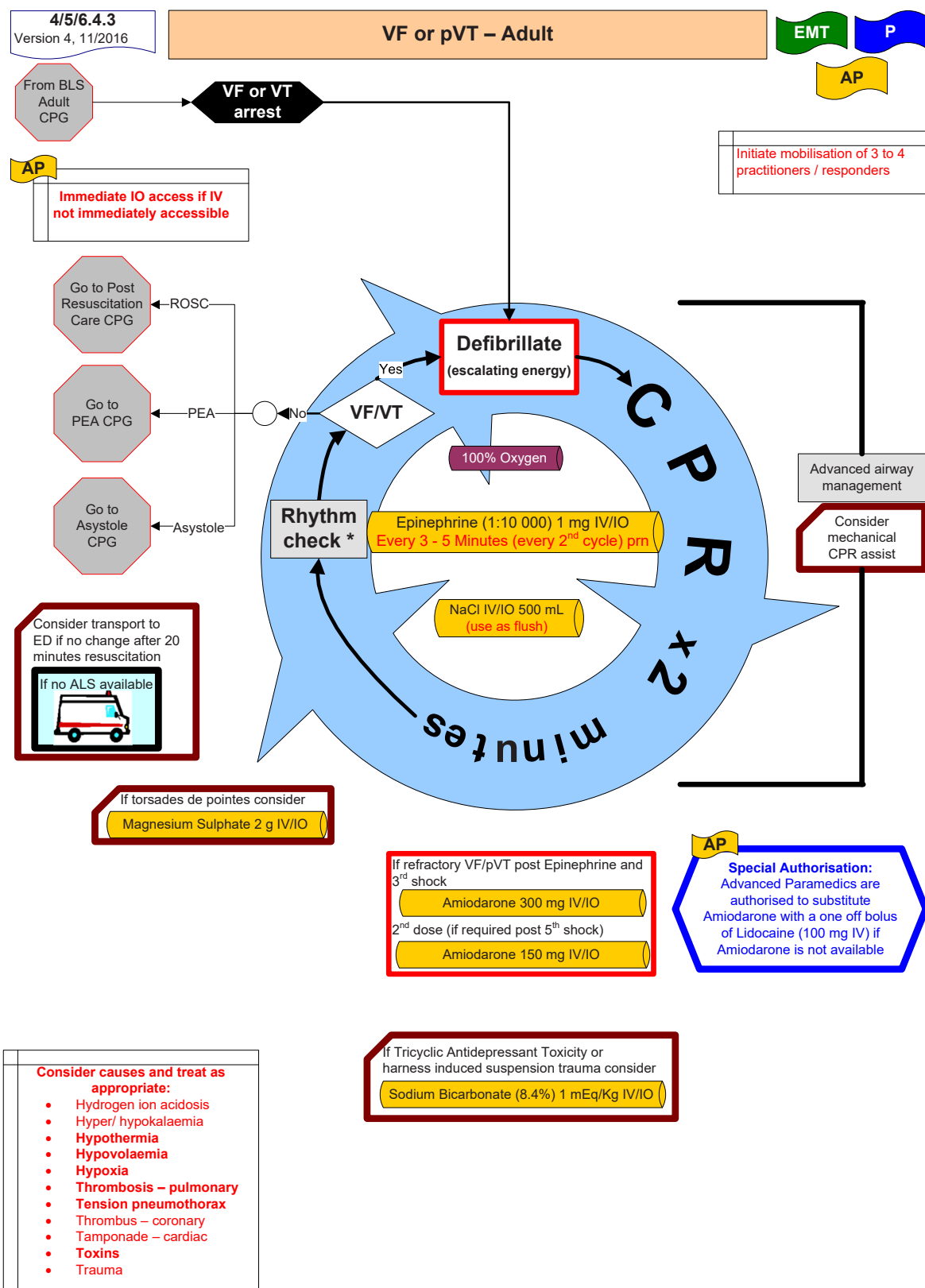
**4/5.4.2**  
Version 2, 03/2016

### Foreign Body Airway Obstruction – Adult



After each cycle of CPR open mouth and look for object.  
If visible attempt once to remove it

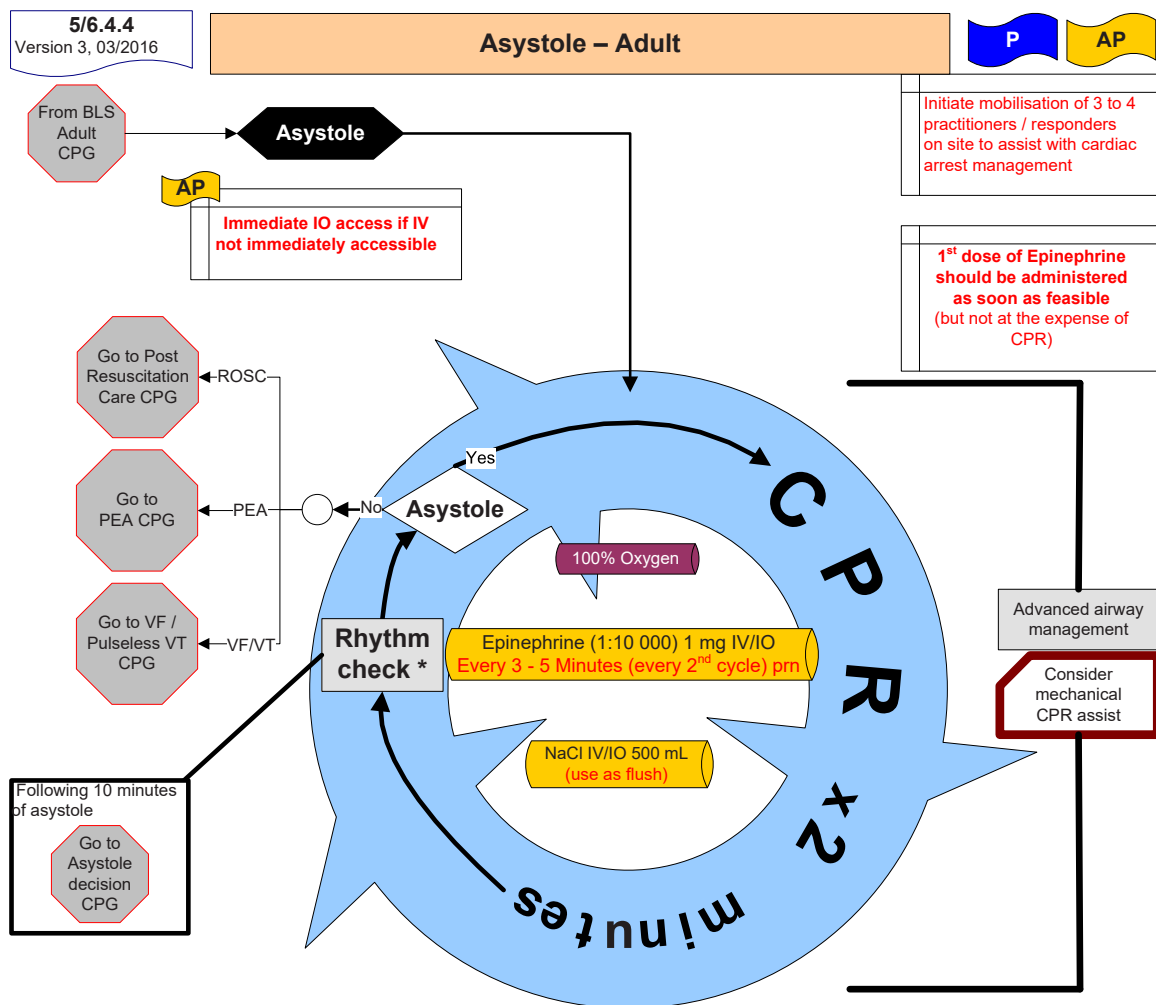
## SECTION 4 - Medical Emergencies



\* +/- Pulse check: pulse check after 2 minutes of CPR if potentially perfusing rhythm

Reference: ILCOR Guidelines 2015

## SECTION 4 – Medical Emergencies



**Consider causes and treat as appropriate:**

- Hydrogen ion acidosis
- Hyper/ hypokalaemia
- Hypothermia
- Hypovolaemia
- Hypoxia
- Thrombosis – pulmonary
- Tension pneumothorax
- Thrombus – coronary
- Tamponade – cardiac
- Toxins
- Trauma

**Consider fluid challenge**

NaCl 1 L IV/IO  
Repeat pm

If Tricyclic Antidepressant Toxicity or harness induced suspension trauma consider

Sodium Bicarbonate (8.4%) 1 mEq/Kg IV/IO

\* +/- Pulse check: pulse check after 2 minutes of CPR if potentially perfusing rhythm

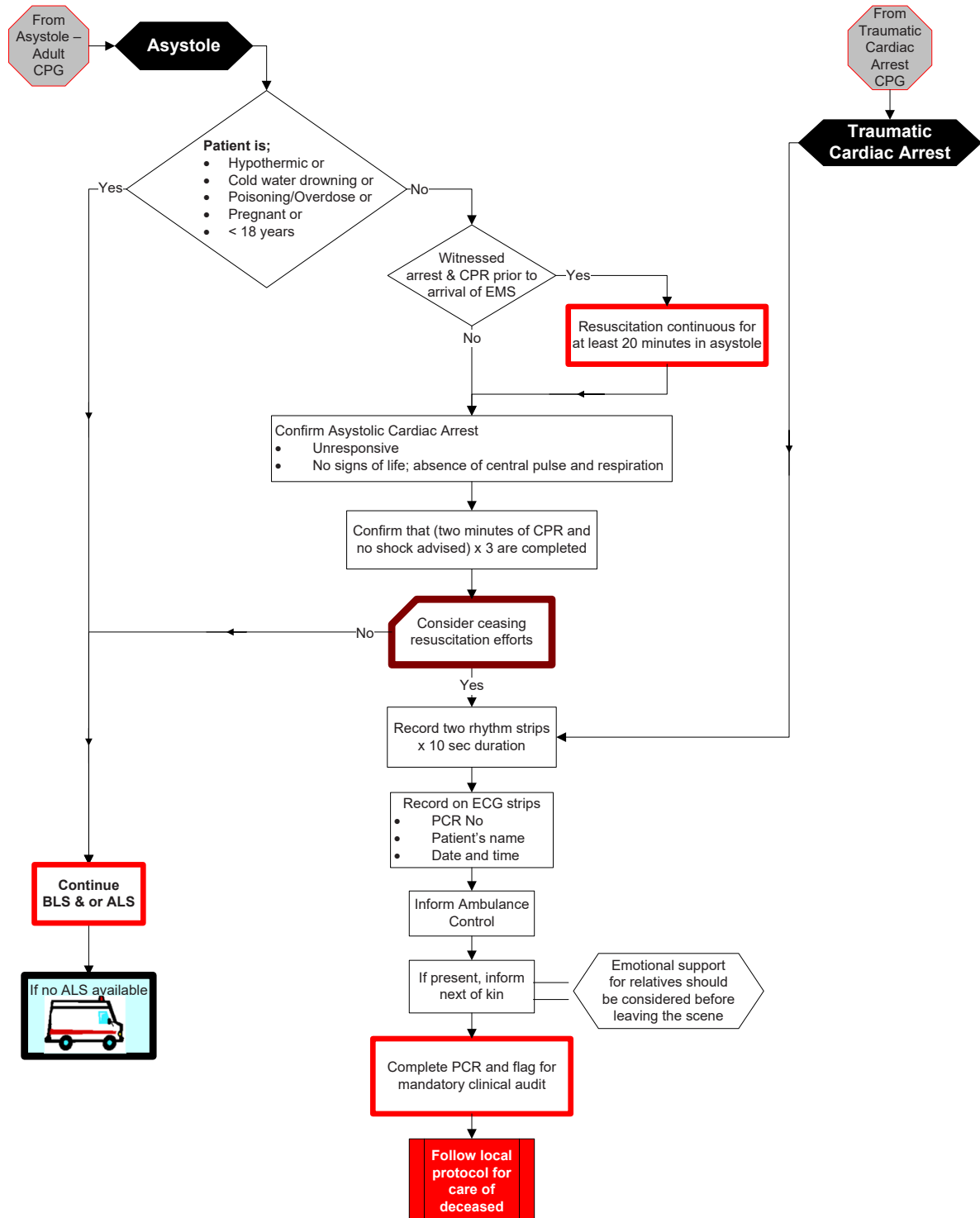
Reference: ILCOR Guidelines 2015

## SECTION 4 - Medical Emergencies

5/6.4.5  
Version 1, 05/2008

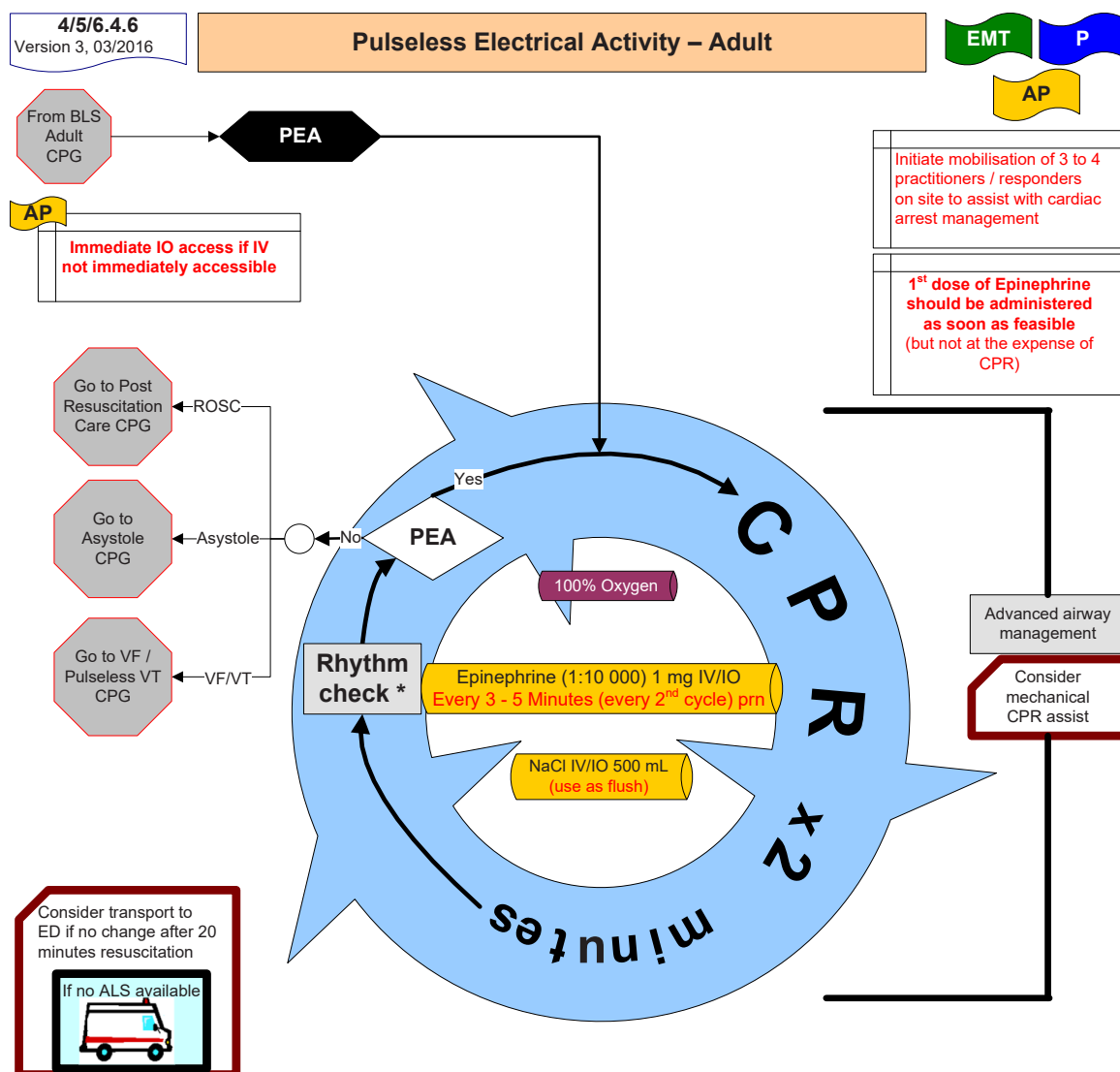
### Asystole - Decision Tree

P AP





## SECTION 4 - Medical Emergencies



Consider causes and treat as appropriate:
<ul style="list-style-type: none"> <li>Hydrogen ion acidosis</li> <li>Hyper/ hypokalaemia</li> <li>Hypothermia</li> <li>Hypovolaemia</li> <li>Hypoxia</li> <li>Thrombosis – pulmonary</li> <li>Tension pneumothorax</li> <li>Thrombus – coronary</li> <li>Tamponade – cardiac</li> <li>Toxins</li> <li>Trauma</li> </ul>

Consider fluid challenge

NaCl 1 L IV/IO Repeat prn

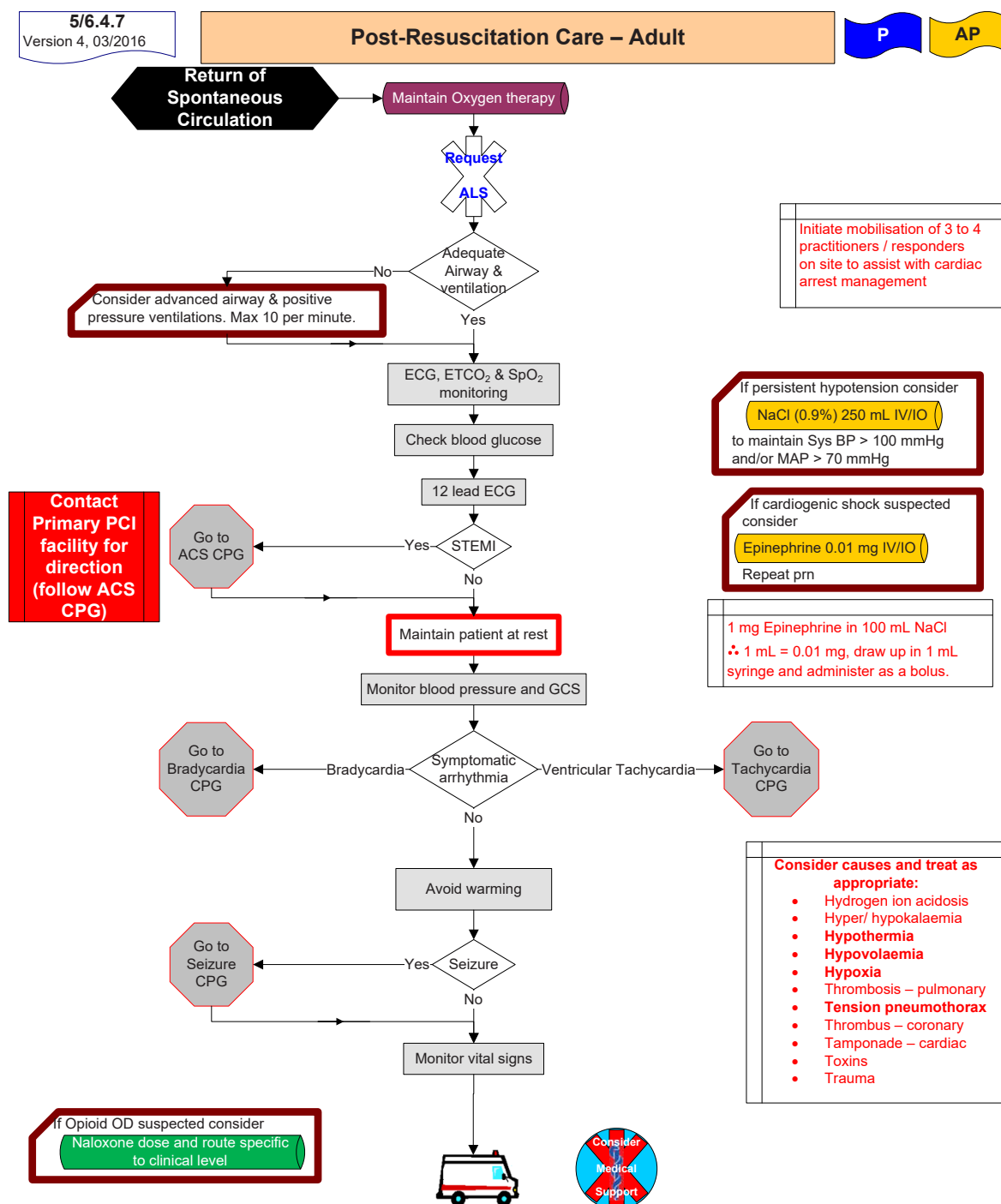
If Tricyclic Antidepressant Toxicity or harness induced suspension trauma consider

Sodium Bicarbonate (8.4%) 1 mEq/Kg IV/IO

\* +/- Pulse check: pulse check after 2 minutes of CPR if potentially perfusing rhythm

Reference: ILCOR Guidelines 2015

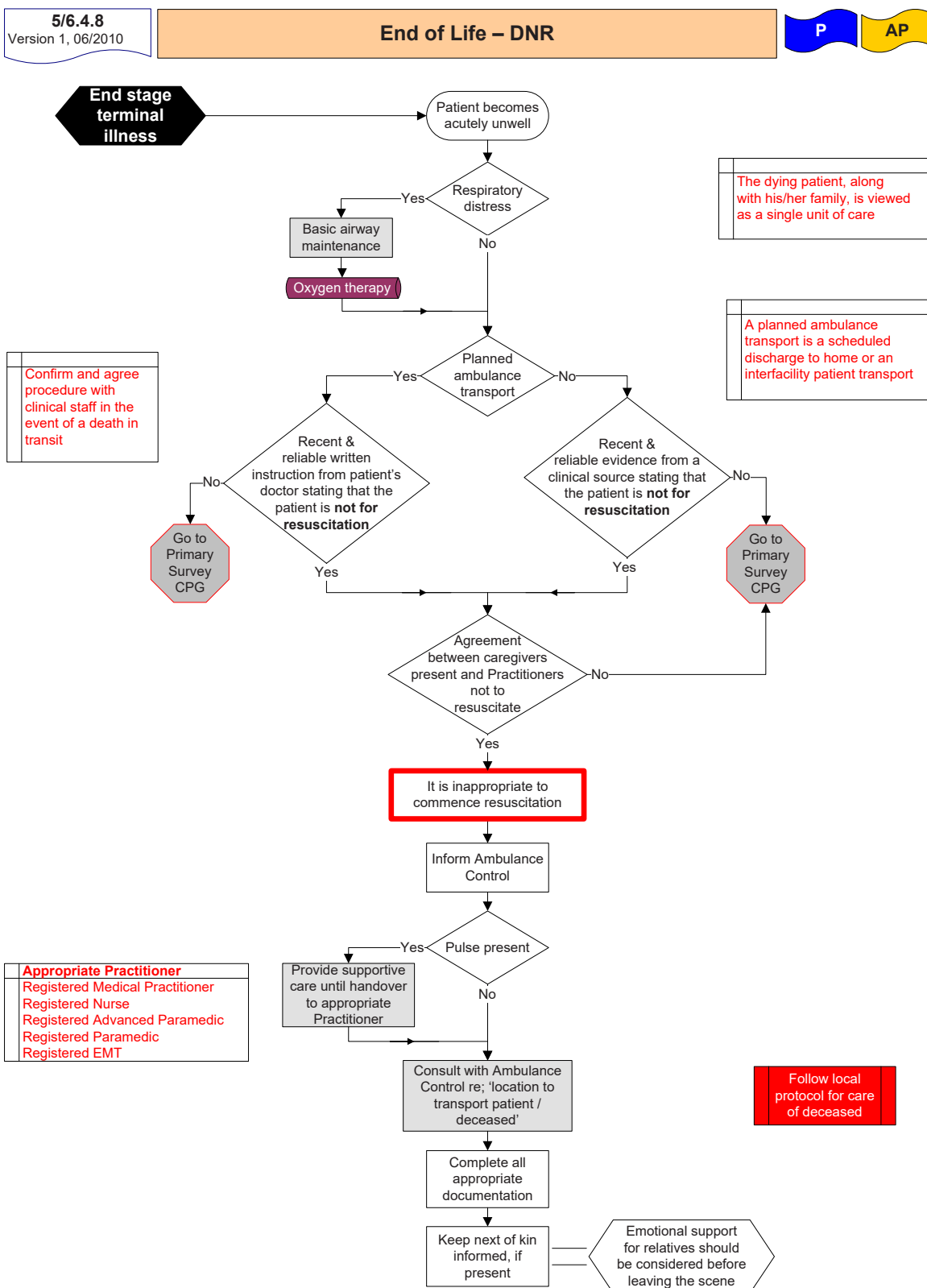
## SECTION 4 - Medical Emergencies



Reference: ILCOR Guidelines 2015

Noc, M., et al. (2014). "Invasive coronary treatment strategies for out-of-hospital cardiac arrest: a consensus statement from the European association for percutaneous cardiovascular interventions (EAPCI)/stent for life (SFL) groups." *EuroIntervention* 10(1): 31-37

## SECTION 4 - Medical Emergencies



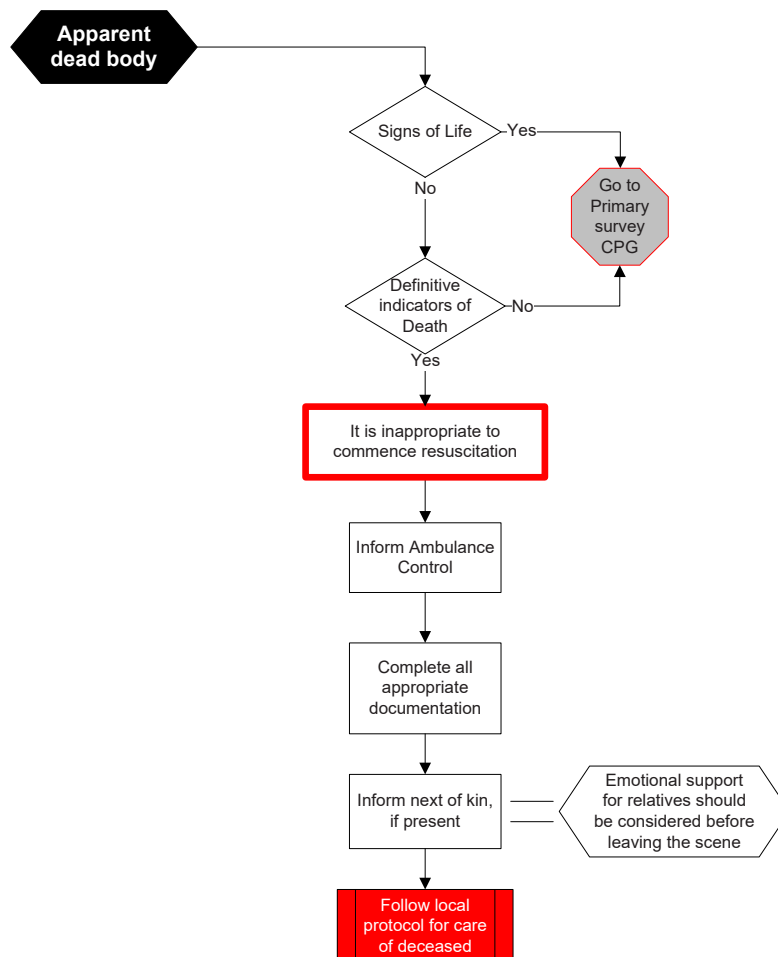
## SECTION 4 - Medical Emergencies

**5/6.4.9**  
Version 2, 06/2011

### Recognition of Death – Resuscitation not Indicated

P

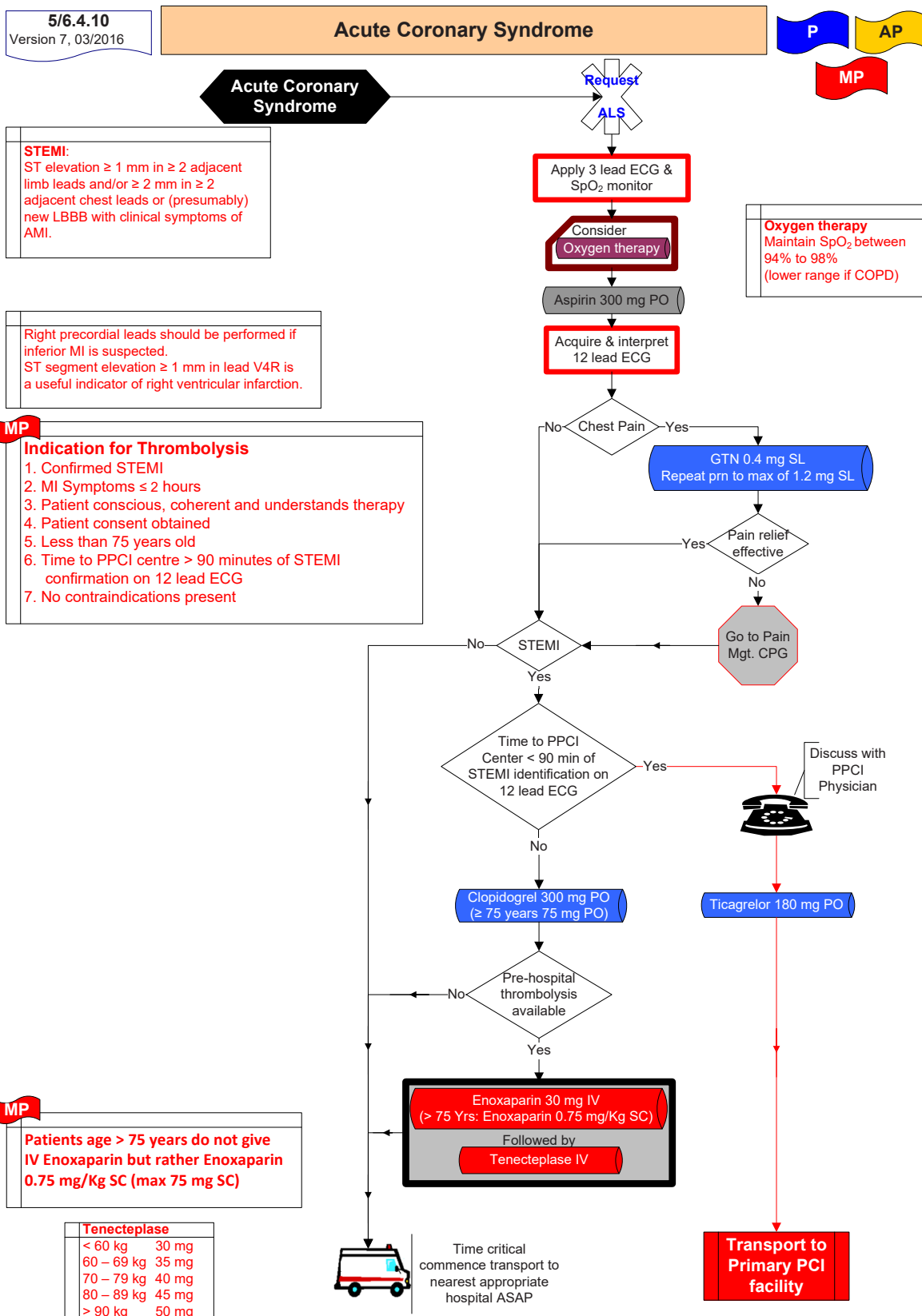
AP



#### Definitive indicators of death:

1. Decomposition
2. Obvious rigor mortis
3. Obvious pooling (hypostasis)
4. Incineration
5. Decapitation
6. Injuries totally incompatible with life
7. Unwitnessed traumatic cardiac arrest following blunt trauma (see CPG 5/6.6.11)

## SECTION 4 - Medical Emergencies

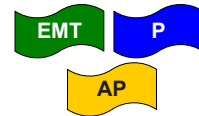


Reference: HSE ACS Programme 2013, ILCOR Guidelines 2015, ECS Guidelines 2010

## SECTION 4 - Medical Emergencies

4/5/6.4.11  
Version 3, 03/2016

### Symptomatic Bradycardia – Adult



#### Symptomatic Bradycardia

**Symptomatic includes;**  
Acute altered mental status  
Ischemic chest discomfort  
Acute heart failure  
Hypotension  
Signs of shock

Oxygen therapy

Request  
ALS

ECG & SpO<sub>2</sub>  
monitoring

P

12 lead ECG

Titrate Atropine to effect (HR > 60)  
and non symptomatic

Atropine 0.6 mg IV  
Repeat at 3 to 5 min intervals prn to max 3 mg

NaCl (0.9%) 250 mL IV infusion  
(Repeat x one prn)

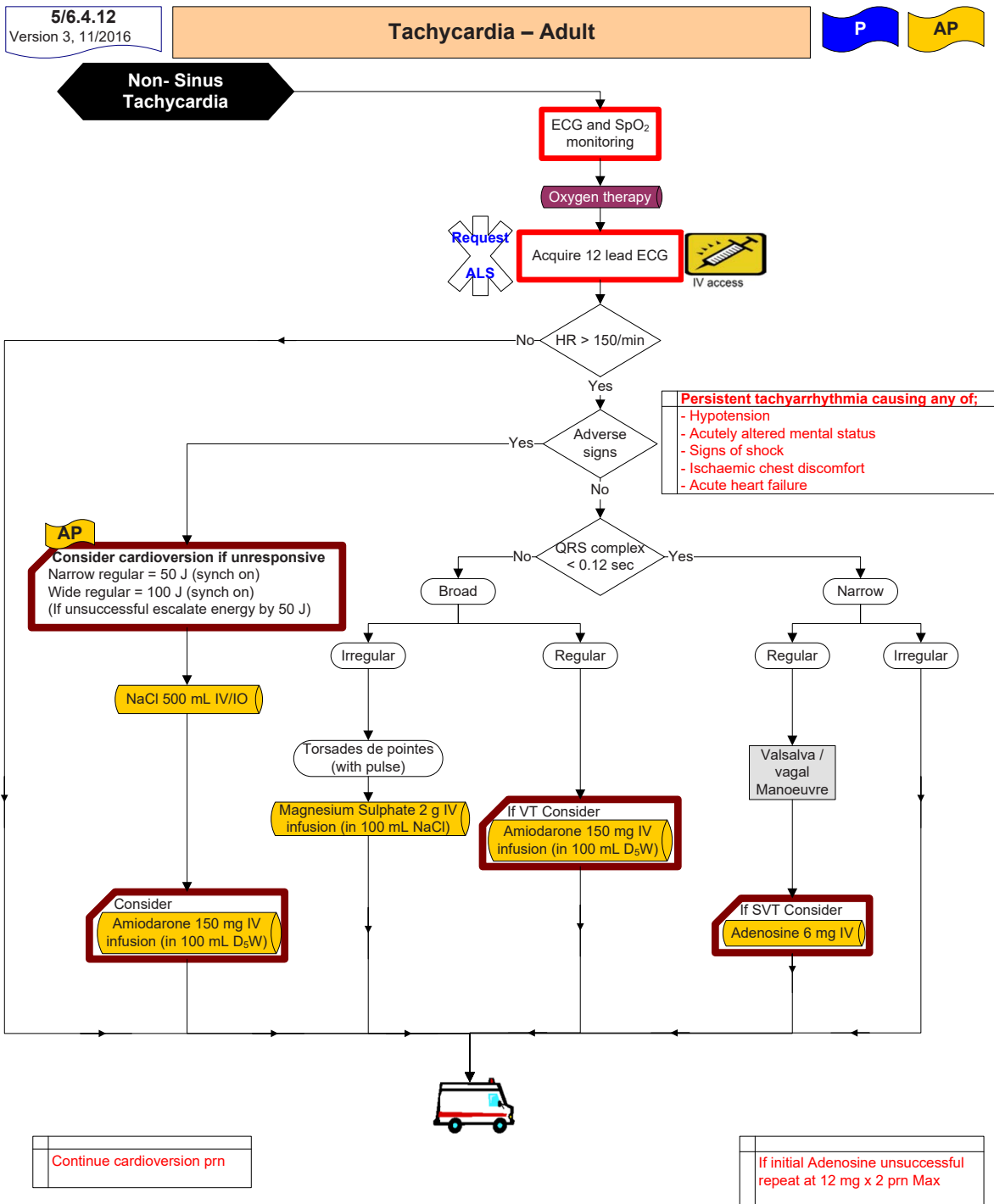
If cardiogenic shock suspected  
consider  
Epinephrine 0.01 mg IV/IO  
Repeat prn

1 mg Epinephrine in 100 mL NaCl  
⚠ 1 mL = 0.01 mg, draw up in 1 mL  
syringe and administer as a bolus.

Reassess



## SECTION 4 - Medical Emergencies



## SECTION 4 - Medical Emergencies

5/6.4.13  
Version 1, 12/2013

### Adrenal Insufficiency – Adult

P

AP

Diagnosed with Addison's disease or Adrenal insufficiency

Recent illness or injury

No

Yes

Check blood glucose

SBP < 90 mmHg

No

Yes

Request  
ALS

Consider  
Hydrocortisone 100 mg IM  
if IV not available

Hydrocortisone 100 mg IV  
(in 100 mL NaCl)

Reassess

NaCl (0.9%) 1 L IV infusion



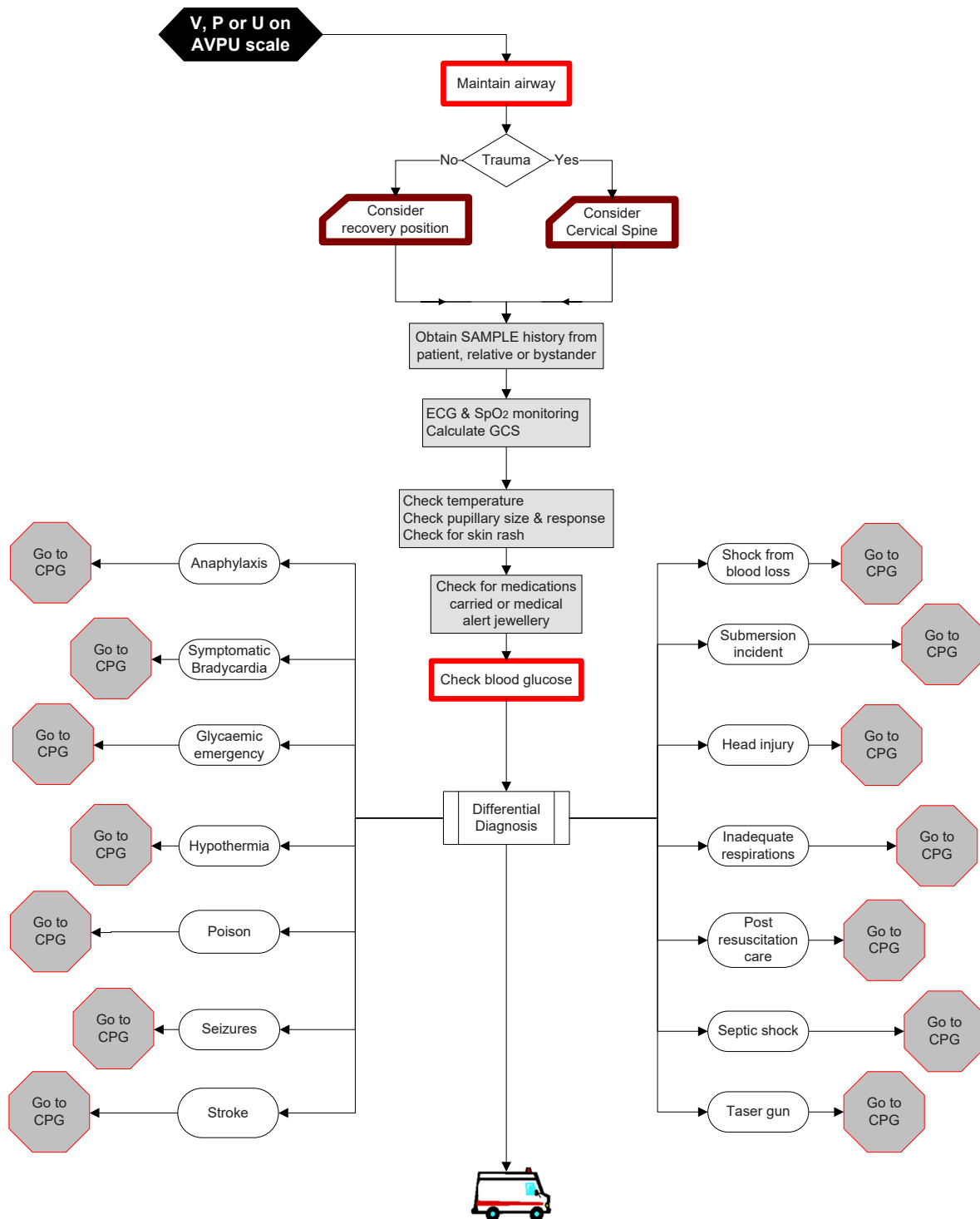
Reference: Wiebke Arlt, Emergency management of acute adrenal insufficiency (adrenal crisis) in adult patients, Endocrine Connections 2016, Sep; 5 (5): G1 – G3



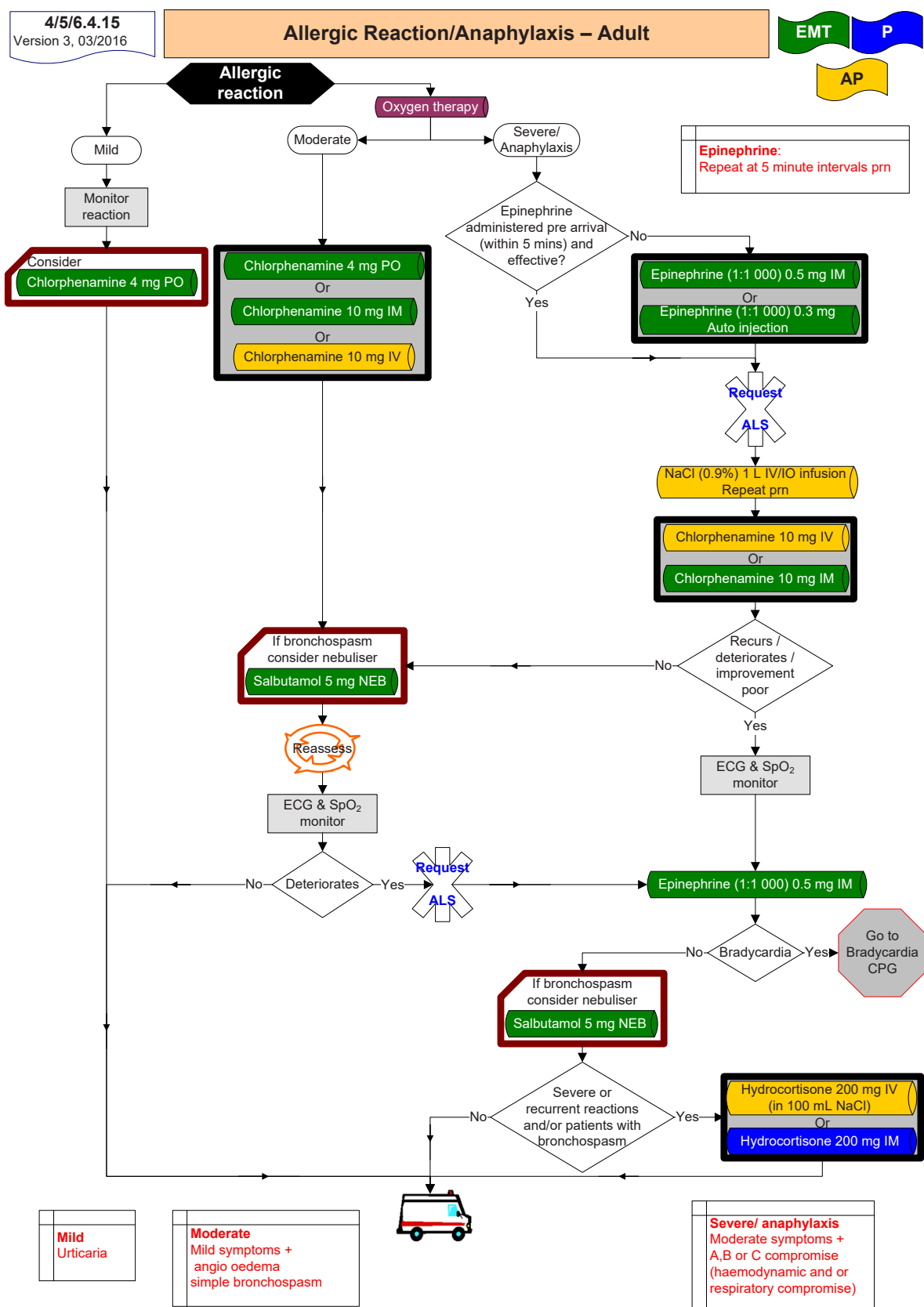
## SECTION 4 - Medical Emergencies

5/6.4.14  
Version 1, 05/2008

### Altered Level of Consciousness – Adult

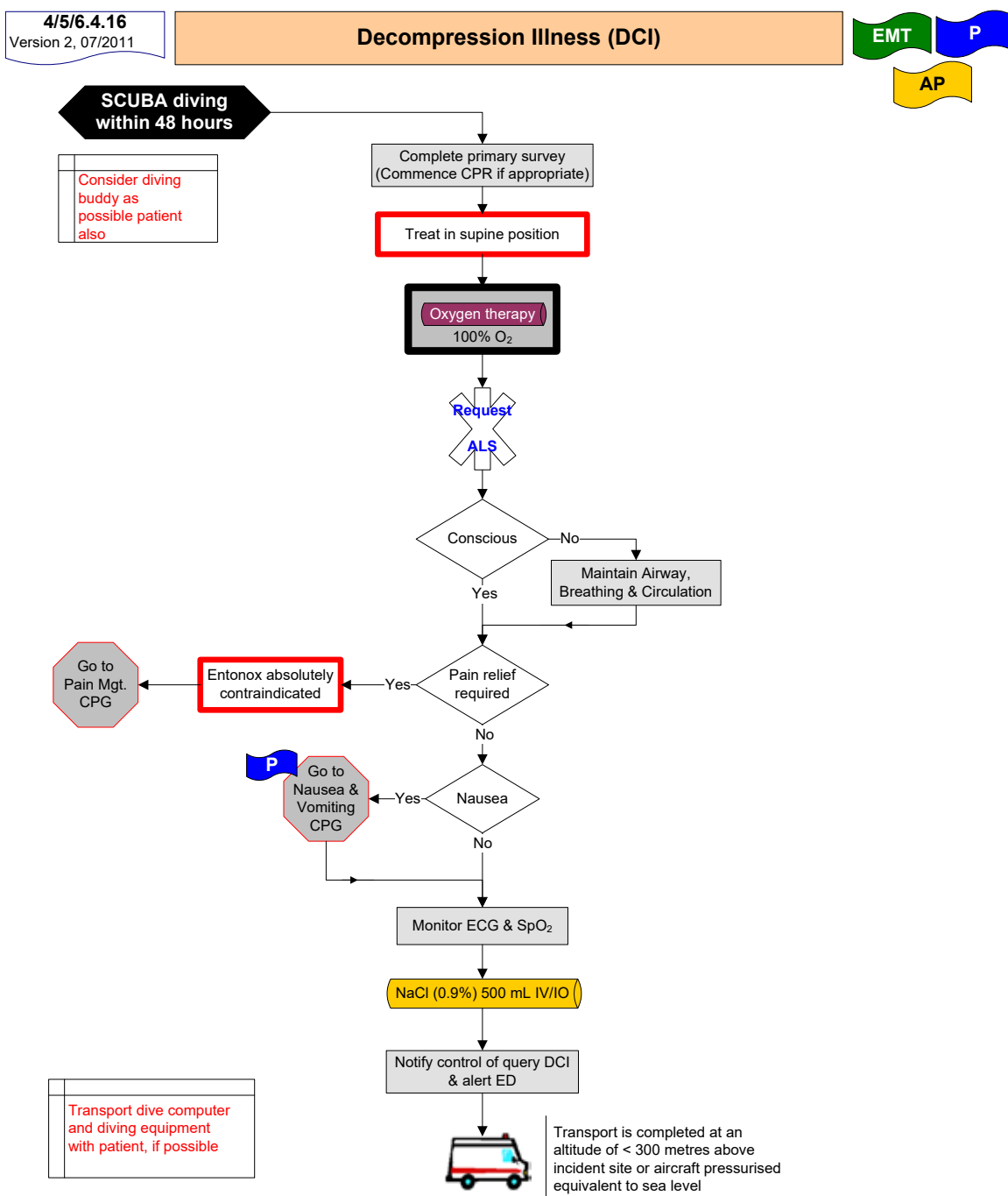


## SECTION 4 - Medical Emergencies



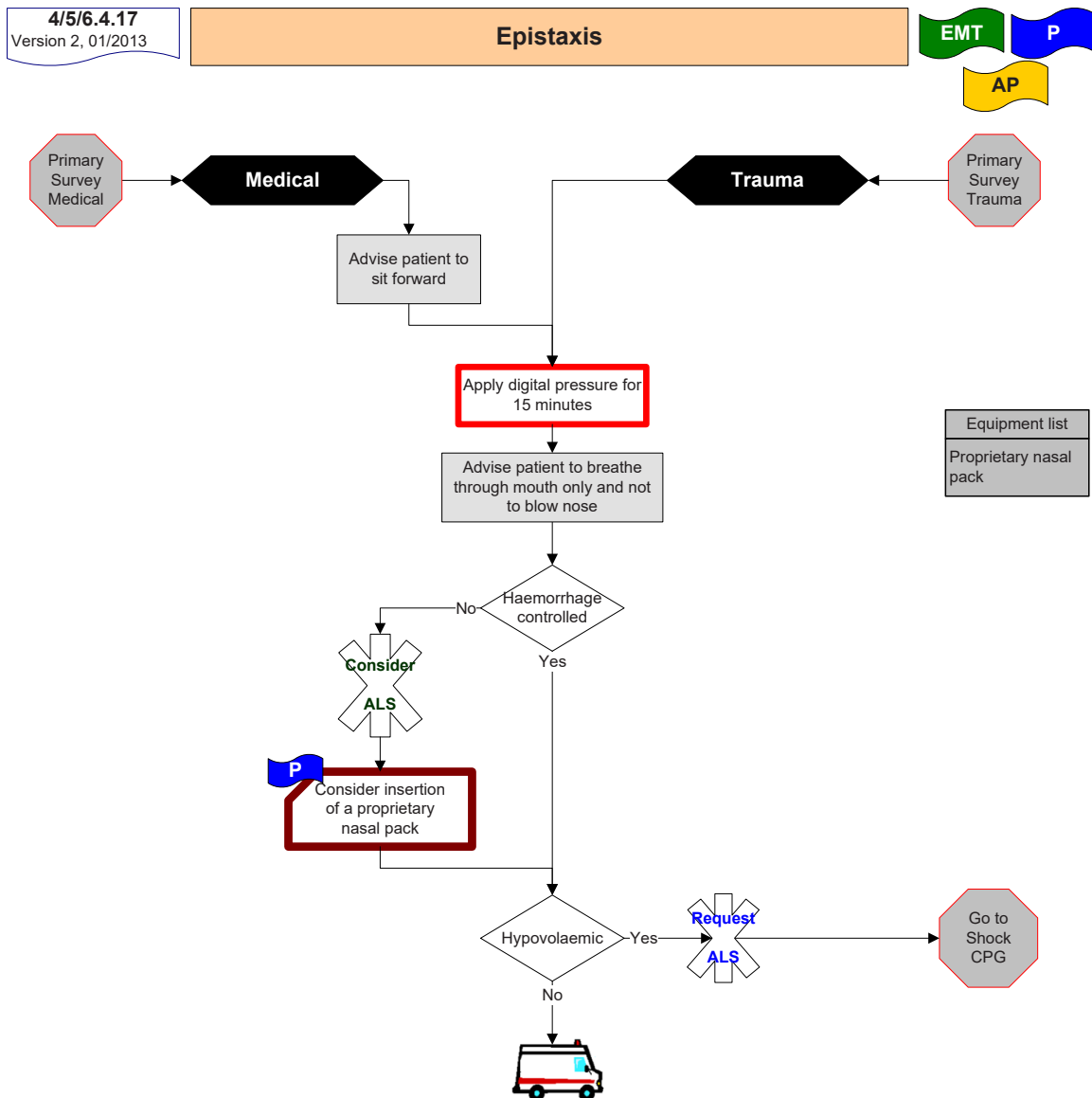
Reference: Royal College of Physicians of Ireland, 2014, National Immunisation Advisory Committee, Anaphylactic Reactions: Treatment Algorithm for First Medical Responders.

## SECTION 4 - Medical Emergencies



Reference: The Primary Clinical Care Manual 3<sup>rd</sup> Edition, 2003, Queensland Health and the Royal Flying Doctor Service (Queensland Section)

## SECTION 4 - Medical Emergencies

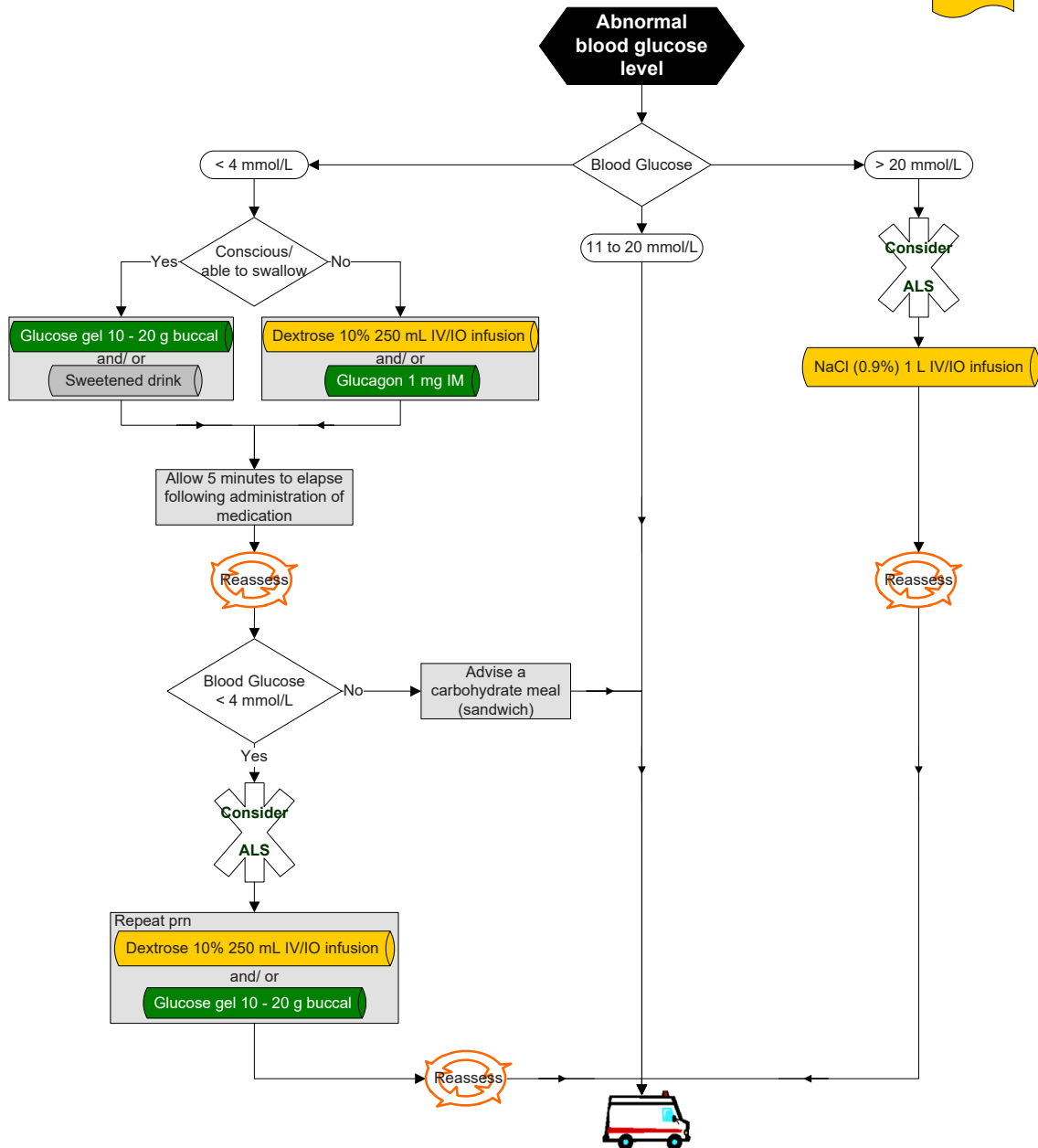
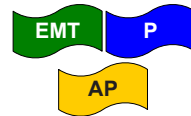


Reference: Management of Acute Epistaxis 2011, Ola Bamimore, MD; Chief Editor: Steven C Dronen, MD, <http://emedicine.medscape.com/article/764719-overview#showall>

## SECTION 4 - Medical Emergencies

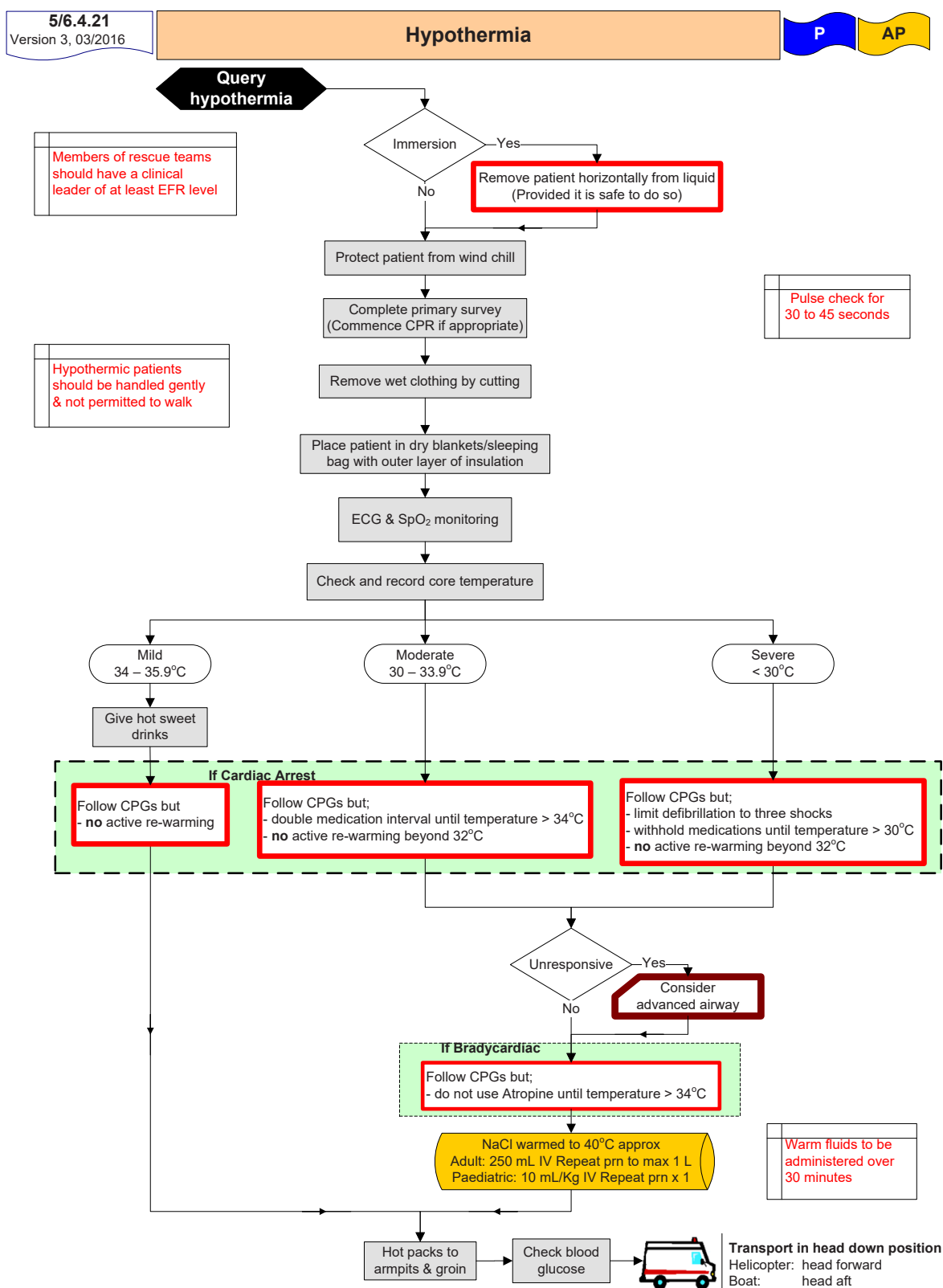
4/5/6.4.19  
Version 2, 04/2016

### Glycaemic Emergency – Adult



Reference:  
Moore, C. and M. Woollard (2005). "Dextrose 10% or 50% in the treatment of hypoglycaemia out of hospital? A randomised controlled trial." *Emerg Med J* 22(7): 512-515  
Carstens, S. and M. Sprehn (1998). "Prehospital treatment of severe hypoglycaemia: a comparison of intramuscular glucagon and intravenous glucose." *Prehosp Disaster Med* 13(2-4): 44-50

## SECTION 4 - Medical Emergencies



Reference: Golden, F & Tipton M, 2002, Essentials of Sea Survival, Human Kinetics  
European Resuscitation Council Guidelines for Resuscitation 2015  
Pennington M, et al, 1994, Wilderness EMT, Wilderness EMS Institute

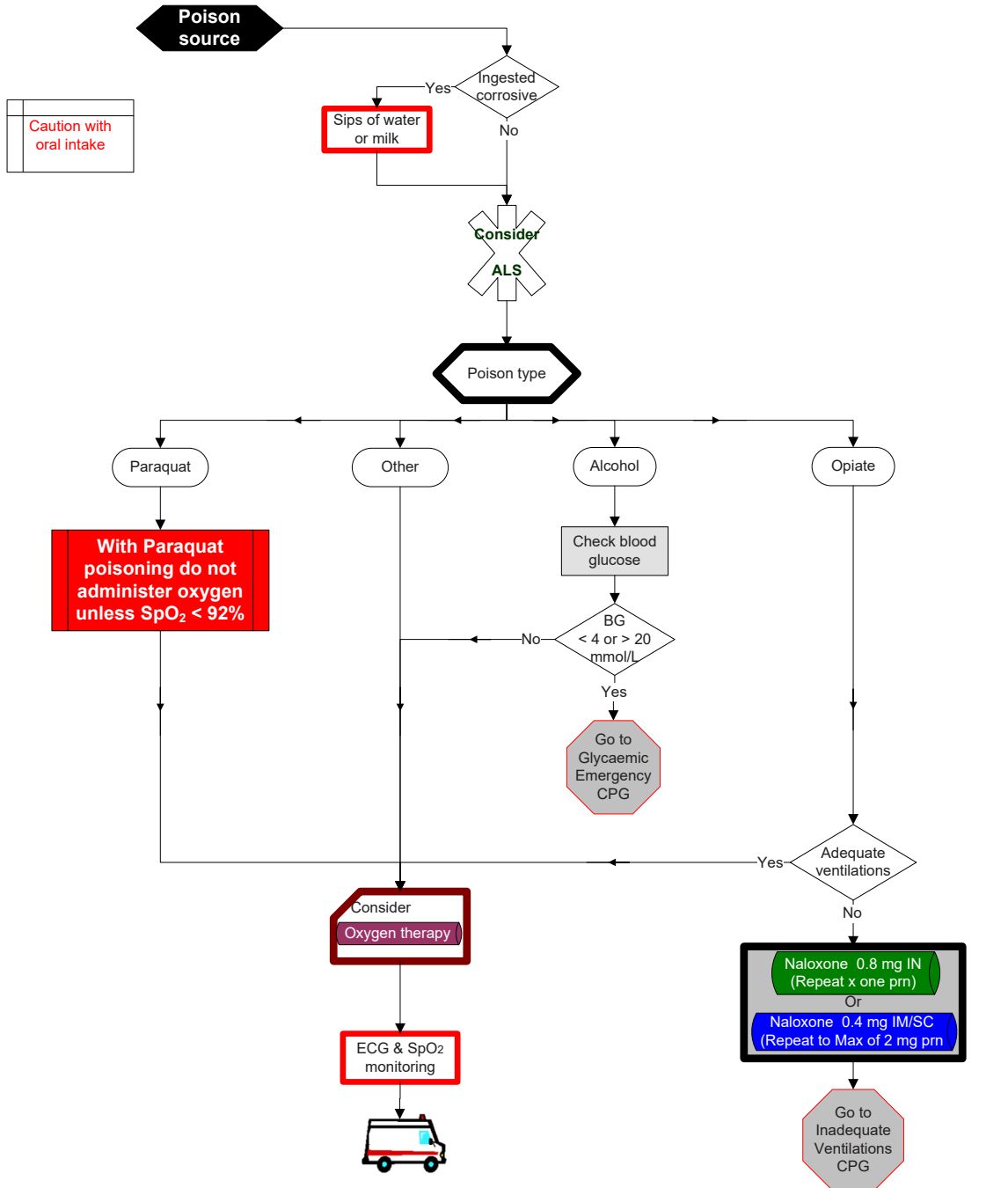
## SECTION 4 - Medical Emergencies

4/5.4.22  
Version 4, 03/2016

### Poisons – Adult

EMT

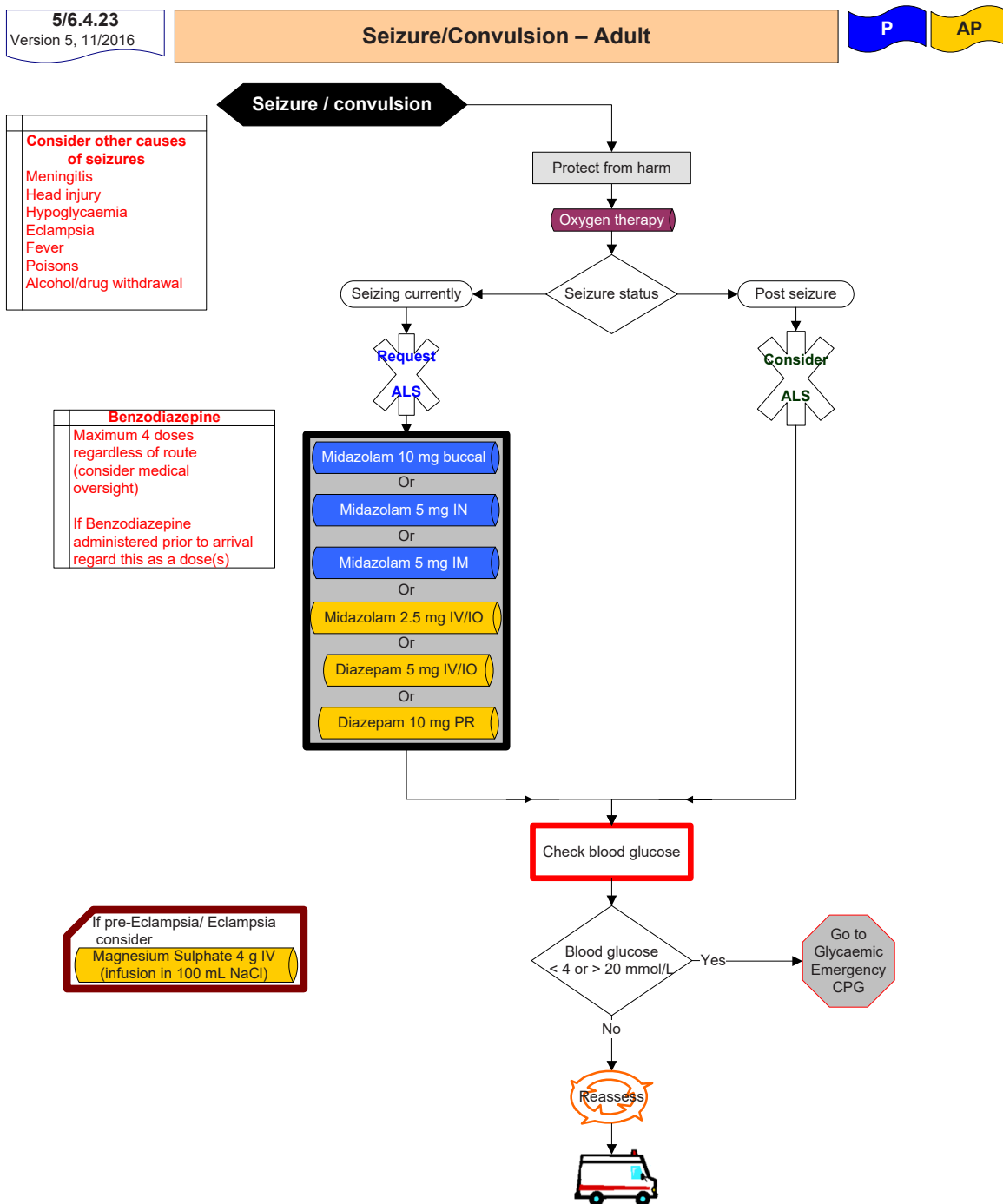
P



Reference: ILCOR Guidelines 2015

Boyer, E, 2012, Management of Opioid Analgesic Overdose, N Engl J Med 2012;367:146-55.DOI: 10.1056/NEJMr1202561

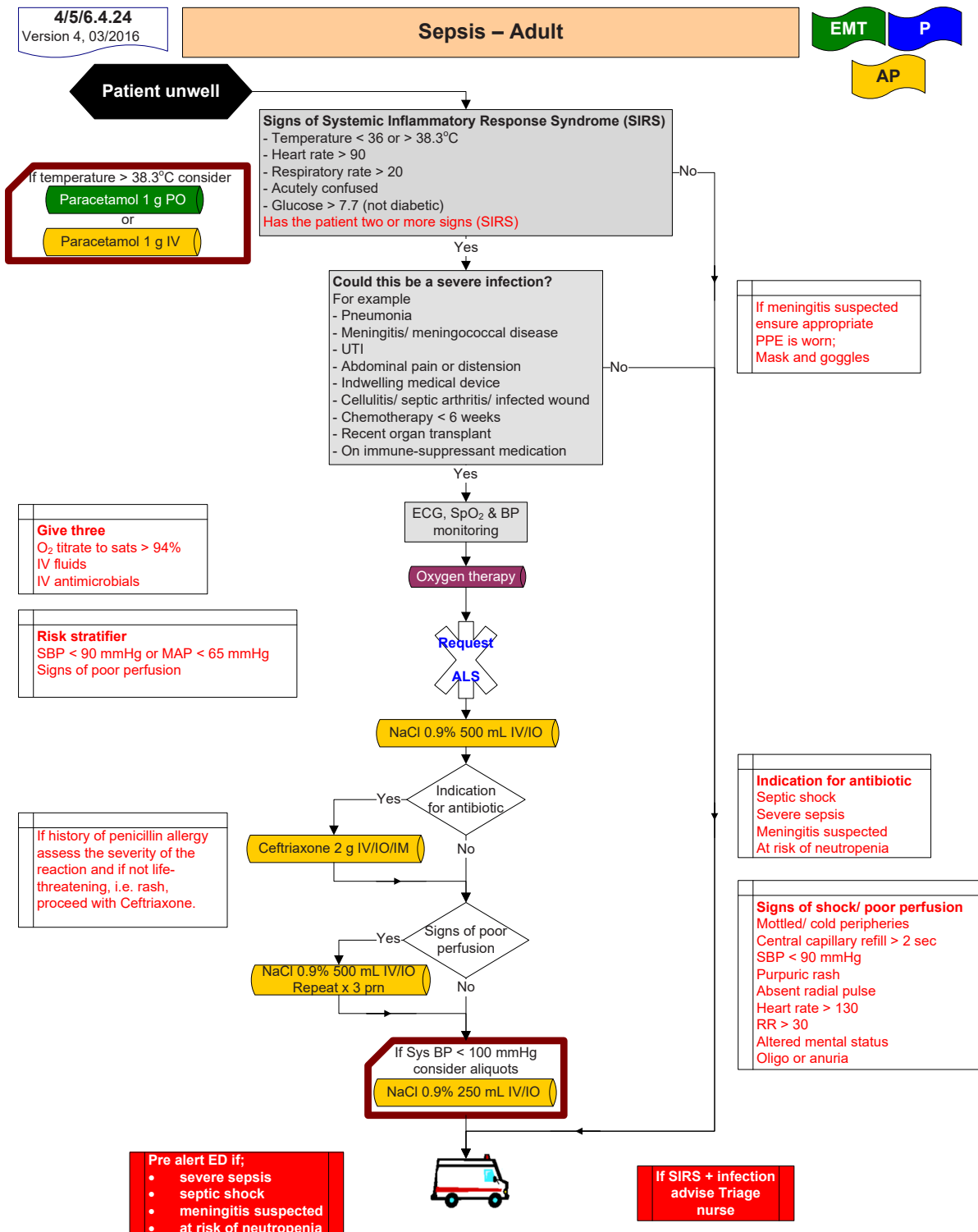
## SECTION 4 - Medical Emergencies



Reference: Tukur, J. and Z. Muhammad (2010). "Management of eclampsia at AKTH: before and after magnesium sulphate." *Niger J Med* 19(1): 104-107



## SECTION 4 – Medical Emergencies



Reference: National Clinical Guideline No. 6: Sepsis Management, National Clinical Effectiveness Committee, Department of Health, November, 2014

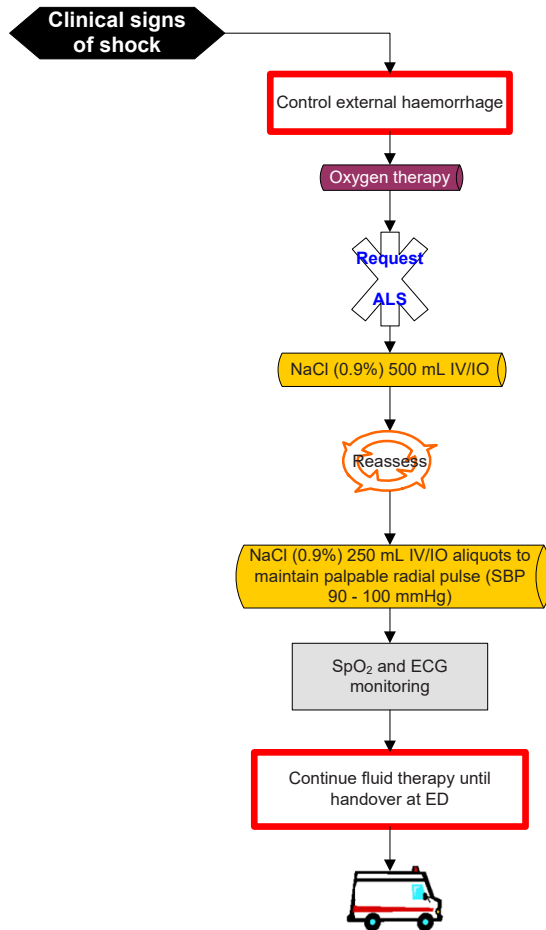
## SECTION 4 - Medical Emergencies

5/6.4.25  
Version 1, 12/2013

### Shock from Blood Loss (non-trauma) – Adult

P

AP



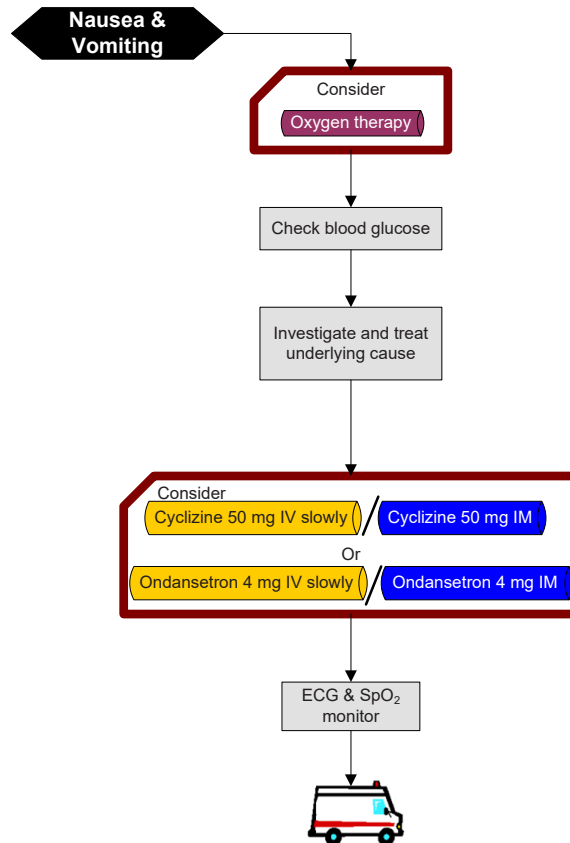
## SECTION 4 – Medical Emergencies

**5/6.4.26**  
Version 2, 04/2016

### Significant Nausea & Vomiting – Adult

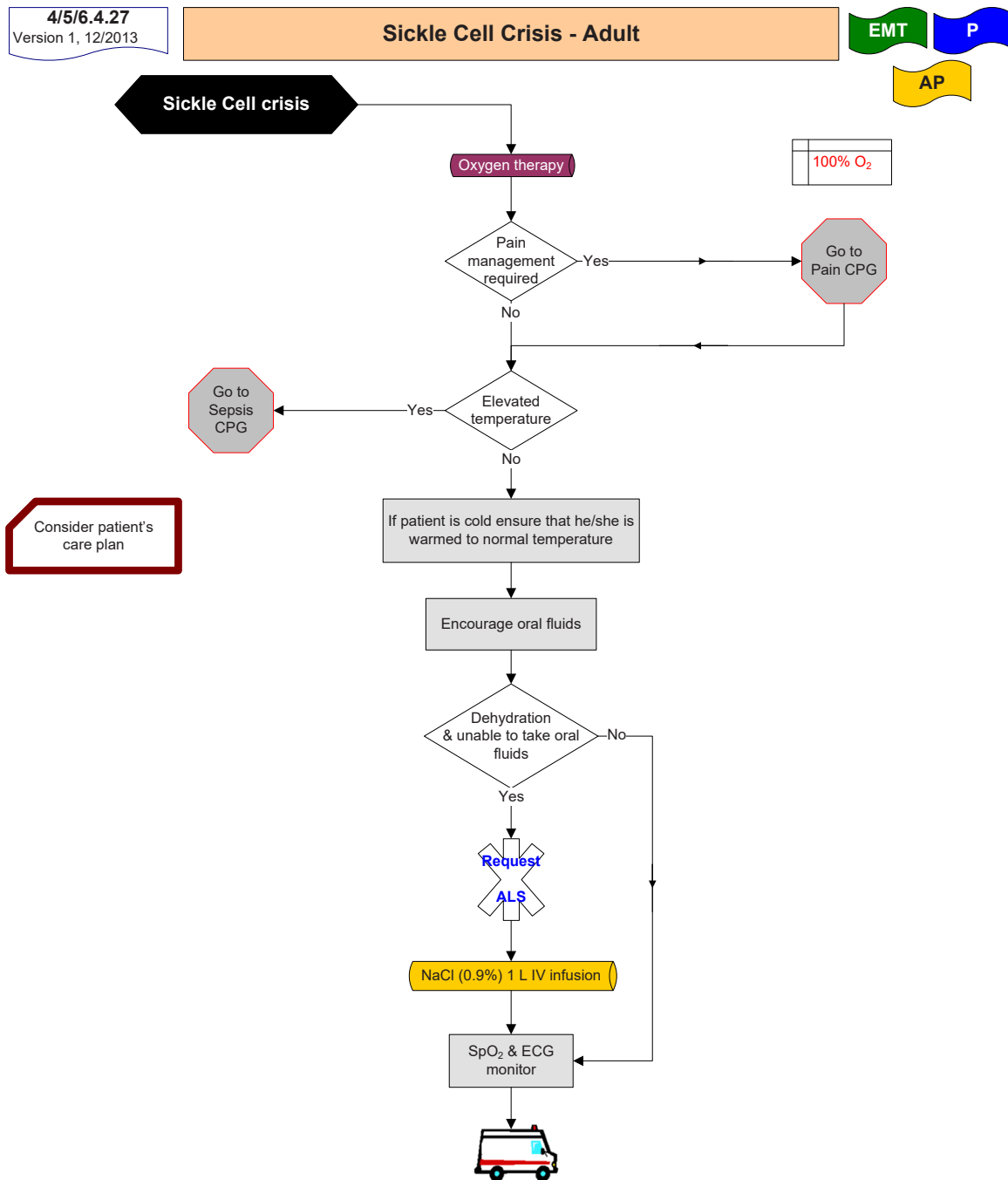
P

AP



Reference: Salvucci, A. A., et al. (2011). "Ondansetron is safe and effective for prehospital treatment of nausea and vomiting by paramedics." *Prehosp Emerg Care* 15(1): 34-38

## SECTION 4 - Medical Emergencies



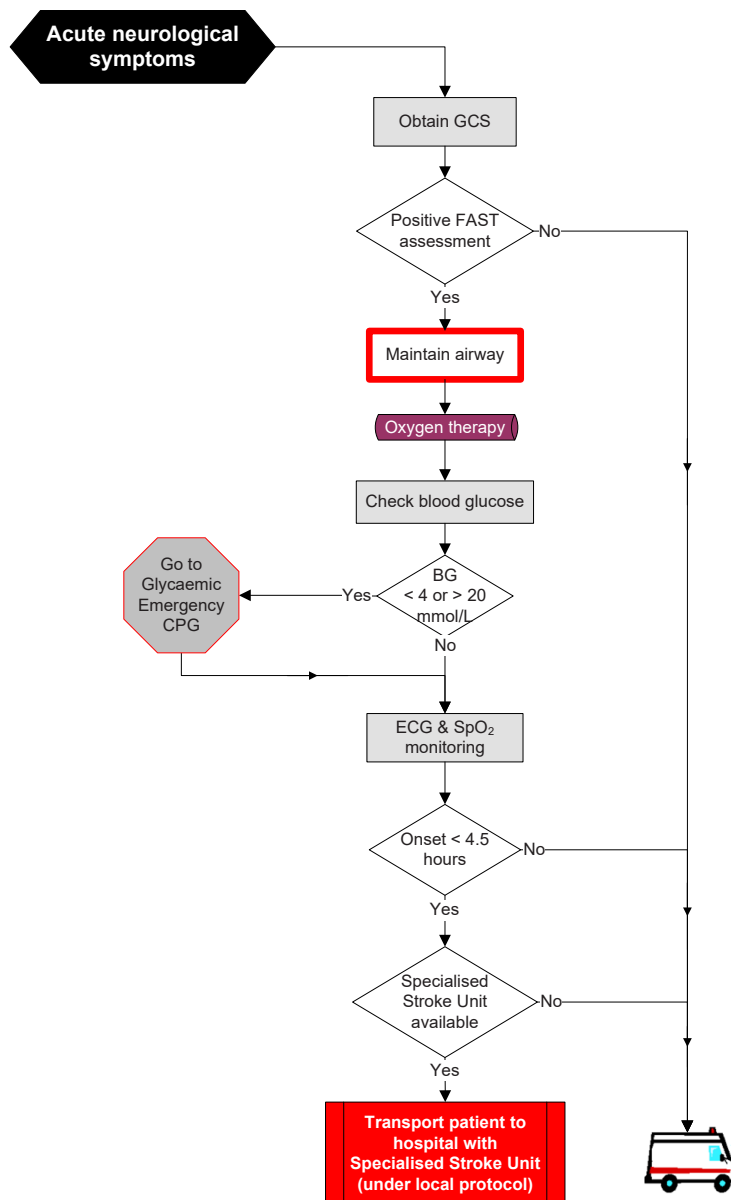
Reference: Rees, D, 2003, GUIDELINES FOR THE MANAGEMENT OF THE ACUTE PAINFUL CRISIS IN SICKLE CELL DISEASE; British Journal of Haematology, 2003, 120, 744–752

## SECTION 4 - Medical Emergencies

**5/6.4.28**  
Version 3, 03/2016

### Stroke

**P** **AP**



**F – facial weakness**  
Can the patient smile? Has their mouth or eye drooped? Which side?

**A – arm weakness**  
Can the patient raise both arms and maintain for 5 seconds?

**S – speech problems**  
Can the patient speak clearly and understand what you say?

**T – time of onset**

#### Reference

ILCOR Guidelines 2015

Prof R Boyle, 2006, Mending hearts and brains, Clinical case for change: Report by Prof R Boyle, National Director for Heart Disease and Stroke, NHS

AHA, 2005, Part 9 Adult Stroke, Circulation 2005; 112; 111-120

A. Mohd Nor, et al, Agreement between ambulance paramedic- and physician- recorded neurological signs with Face Arm Speech Test (FAST) in acute stroke patients, Stroke 004; 35;1355-1359

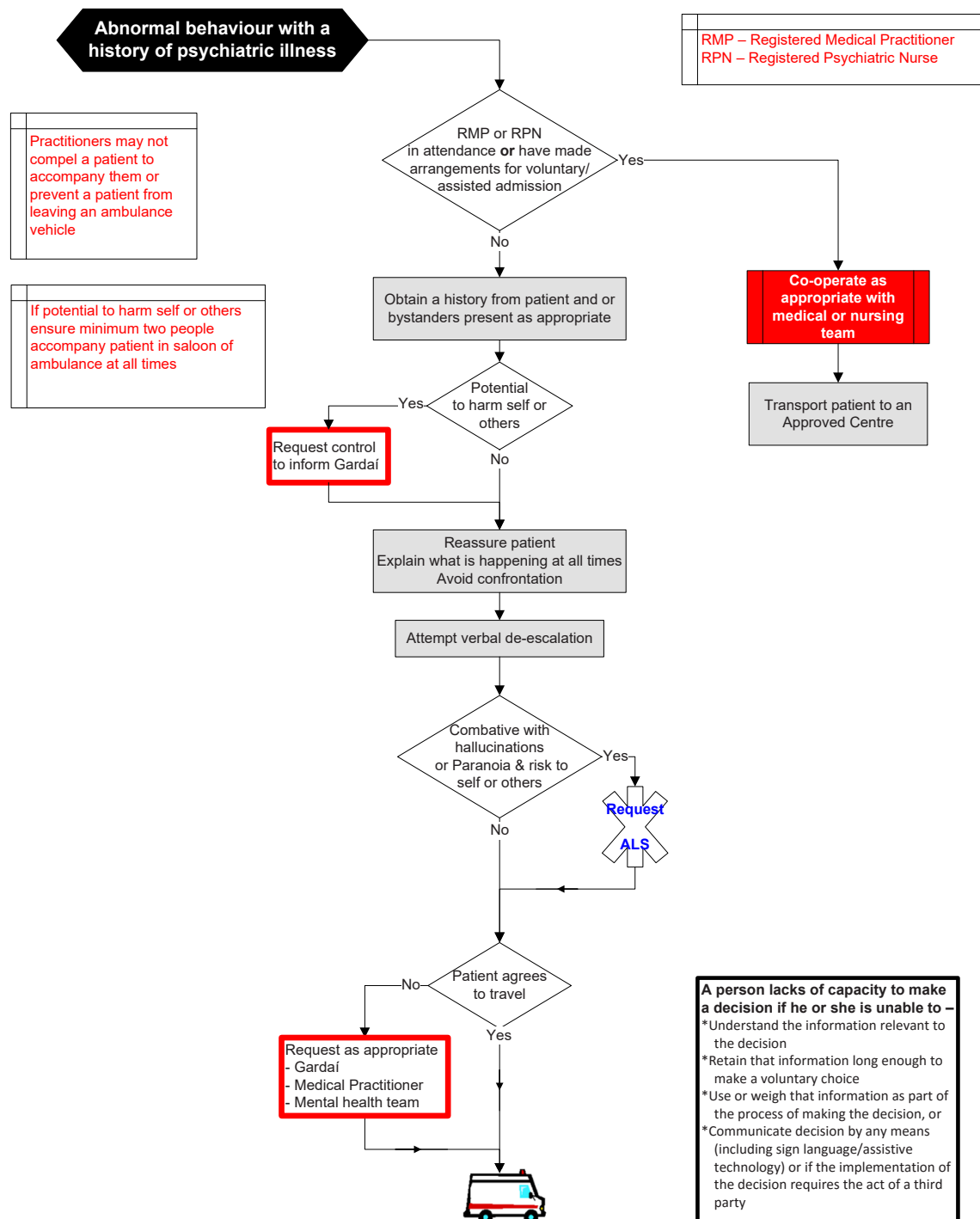
Jeffrey L Saver, et al, Prehospital neuroprotective therapy for acute stroke: results of the field administration of stroke therapy-Magnesium (FAST-MAG) pilot trial, Stroke 2004; 35; 106-108

Werner Hacke MD, et al, 2008, Thrombolysis with Alteplase 3 to 4.5 Hours after Acute Ischemic Stroke, N Engl J Med 2008; 359:1317-29

## SECTION 4 - Medical Emergencies

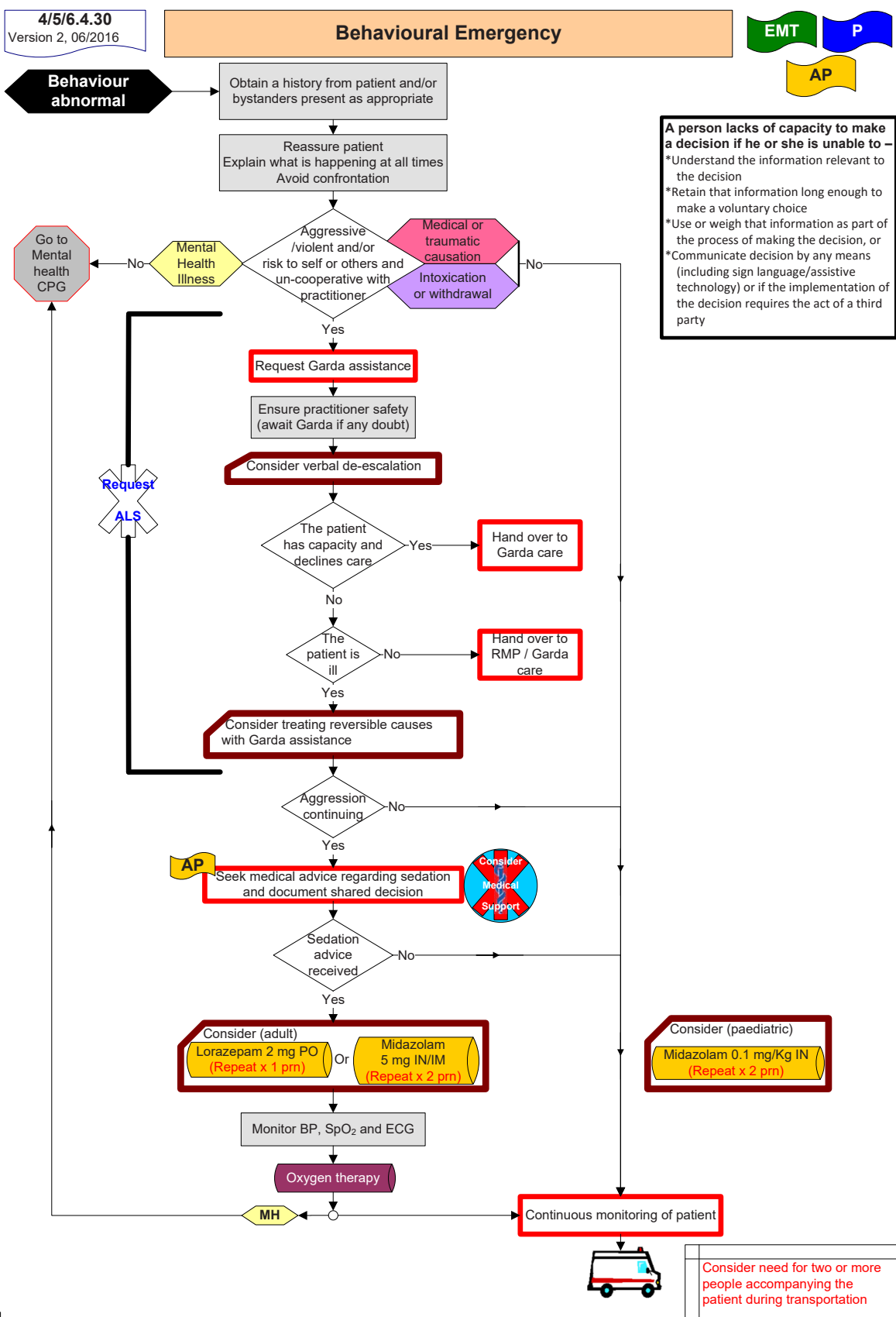
4/5.4.29  
Version 2, 04/2016

### Mental Health Emergency



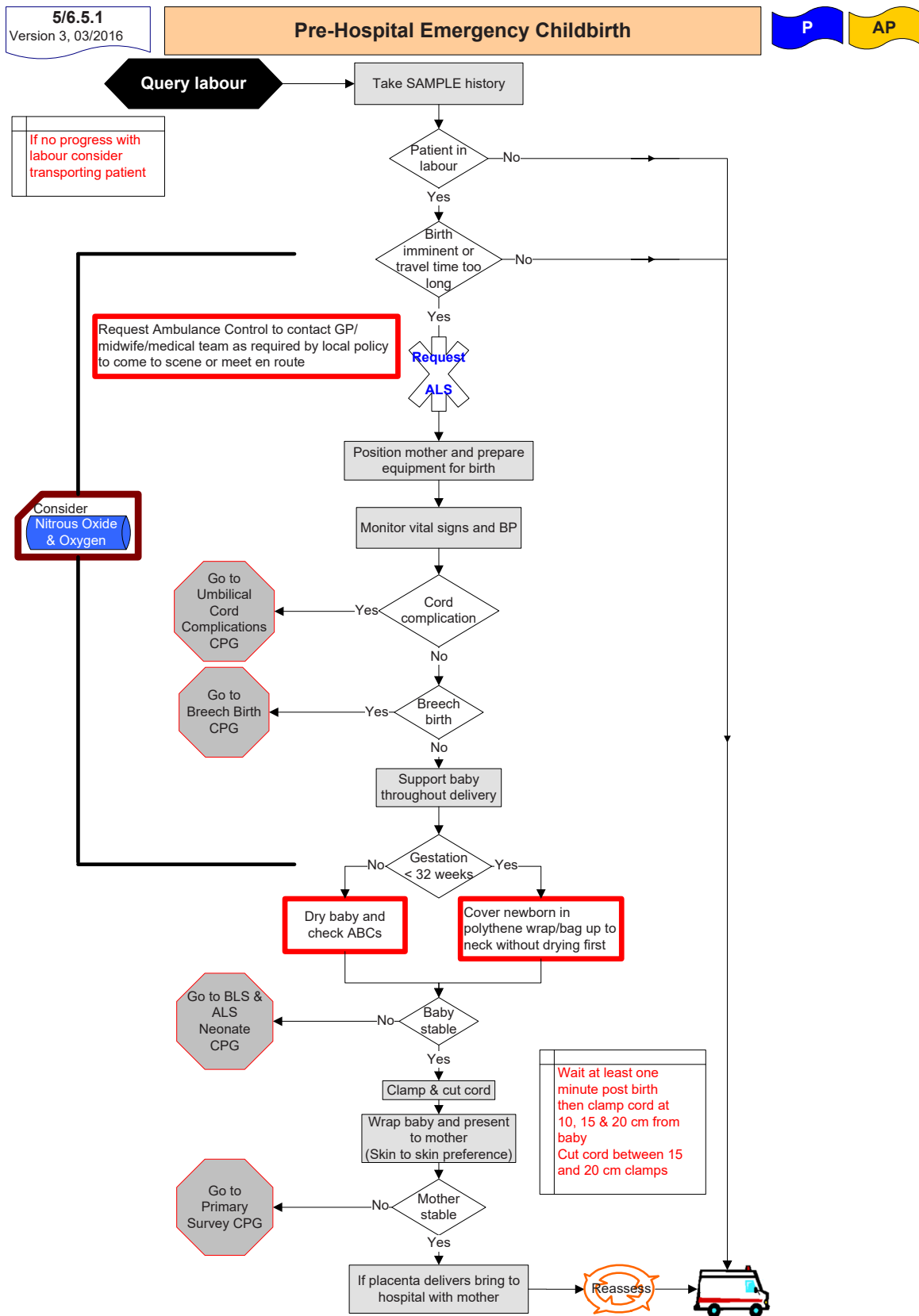
Reference; Reference Guide to the Mental Health Act 2001, Mental Health Commission  
HSE Mental Health Services

## SECTION 4 - Medical Emergencies



Reference: HSE Mental Health Services  
Assisted Decision-Making (Capacity) Act 2015

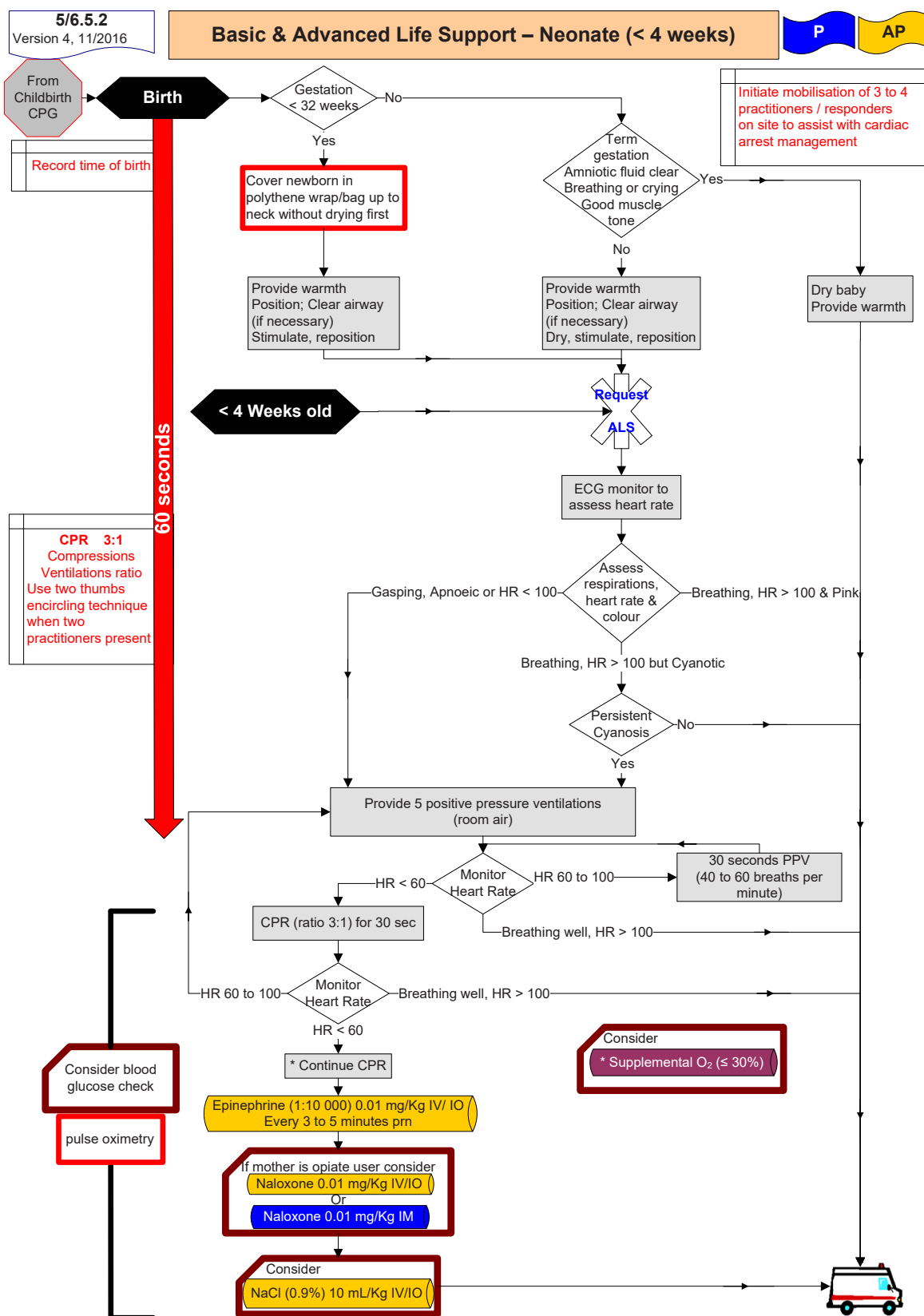
## SECTION 5 - Obstetric Emergencies



Reference: ILCOR Guidelines 2015



## SECTION 5 - Obstetric Emergencies

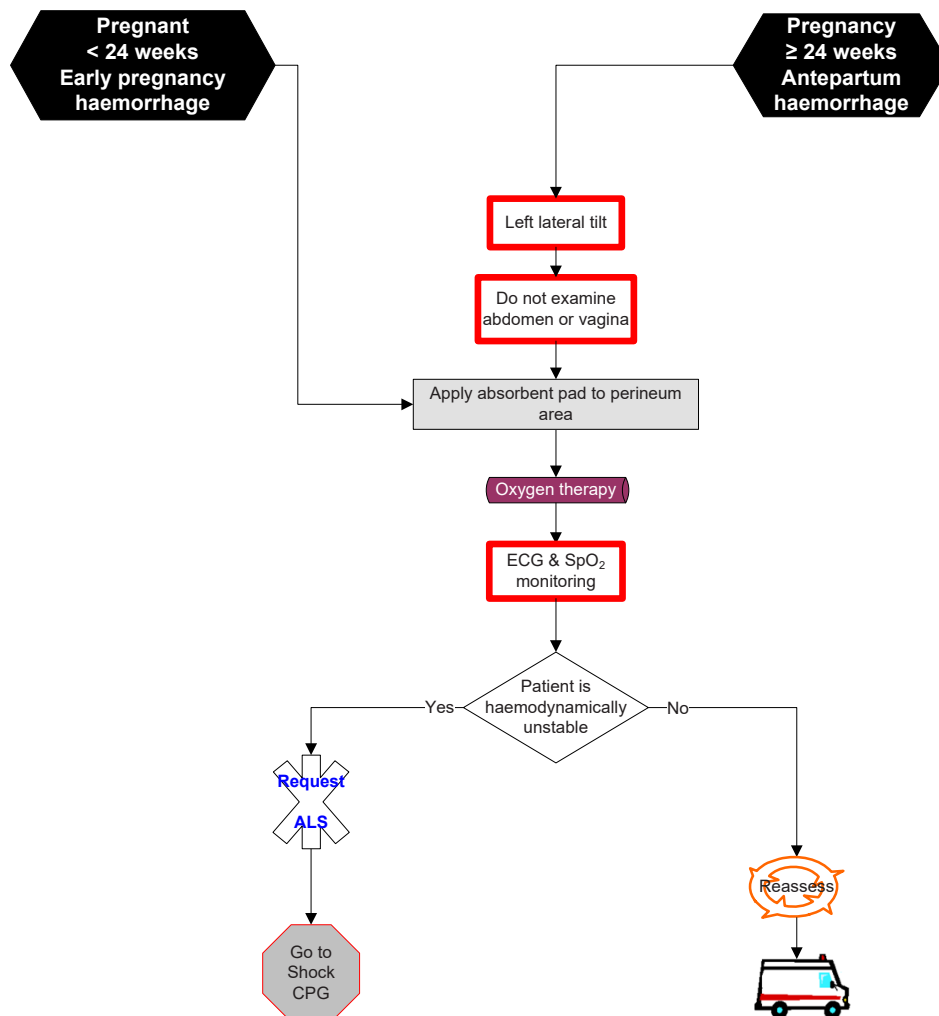
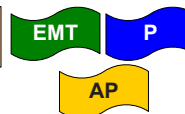


Reference: ILCOR Guidelines 2015

## SECTION 5 - Obstetric Emergencies

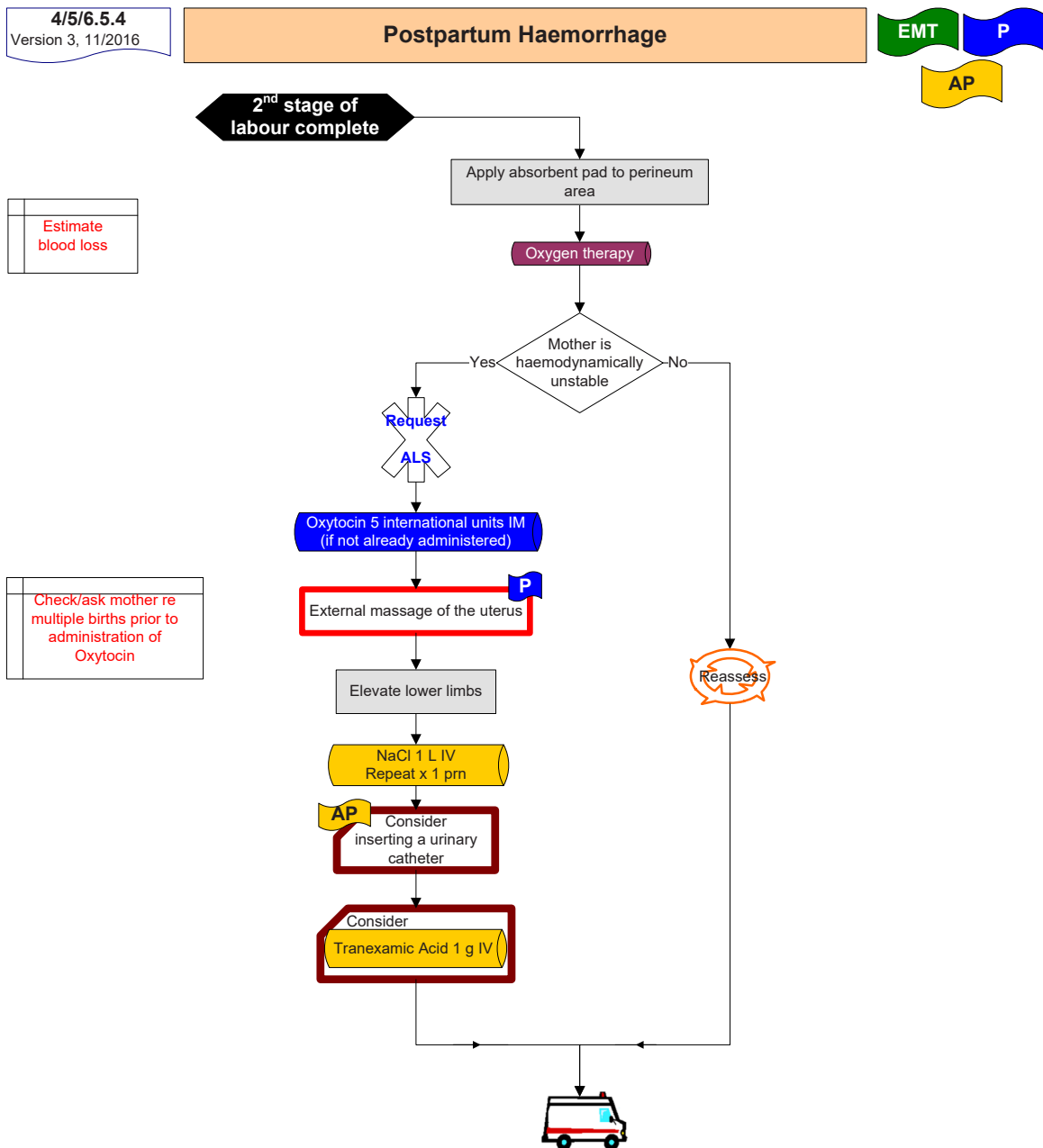
4/5/6.5.3  
Version 2, 03/2016

### PV Haemorrhage in Pregnancy



Reference: Sweet, BR, 2000, Mayes' Midwifery, 12<sup>th</sup> Edition, Bailliere Tindall

## SECTION 5 - Obstetric Emergencies

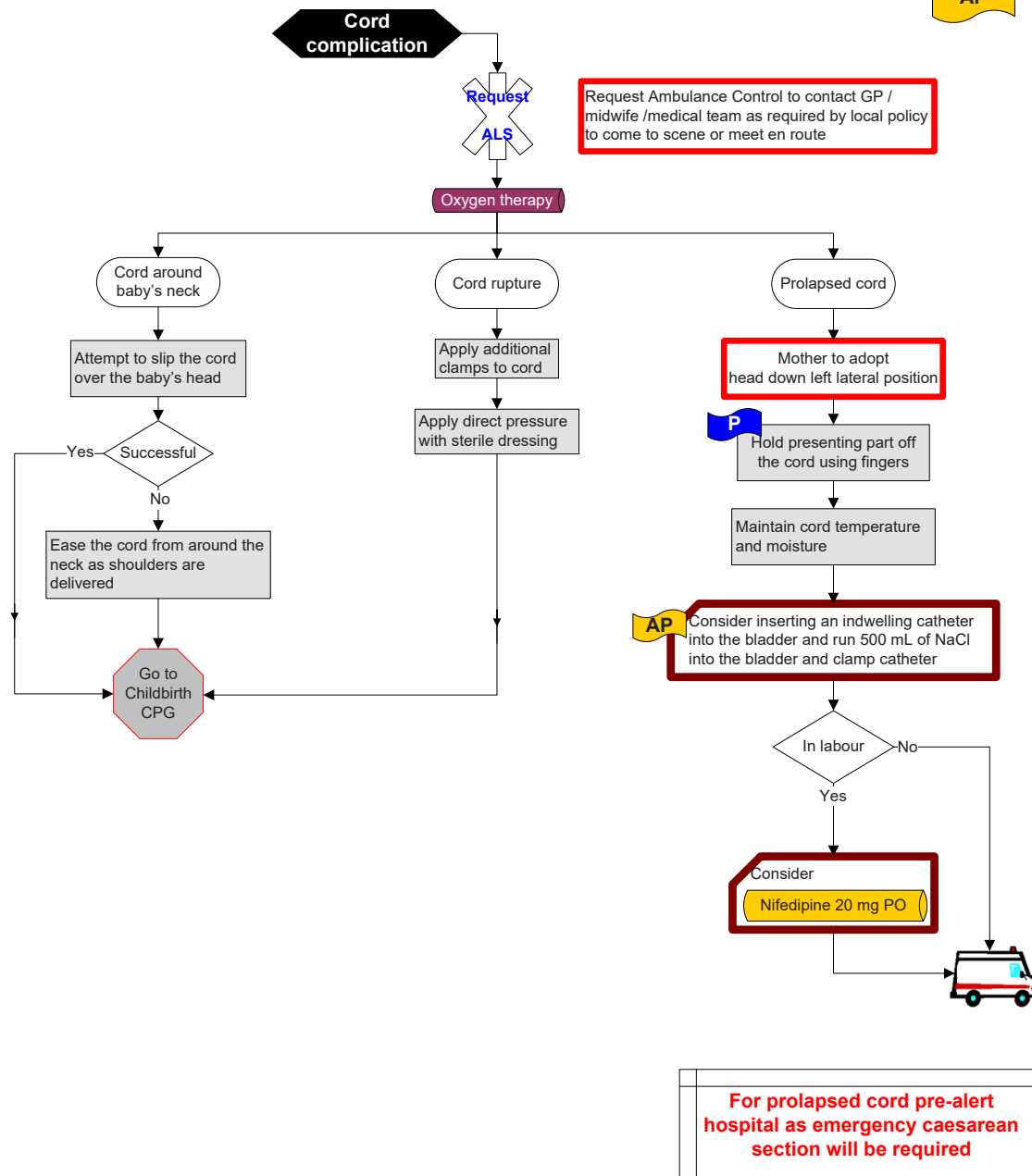
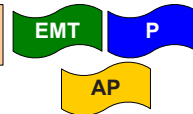


Reference: Institute of Obstetricians and Gynaecologists Royal College of Physicians of Ireland and Directorate of Strategy and Clinical Programmes Health Service Executive, 2014, Prevention and management of primary post partum haemorrhage – Guideline No 17

## SECTION 5 - Obstetric Emergencies

4/5/6.5.5  
Version 2, 03/2016

### Umbilical Cord Complications



Reference: Sweet, BR, 2000, Mayes' Midwifery, 12<sup>th</sup> Edition, Bailliere Tindall  
Katz Z et al, 1988, Management of labor with umbilical cord prolaps: A 5 year study. Obstet. Gynecol. 72(2): 278-281  
Duley, LMM, 2002, Clinical Guideline No 1(B), Tocolytic Drugs for women in preterm labour, Royal College of Obstetricians and gynaecologists

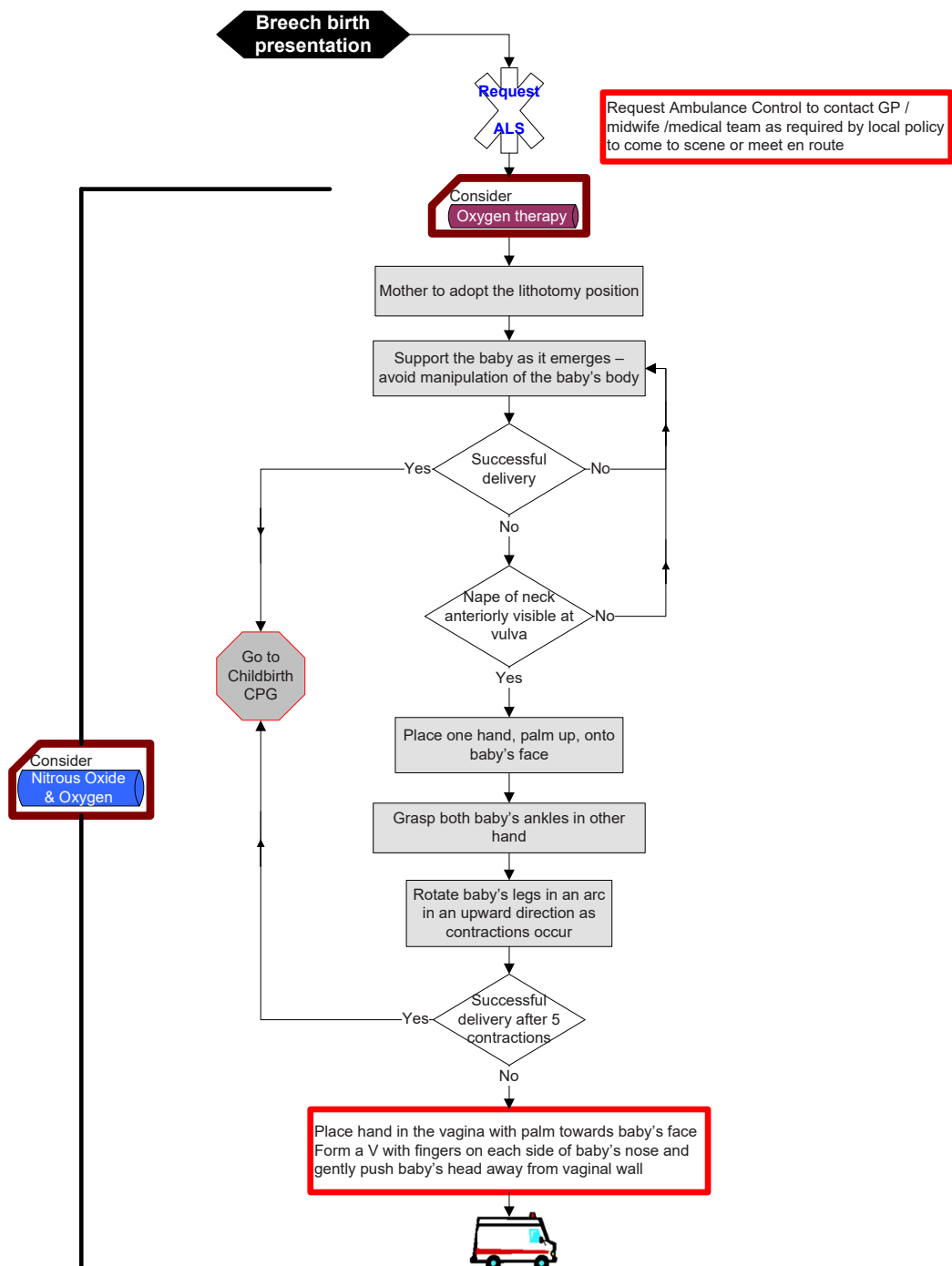
## SECTION 5 - Obstetric Emergencies

**5/6.5.6**  
Version 2, 03/2016

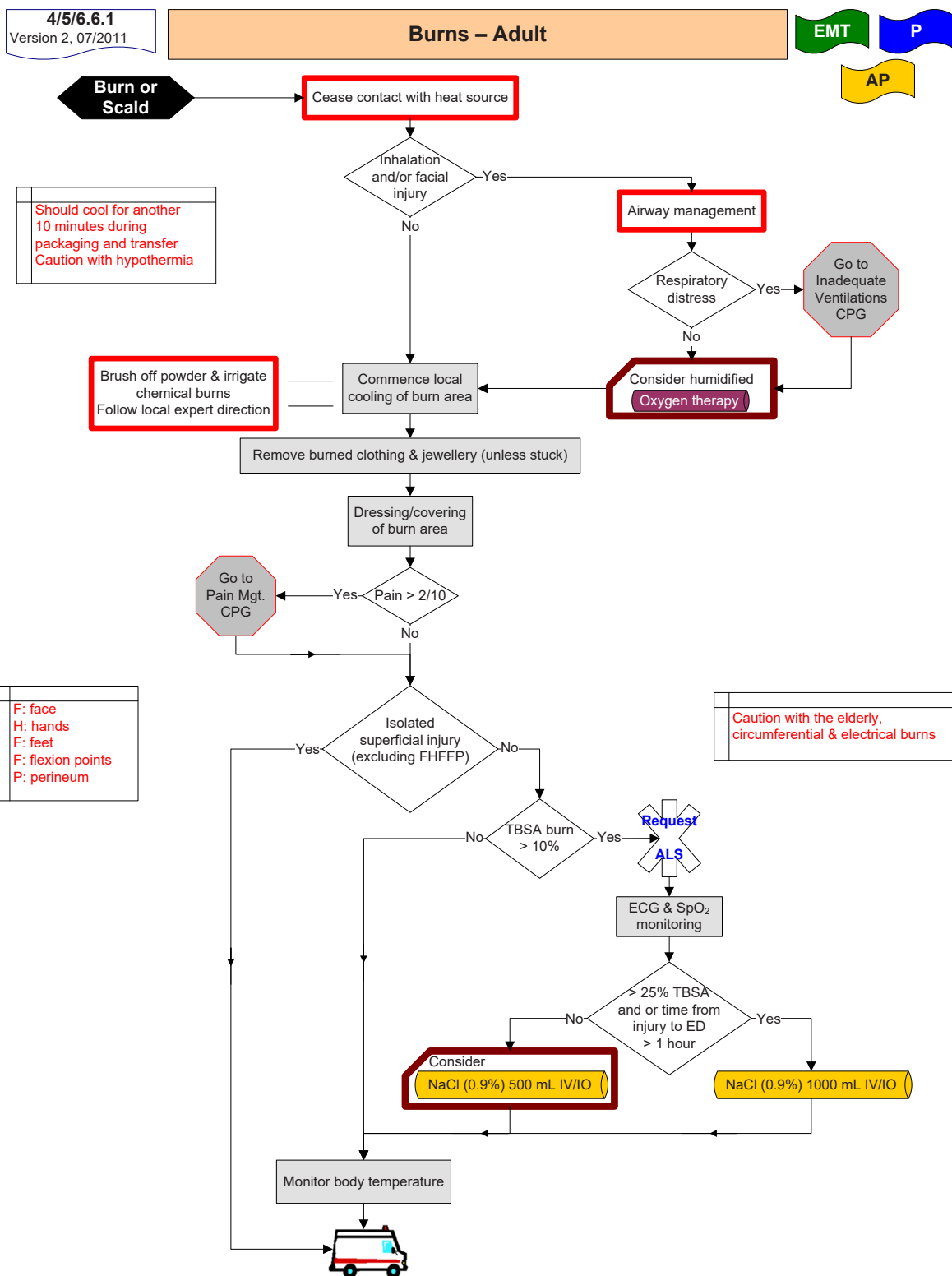
### Breech Birth

P

AP

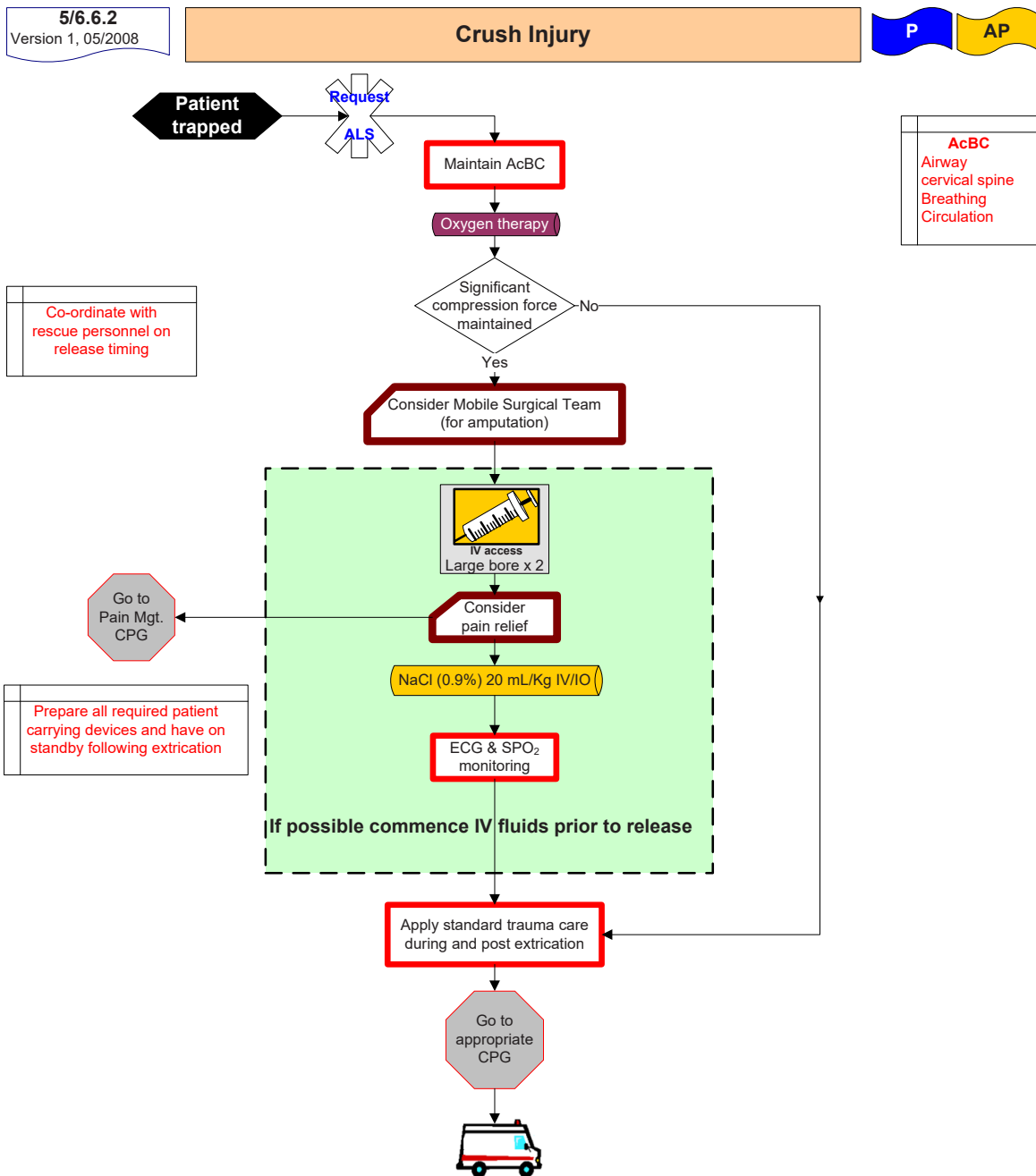


## SECTION 6 - Trauma



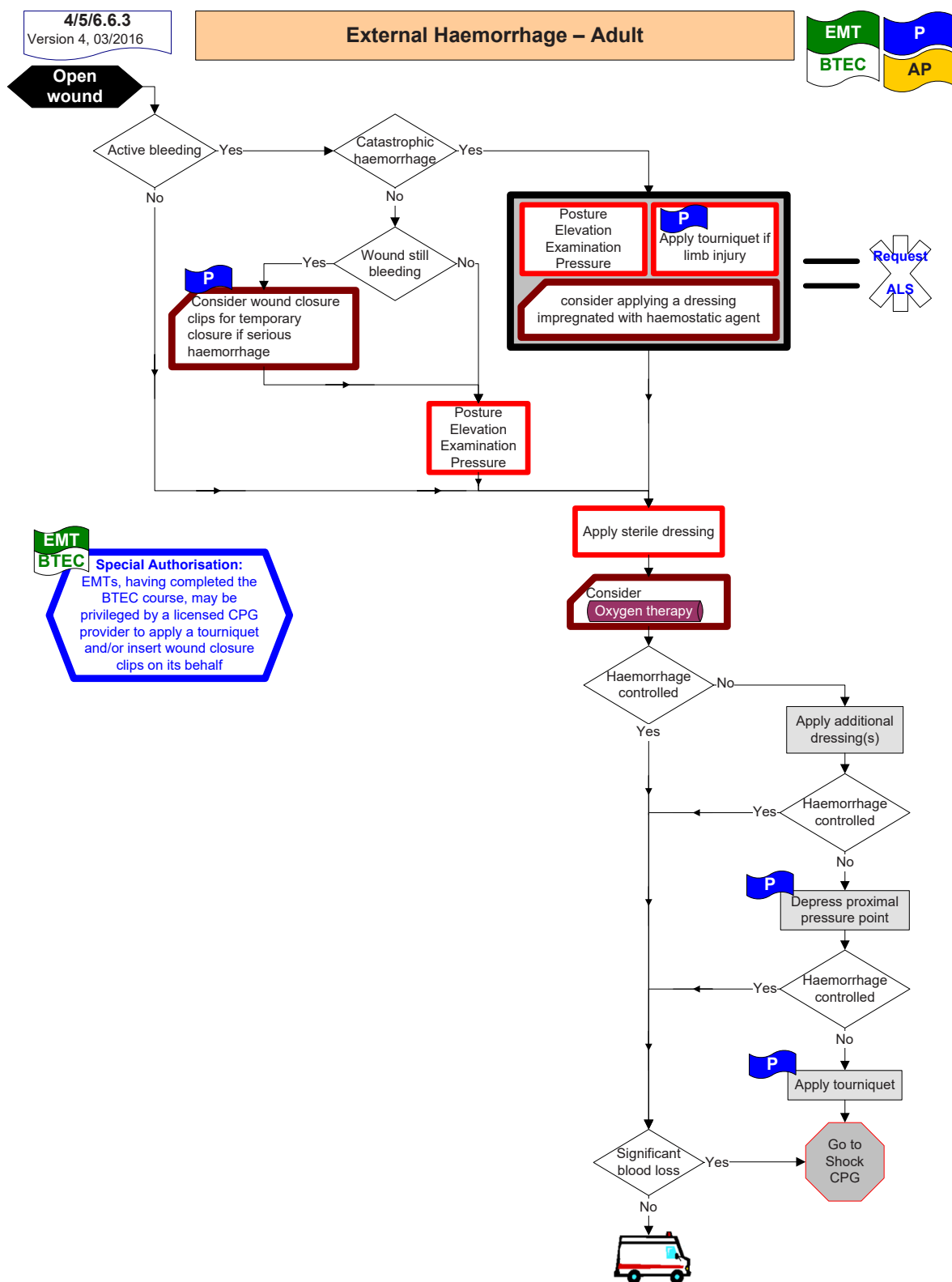
Reference: Allison, K et al, 2004, Consensus on the prehospital approach to burns patient management, Emerg Med J 2004; 21:112-114  
Sanders, M, 2001, Paramedic Textbook 2<sup>nd</sup> Edition, Mosby

## SECTION 6 - Trauma



Reference: Crush Injury Syndrome (# 7102) Patient Care Policy, Alameda County EMS Agency (CA)  
Crush Injuries, Clinical Practice Manual, Queensland Ambulance Service

## SECTION 6 - Trauma

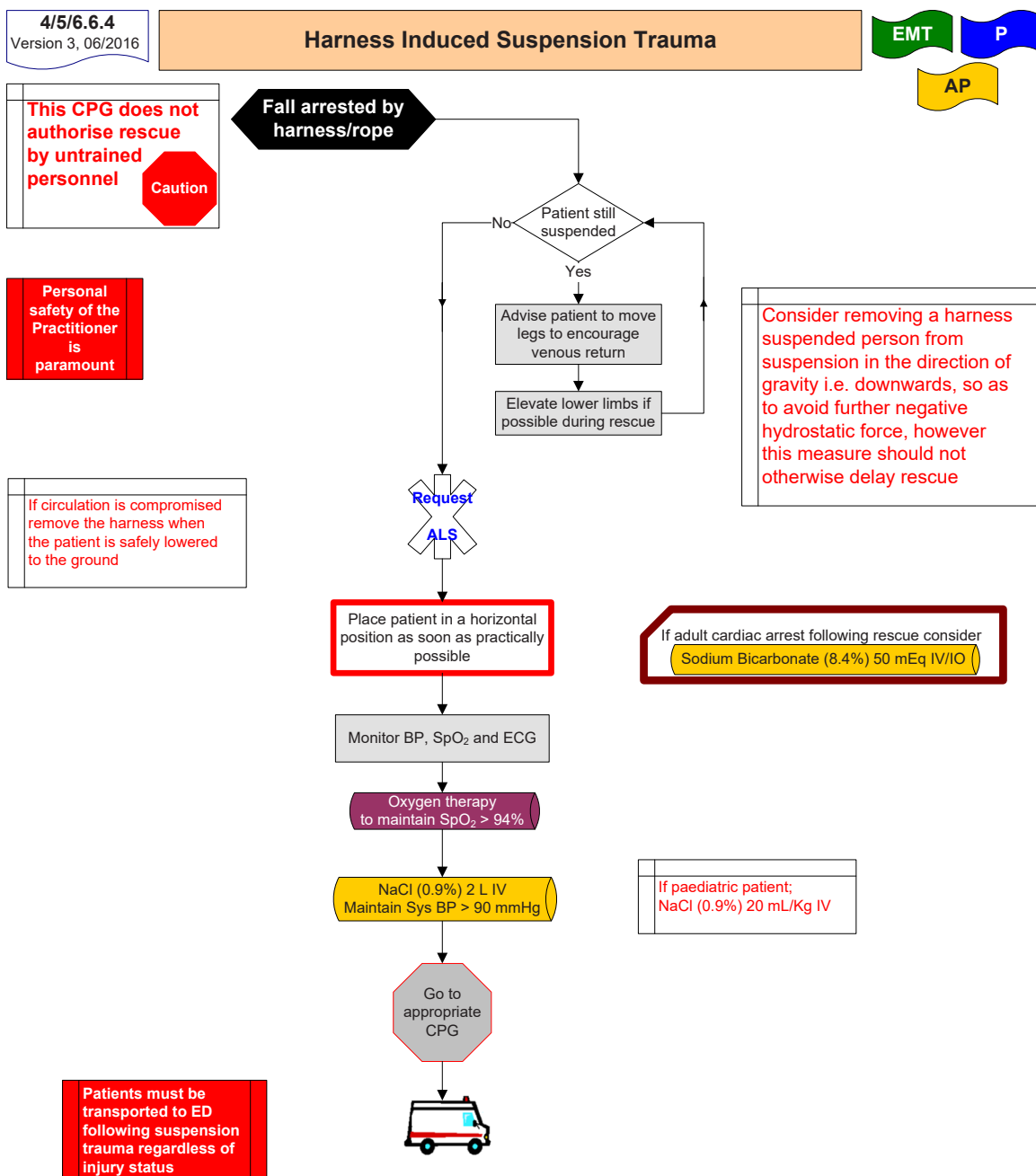


Reference: ILCOR Guidelines 2015

Granville-Chapman J, et al. Pre-hospital haemostatic dressings: A systematic review. Injury (2010), doi: 10.1016/j.injury.2010.09.037

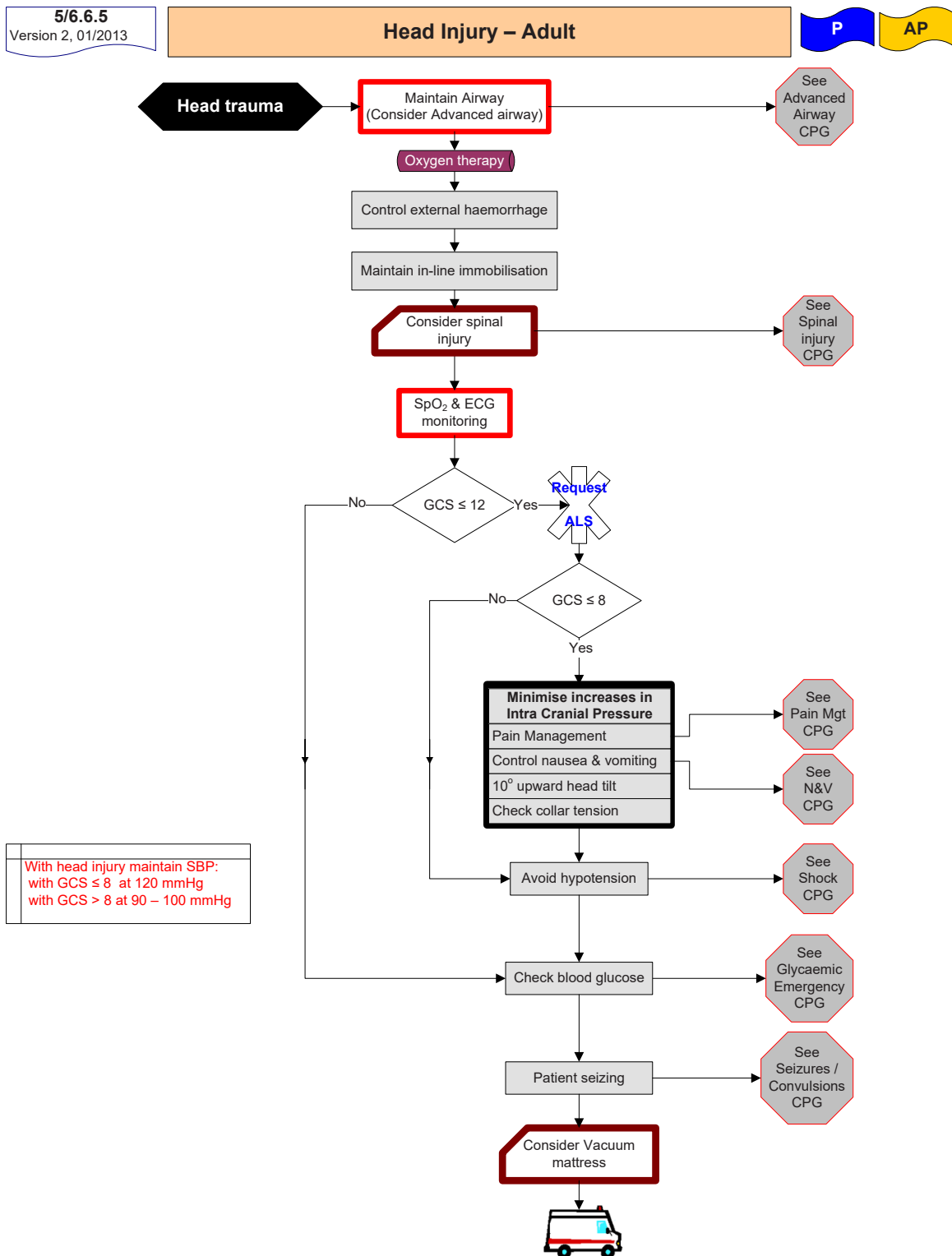


## SECTION 6 - Trauma



Reference: Adish A et al, 2009, Evidence-based review of the current guidance on first aid measures for suspension trauma, Health and Safety Executive (UK) Research report RR708  
 Australian Resuscitation Council, 2009, Guideline 9.1.5 Harness Suspension Trauma first aid management.  
 Thomassen O et al, Does the horizontal position increase risk of rescue death following suspension trauma?, *Emerg Med J* 2009;26:896-898  
 doi:10.1136/emj.2008.064931

## SECTION 6 - Trauma

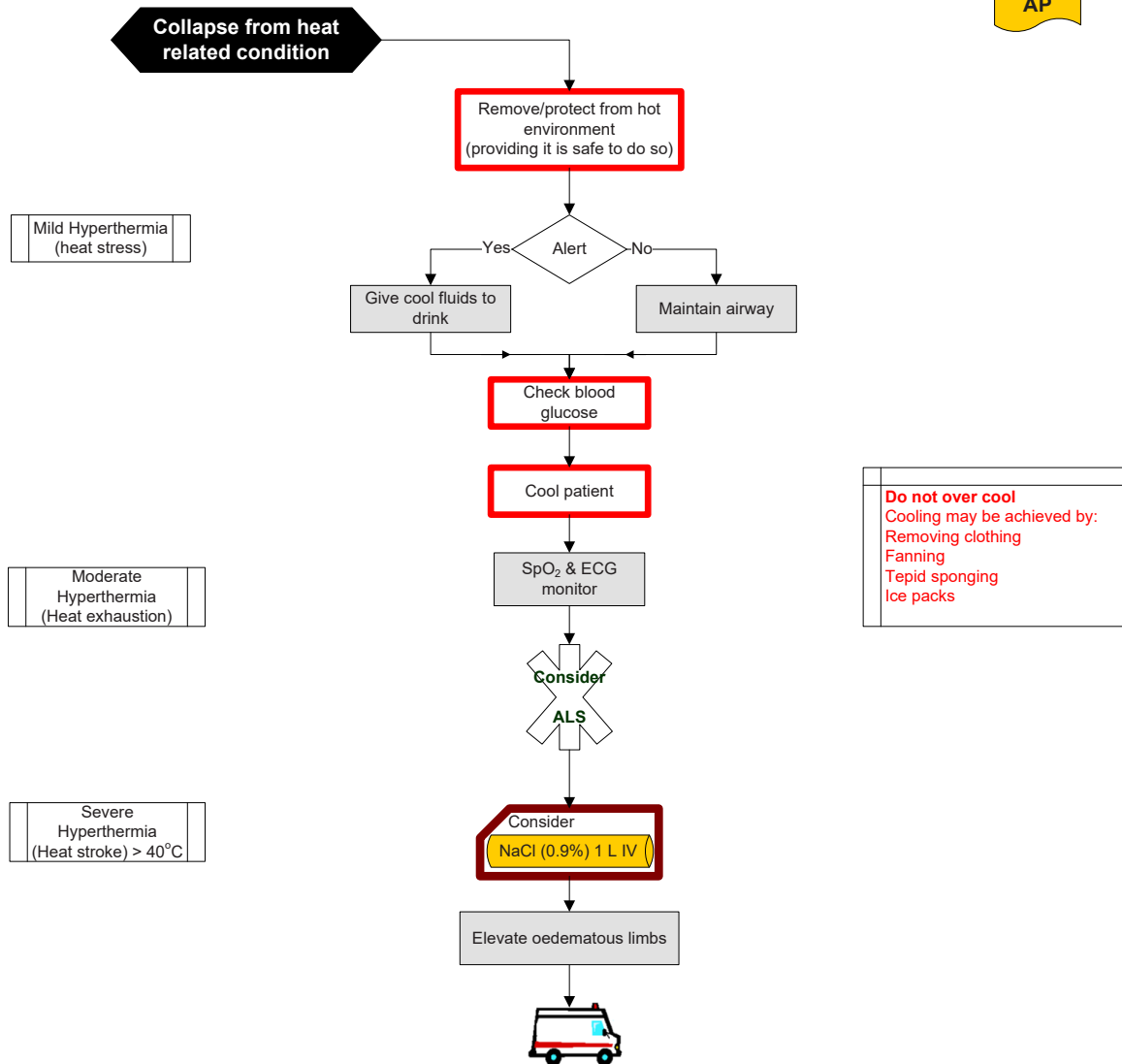
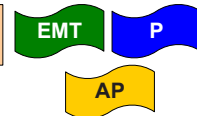


Reference; Mc Swain, N, 2011, PHTLS Prehospital Trauma Life Support 7<sup>th</sup> Edition, Mosby

## SECTION 6 - Trauma

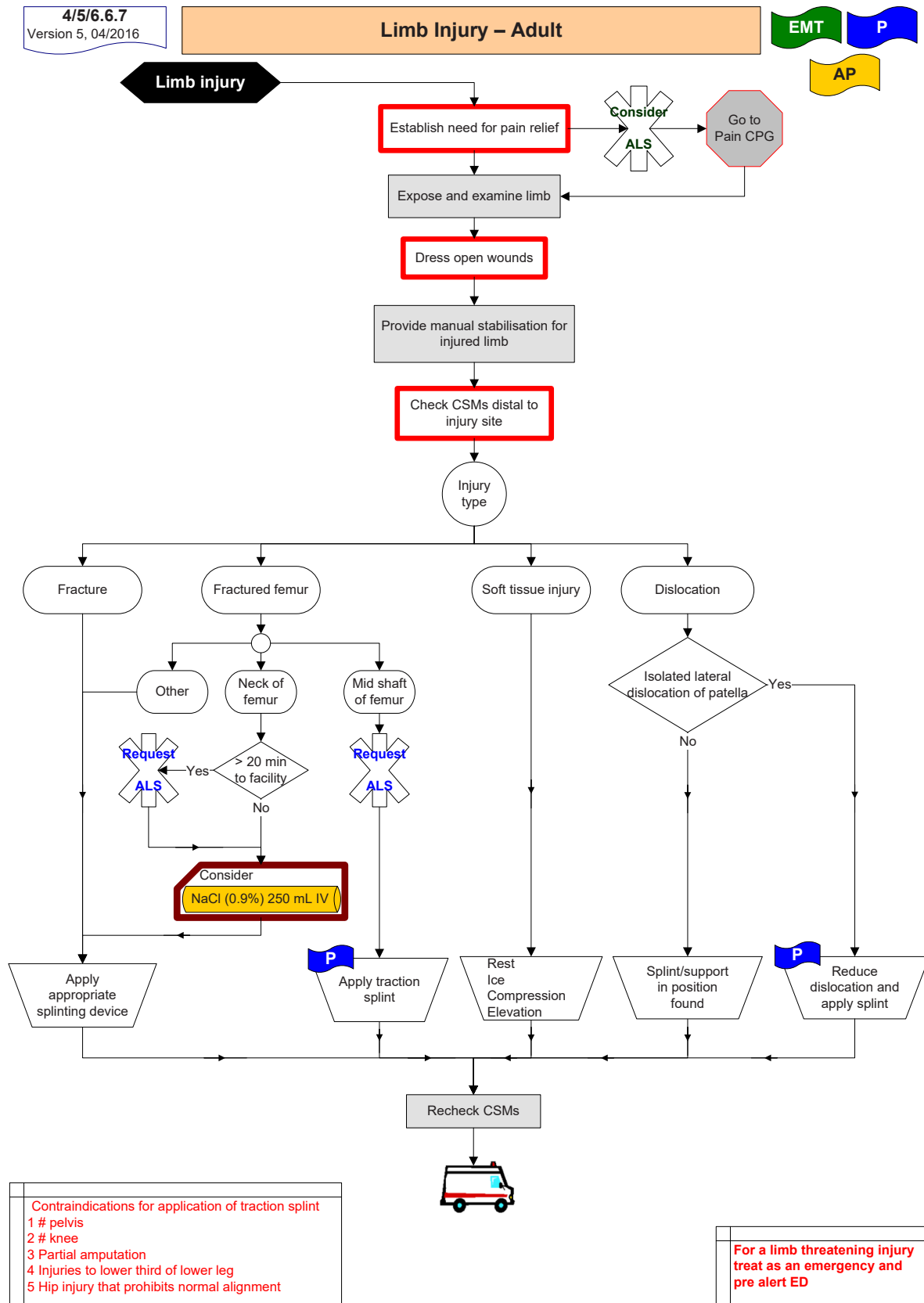
**4/5/6.6.6**  
Version 2, 03/2016

### Heat Related Emergency – Adult



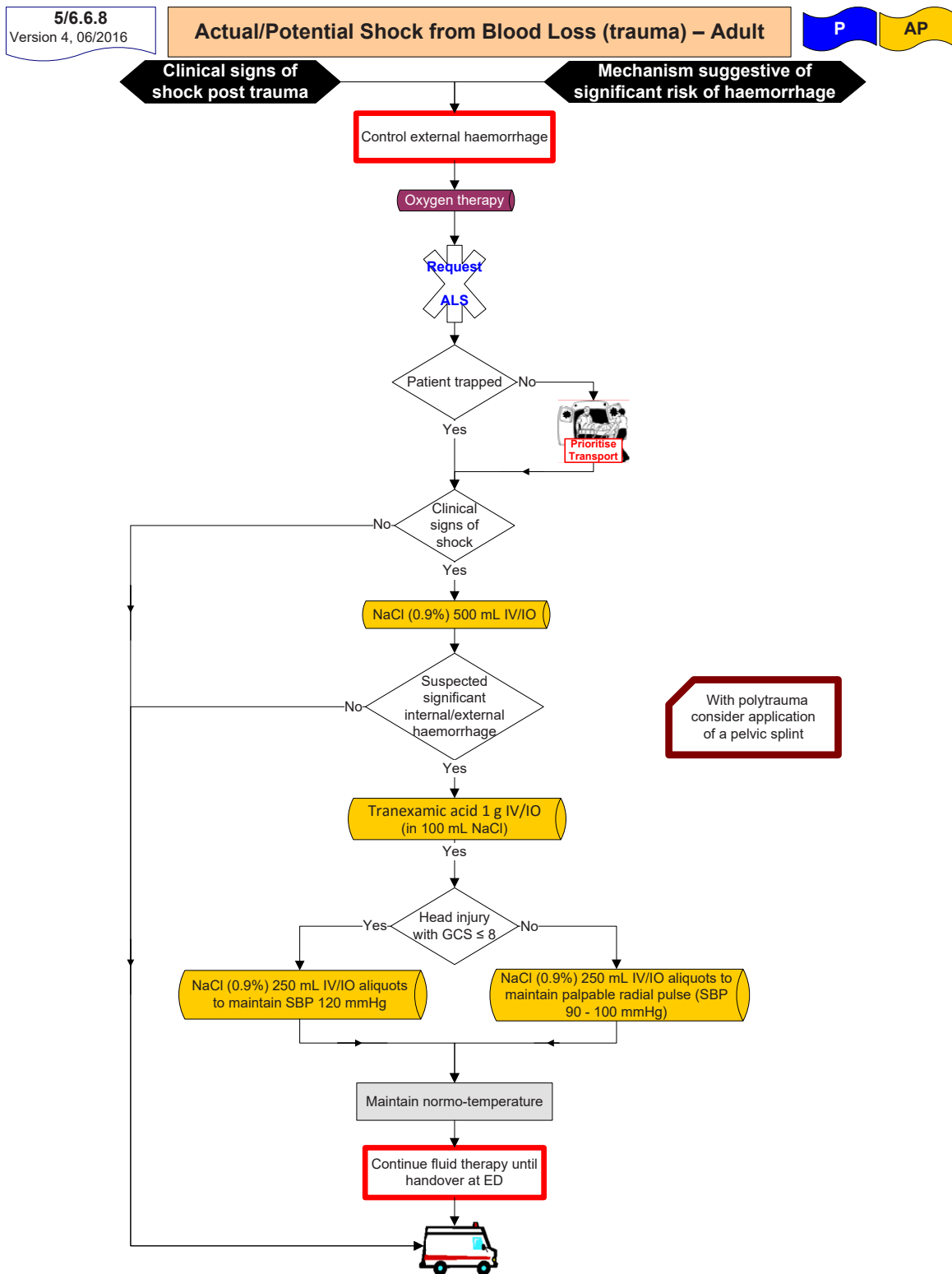
Reference: ILCOR Guidelines 2015  
European Resuscitation Guidelines 2010  
RFDS, 2011, Primary Clinical Care Manual

## SECTION 6 - Trauma



Reference: An algorithm guiding the evaluation and treatment of acute primary patellar dislocations, Mehta VM et al. Sports Med Arthrosc. 2007 Jun;15(2):78-81

## SECTION 6 - Trauma



Reference: Gruen, R. L. and M. C. Reade (2012). "Administer tranexamic acid early to injured patients at risk of substantial bleeding." *BMJ* 345: e7133  
 Leech, C., et al. (2014). "Log-rolling a blunt major trauma patient is inappropriate in the primary survey." *Emerg Med J* 31(1): 86

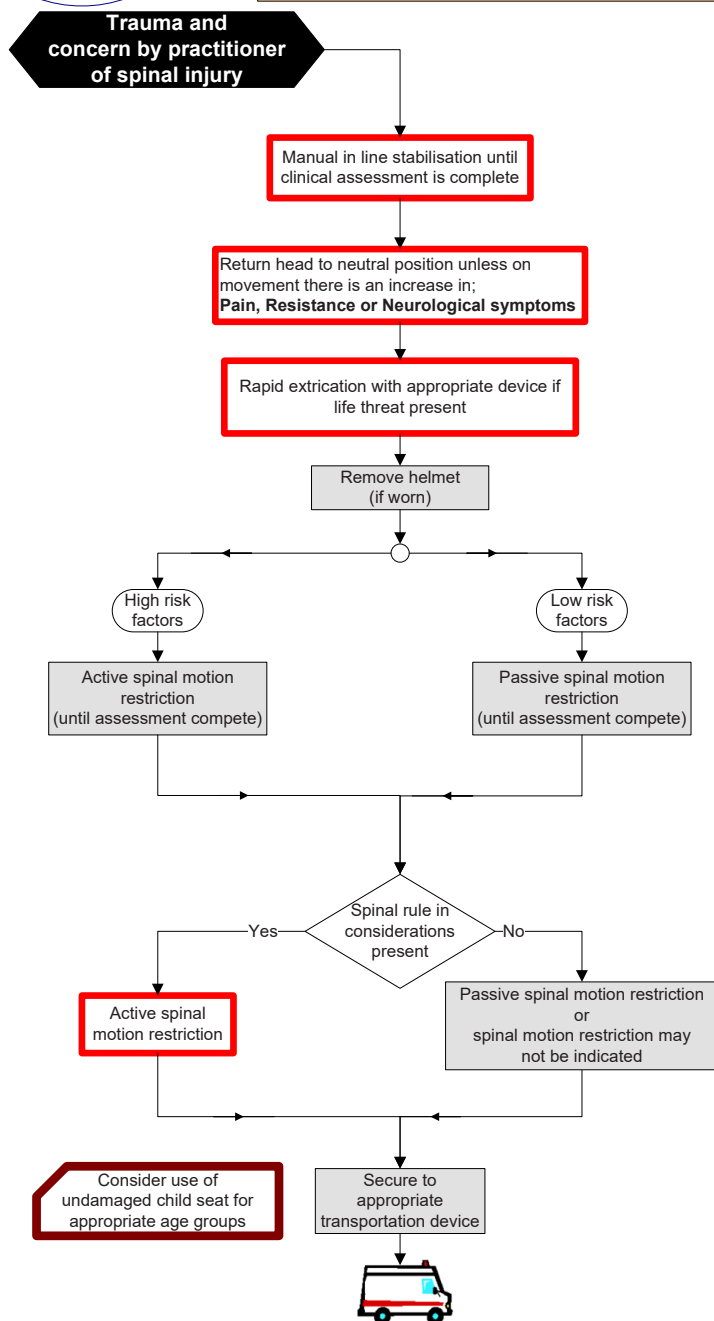
## SECTION 6 - Trauma

**5/6.6.9**  
Version 3, 06/2016

### Spinal Injury Management

P

AP



**High risk factors:-** any of the following;

- ☐ dangerous mechanism of injury
- ☐ fall from a height of greater than 1 metre or 5 steps
- ☐ axial load to the head or base of the spine

– for example;

- ☐ diving, high-speed motor vehicle collision, rollover motor accident, ejection from a motor vehicle, accident involving motorised recreational vehicle, bicycle collision, horse riding accident, pedestrian v vehicle.
- ☐ impaired awareness (alcohol/ drug intoxication, confused /uncooperative or ALoC)
- ☐ age 65 years or older, with any of the above
- ☐ age 2 years or younger incapable of verbal communication, with any of the above

**Low risk factors:-** any two or more of;

- ☐ involved in a minor rear-end motor vehicle collision
- ☐ comfortable in a sitting position
- ☐ ambulatory at any time since the injury
- ☐ no midline cervical spine tenderness
- ☐ no spinal column/ midline pain

**And** are able to actively rotate their neck 45 degrees to the left and right

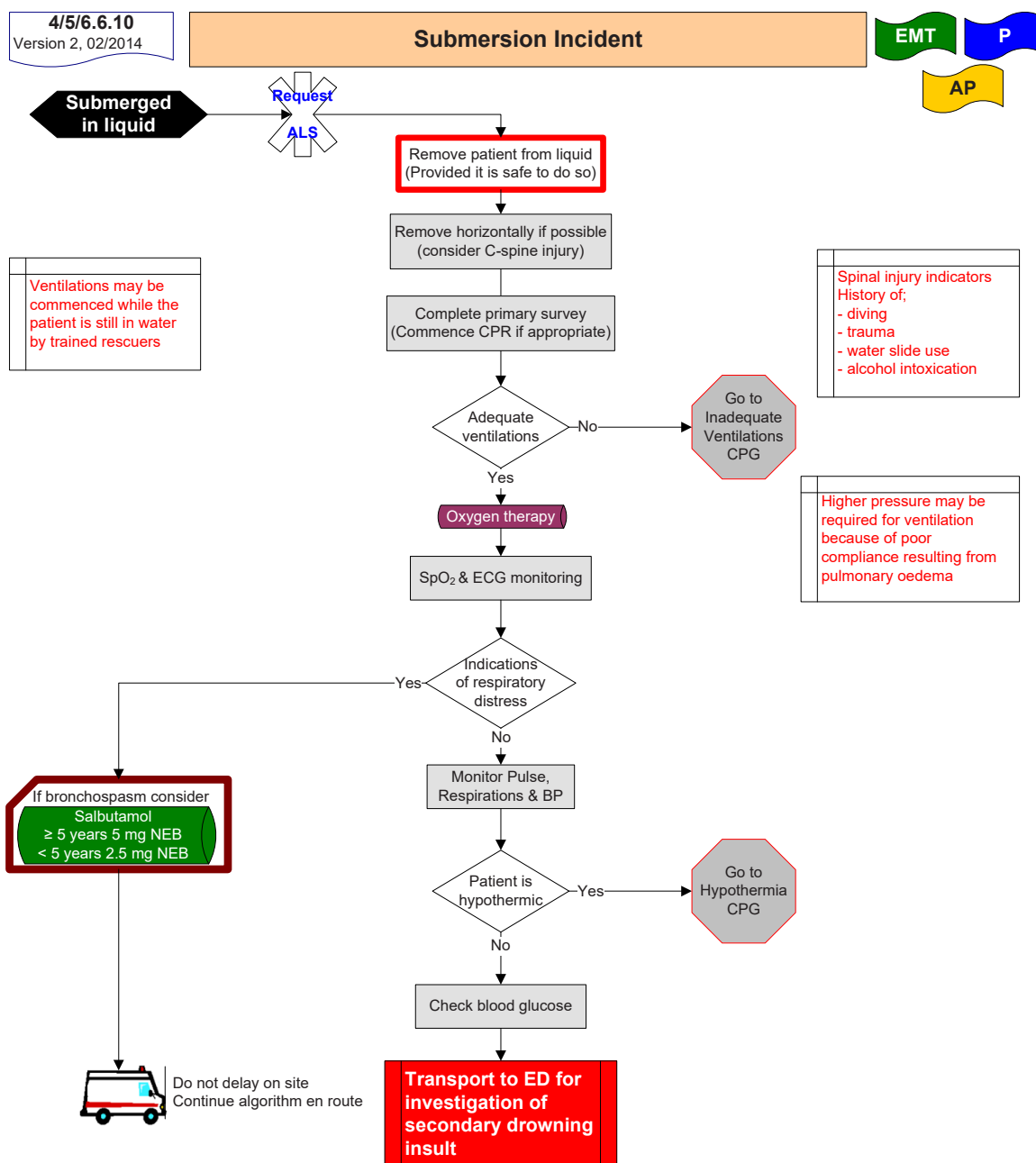
**Spinal injury rule in considerations;**

- ☐ any significant distracting injuries
- ☐ impaired awareness (alcohol/ drug intoxication, confused /uncooperative or ALoC)
- ☐ immediate onset of spinal/ midline back pain
- ☐ hand or foot weakness (motor issue)
- ☐ altered or absent sensation in the hands or feet (sensory issue)
- ☐ priapism
- ☐ history of past spinal problems, including previous spinal surgery or conditions that predispose to instability of the spine.
- ☐ Unable to actively rotate their neck 45 degrees to the left and right.

**PHECC Spinal Injury Management Standard**

- ☐ **Active spinal motion restriction;** using manual inline techniques with or without spinal injury management devices to reduce spinal column motion.
- ☐ **Passive spinal motion restriction;** requesting the patient to minimise his/her movement without external intervention and permitting the patient to adopt a position of comfort.

## SECTION 6 - Trauma

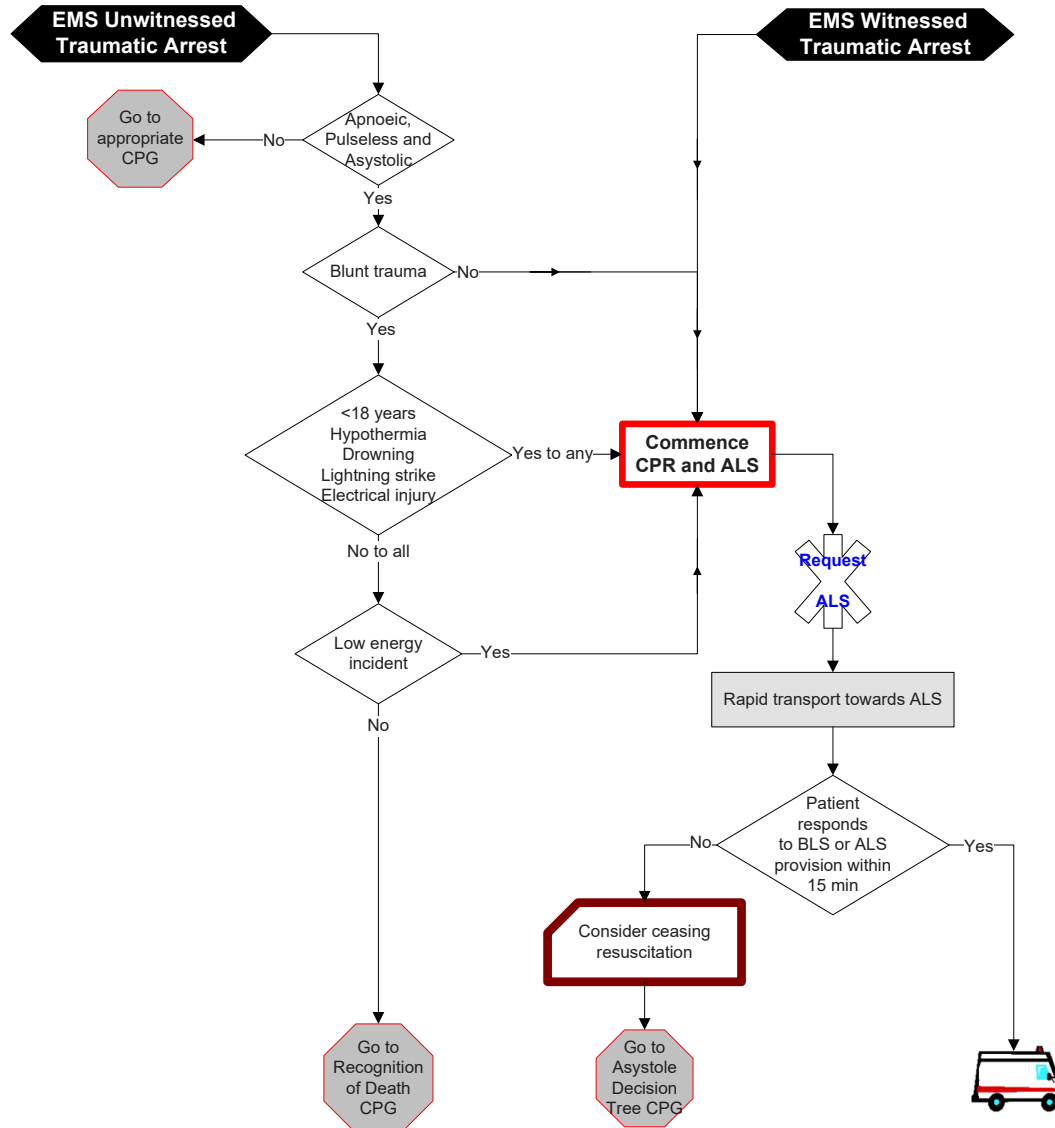
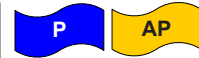


Reference: Golden, F & Tipton M, 2002, Essentials of Sea Survival, Human Kinetics  
 Verie, M, 2007, Near Drowning, E medicine, [www.emedicine.com/ped/topic20570.htm](http://www.emedicine.com/ped/topic20570.htm)  
 Shepherd, S, 2005, Submersion Injury, Near Drowning, E Medicine, [www.emedicine.com/emerg/topic744.htm](http://www.emedicine.com/emerg/topic744.htm)  
 AHA, 2005, Part 10.3: Drowning, Circulation 2005;112;133-135  
 Soar, J et al, 2005, European Resuscitation Council Guidelines for Resuscitation 2005, Section 7. Cardiac arrest in special circumstances, Resuscitation (2005) 6751, S135-S170

## SECTION 6 - Trauma

5/6.6.11  
Version 1, 05/2008

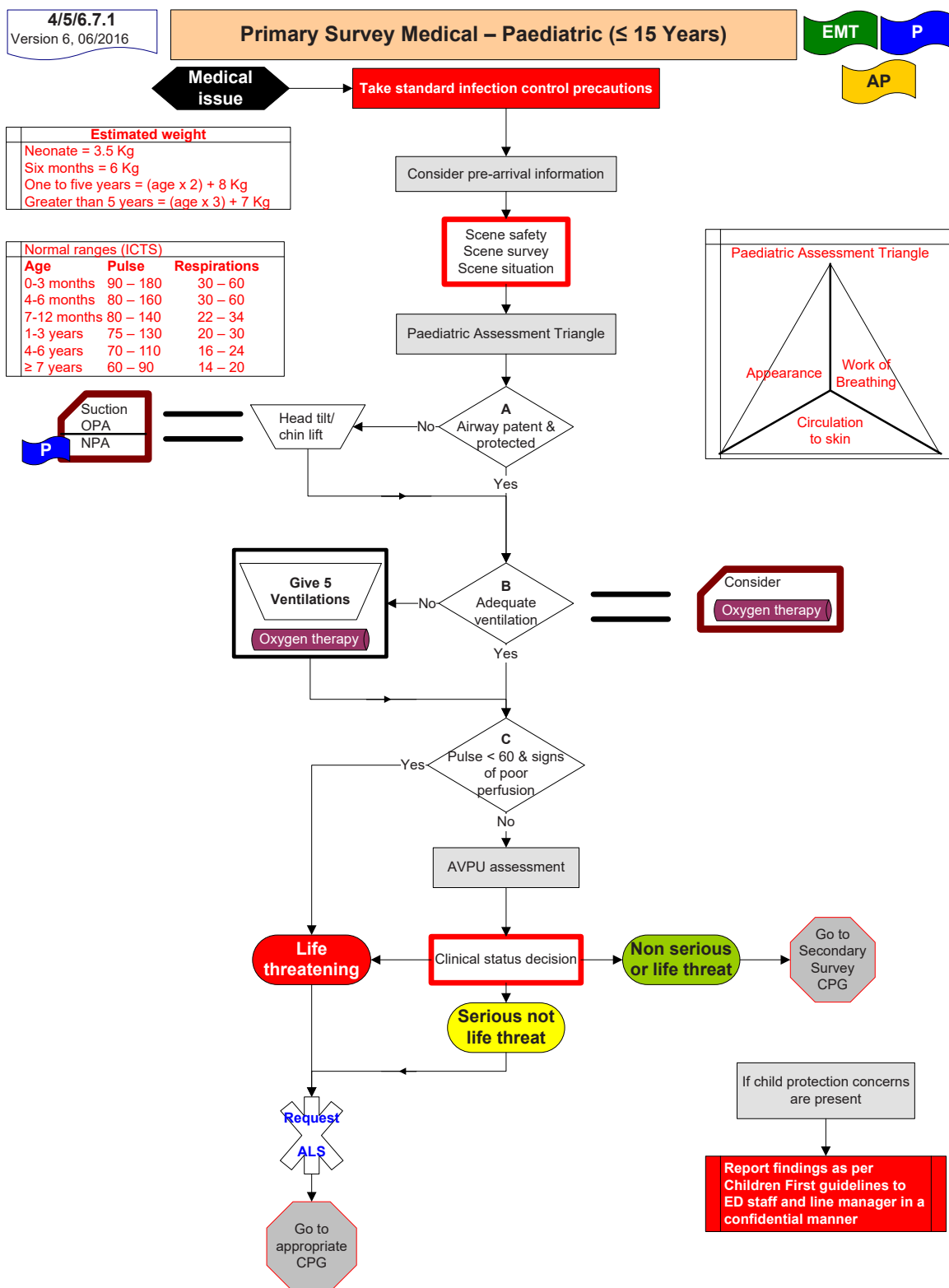
### Traumatic Cardiac Arrest – Adult



Reference: Hopson, L et al, 2003, Guidelines for withholding or termination of resuscitation in prehospital traumatic cardiac arrest, Position paper for National Association of EMS Physicians, Prehospital Emergency Care, Vol 7 p141-146

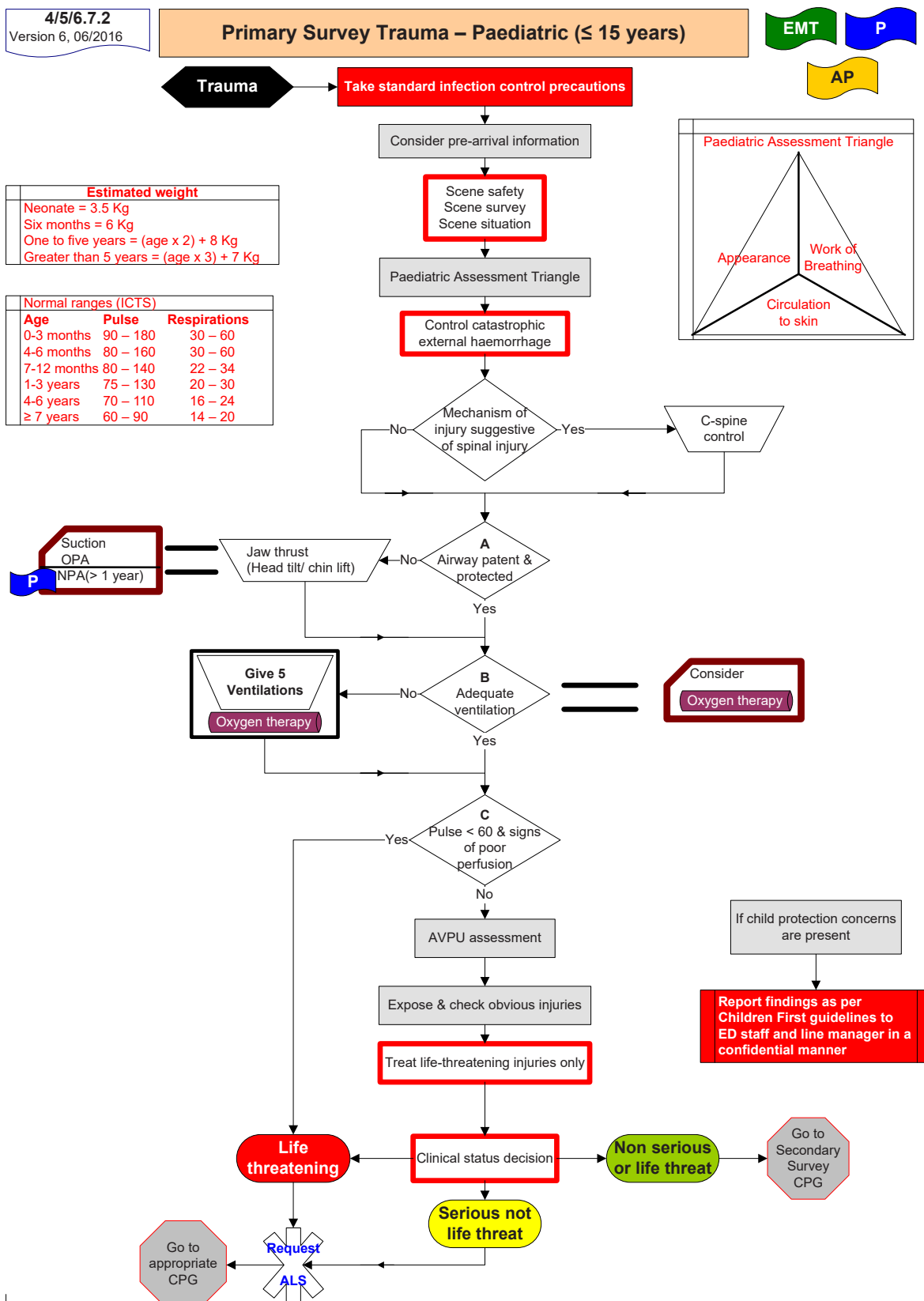


## SECTION 7 - Paediatric Emergencies



Reference:  
ILCOR Guidelines 2015, American Academy of Pediatrics, 2000, Pediatric Education for Prehospital Professionals  
Department of Children and Youth Affairs, 2011, Children First: National Guidance for the Protection and Welfare of Children  
Irish Children's Triage System: National Emergency Medicine Programme, 2015

## SECTION 7 - Paediatric Emergencies

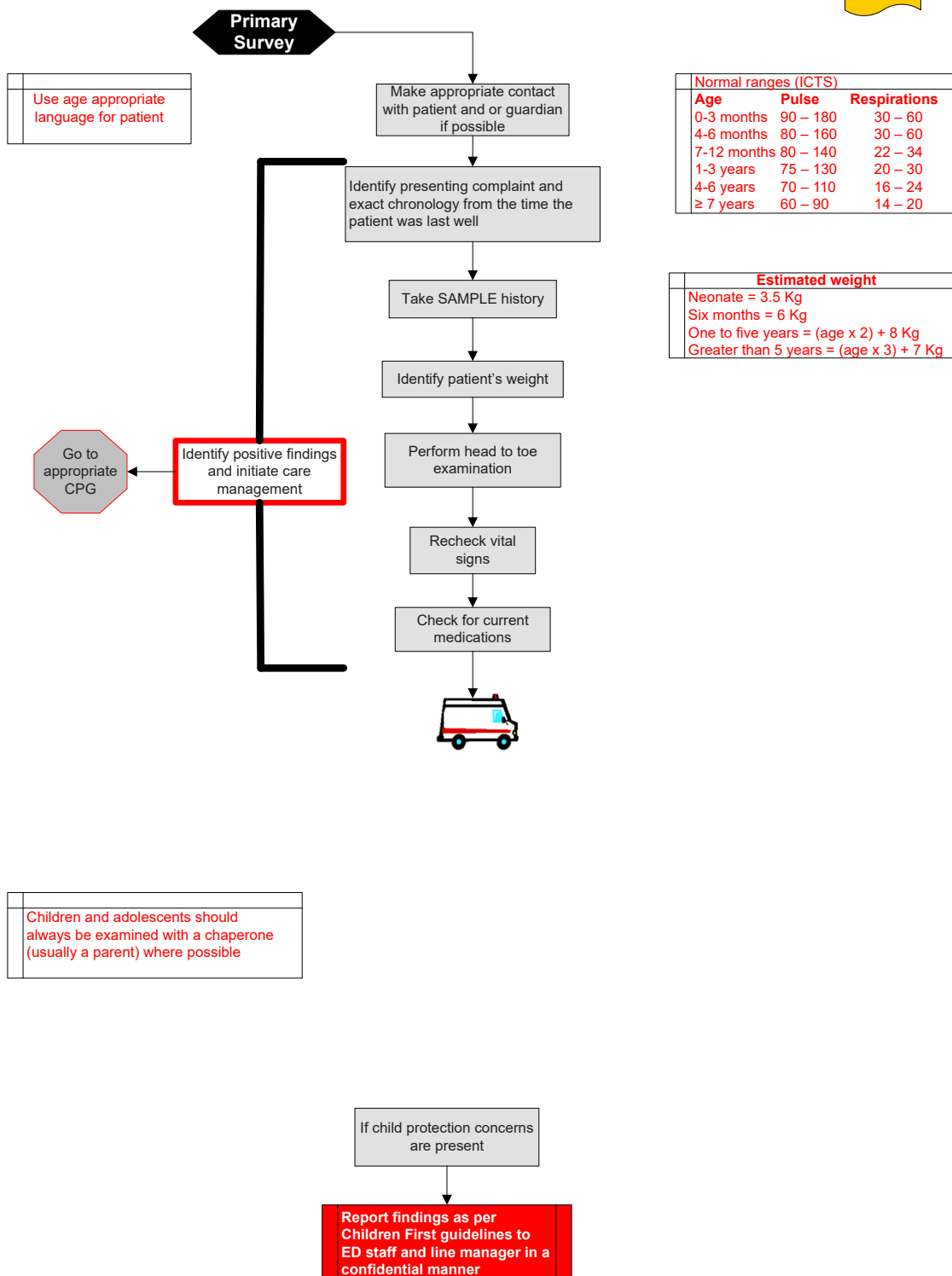
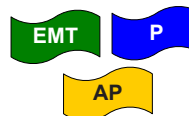


Reference:  
ILCOR Guidelines 2015, American Academy of Pediatrics, 2000, Pediatric Education for Prehospital Professionals  
Department of Children and Youth Affairs, 2011, Children First: National Guidance for the Protection and Welfare of Children  
Irish Children's Triage System: National Emergency Medicine Programme, 2015

## SECTION 7 - Paediatric Emergencies

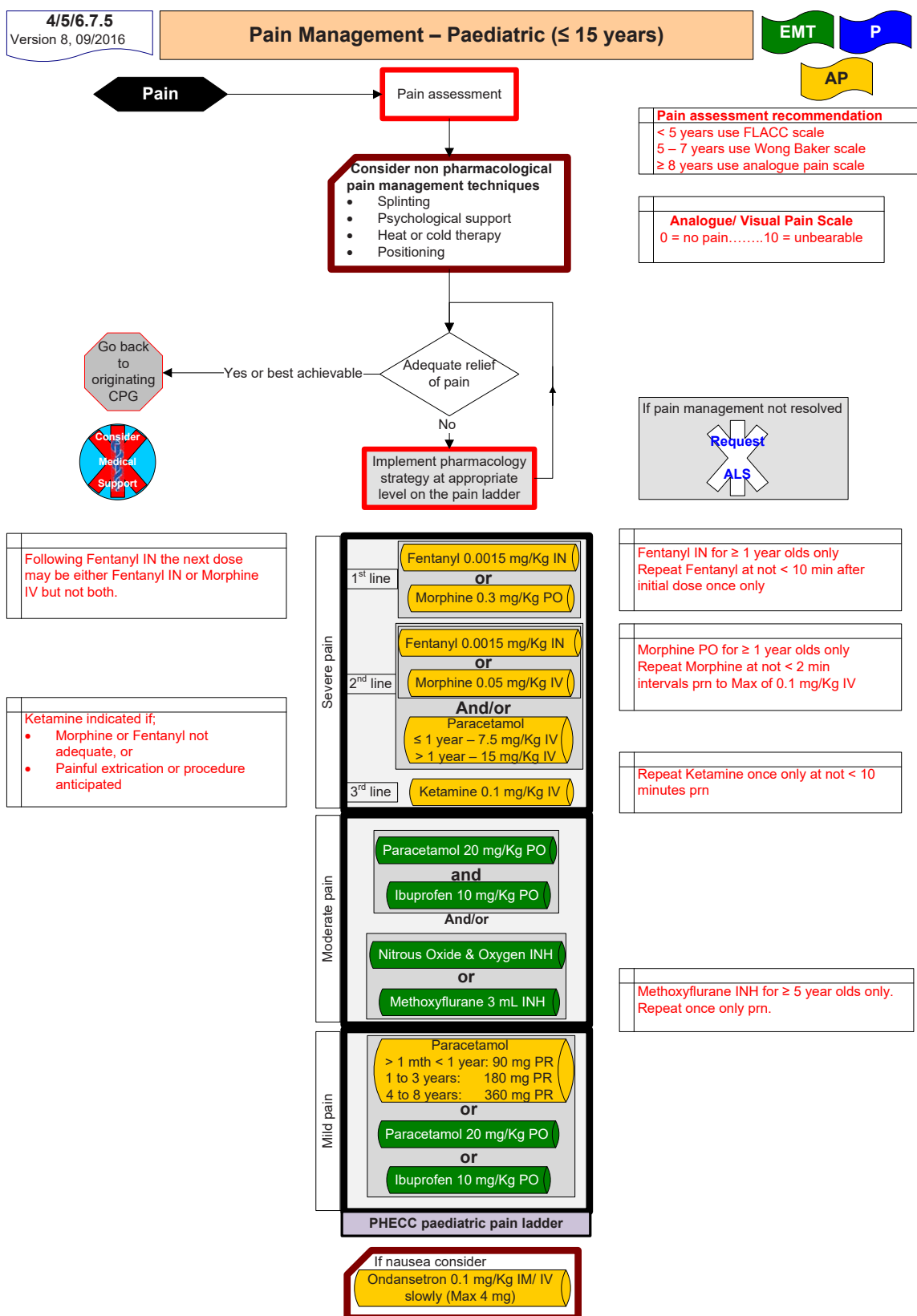
4/5/6.7.4  
Version 4, 06/2016

### Secondary Survey – Paediatric ( ≤ 15 years)



Reference:  
Miall, Lawrence et al, 2003, Paediatrics at a Glance, Blackwell Publishing  
Department of Children and Youth Affairs, 2011, Children First: National Guidance for the Protection and Welfare of Children  
Luscombe, M et al 2010, BMJ, Weight estimation in paediatrics: a comparison of the APLS formula and the formula 'Weight=3(age)+7'  
Irish Children's Triage System: National Emergency Medicine Programme, 2015

## SECTION 7 - Paediatric Emergencies



Reference: Coffey, F., et al. (2014). "STOP!: a randomised, double-blind, placebo-controlled study of the efficacy and safety of methoxyflurane for the treatment of acute pain." *Emerg Med J* 31(8): 613-618

Jennings, P. A., et al. (2011). "Ketamine as an analgesic in the pre-hospital setting: a systematic review." *Acta Anaesthesiol Scand* 55(6): 638-643

Park, C. L., et al. (2010). "Prehospital analgesia: systematic review of evidence." *J R Army Med Corps* 156(4 Suppl 1): 295-300

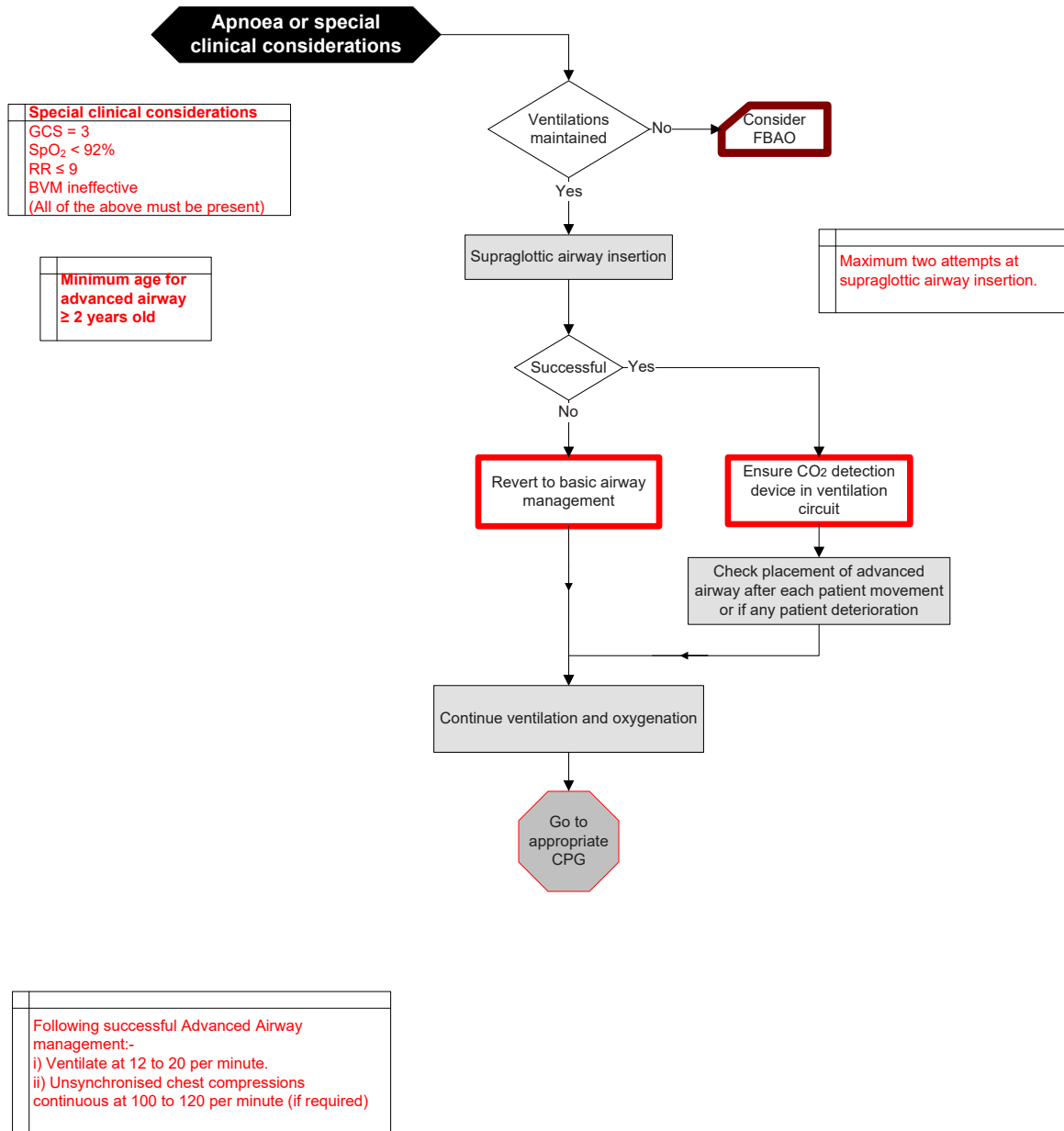
Leung, L. (2012). "From ladder to platform: a new concept for pain management." *J Prim Health Care* 4(3): 254-258

## SECTION 7 – Paediatric Emergencies

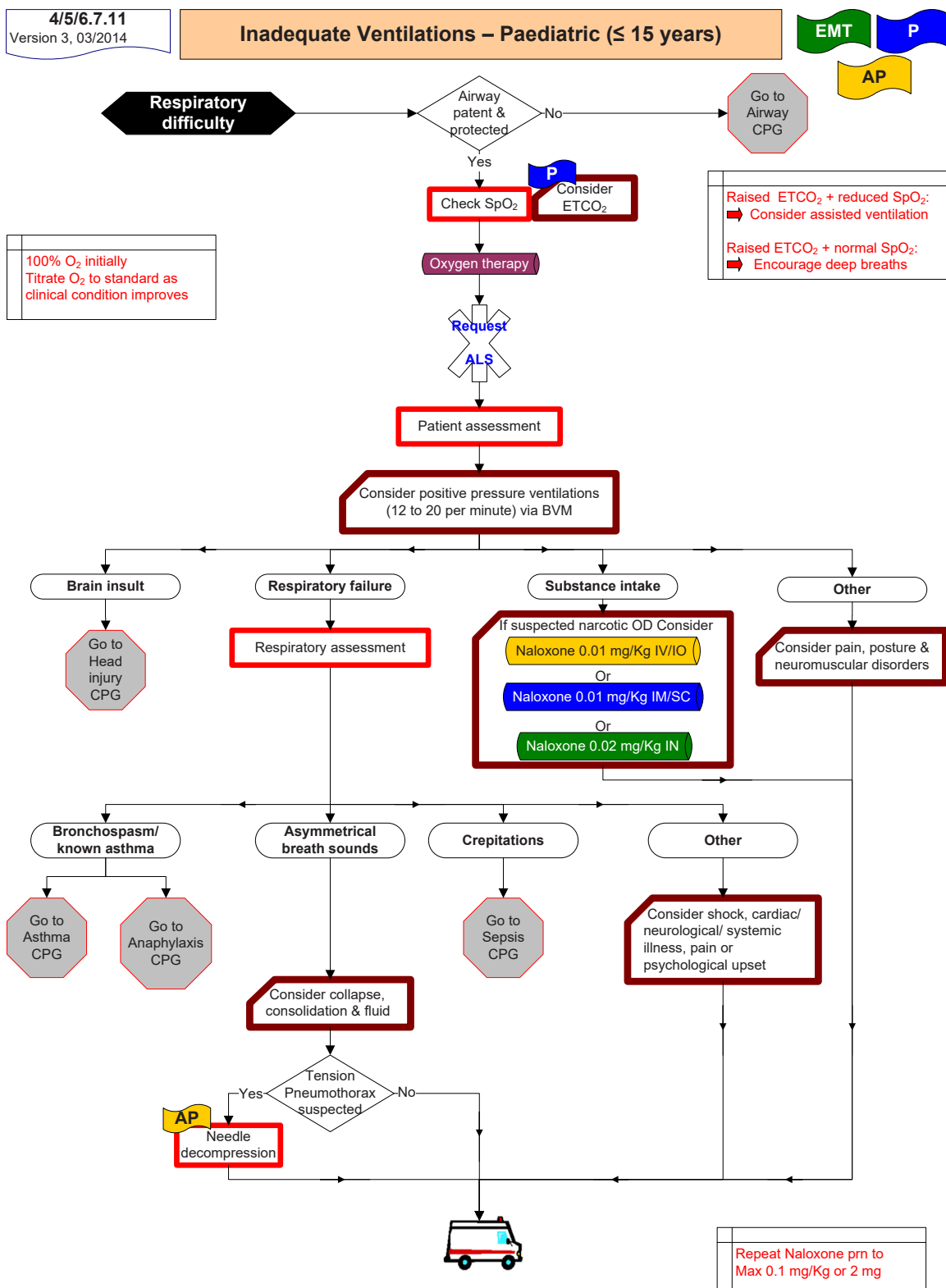
**5.7.10**  
Version 2, 03/2016

### Advanced Airway Management – Paediatric (≤ 15 years)

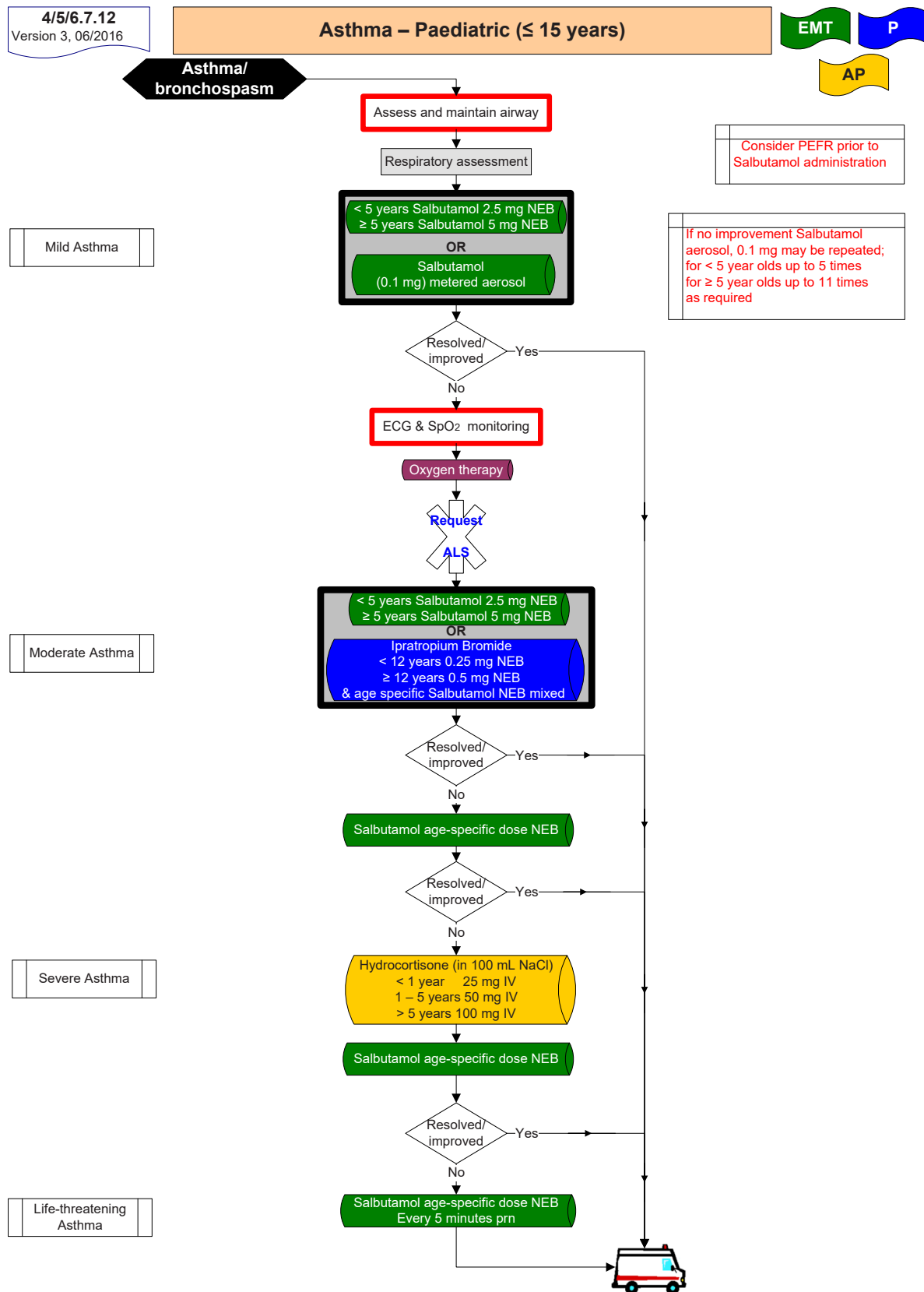
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## SECTION 7 - Paediatric Emergencies



## SECTION 7 - Paediatric Emergencies

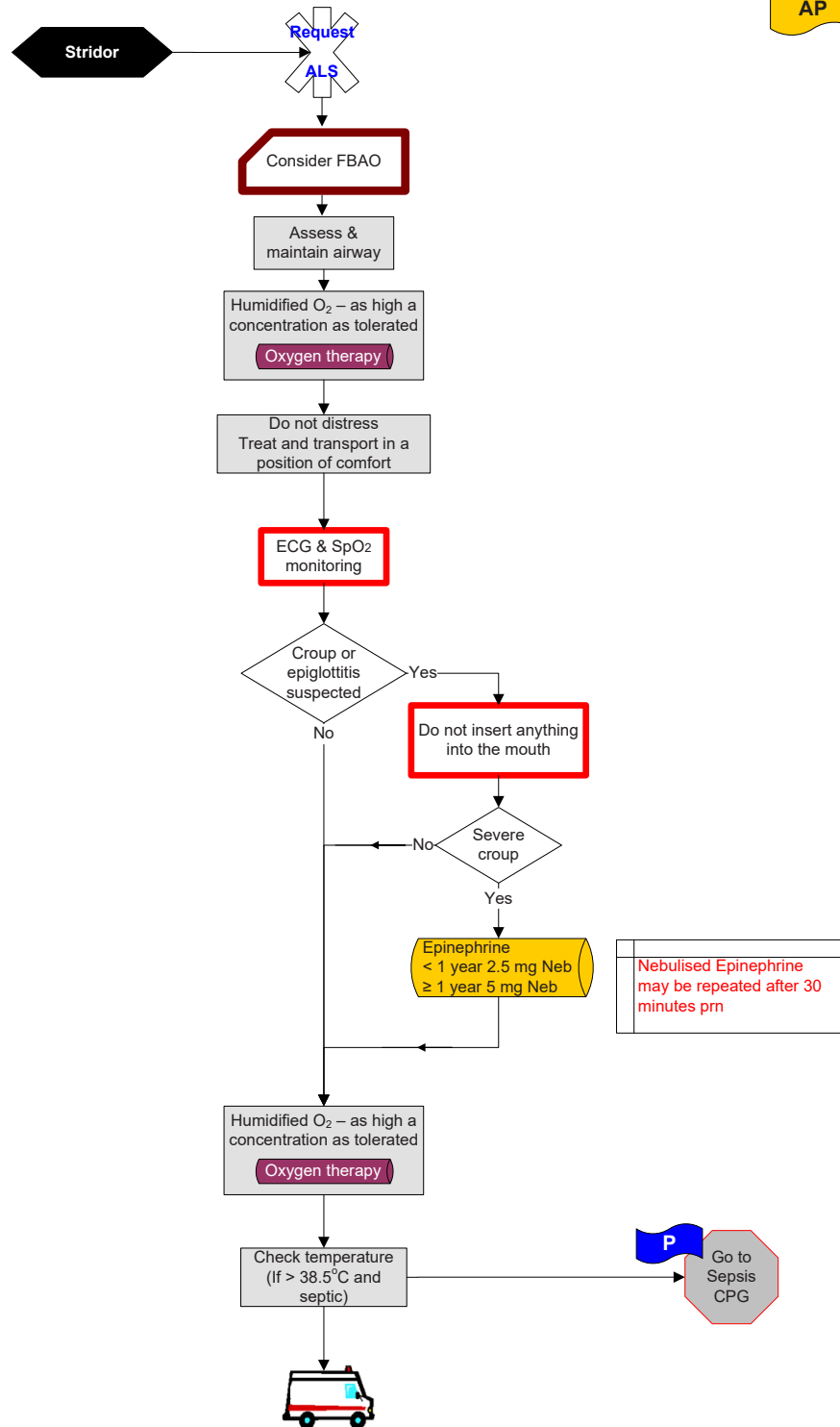
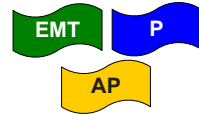


Reference: HSE National Asthma Programme 2012, Emergency Asthma Guidelines, British Thoracic Society, 2008, British Guidelines on the Management of Asthma, a national clinical guideline

## SECTION 7 - Paediatric Emergencies

4/5/6.7.13  
Version 4, 11/2016

### Stridor – Paediatric (≤ 15 years)



Reference: BNF for children 2015 - 2016

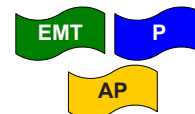
National Clinical Guideline No. 6: Sepsis Management, National Clinical Effectiveness Committee, Department of Health, November, 2014



## SECTION 7 - Paediatric Emergencies

4/5/6.7.20  
Version 3, 03/2016

### Basic Life Support – Paediatric (≤ 15 Years)



Initiate mobilisation of 3 to 4 practitioners / responders

**Cardiac arrest  
or  
pulse < 60 per minute with signs of poor perfusion**

Give 5 rescue ventilations

Oxygen therapy

Request

ALS

Commence chest **Compressions**  
Continue CPR (30:2) until defibrillator is attached

< 8 years

Yes

No

Apply paediatric system  
AED pads

Apply adult defibrillation  
pads

Assess  
Rhythm

**Shockable**  
VF or pulseless VT  
(4 J/Kg)

**Non - Shockable**  
Asystole or PEA

Give 1  
shock

**Immediately resume CPR  
x 2 minutes**

Rhythm check \*

Go to VF /  
Pulseless VT  
CPG

VF/ VT

ROSC

Go to Post  
Resuscitation  
Care CPG

Asystole / PEA

Go to  
Asystole /  
PEA CPG

< 8 years use paediatric  
defibrillation system  
(if not available use adult pads)

**One rescuer CPR 30:2**  
**Two rescuer CPR 15:2**  
(≥ 12 years two rescuer CPR 30:2)  
Compressions : Ventilations

**Chest compressions**  
Rate: 100 to 120/min  
Depth: 1/3 depth of chest  
Child : two hands (5 cm)  
Small child; one hand (4 cm)  
Infant (< 1); two fingers (4 cm)

With two rescuer CPR use  
two thumb-encircling hand  
chest compression for infants

AP Change defibrillator to  
manual mode

P Consider changing  
defibrillator to  
manual mode

#### Infant AED

It is extremely unlikely to ever have to defibrillate a child less than 1 year old. Nevertheless, if this were to occur the approach would be the same as for a child over the age of 1. The only likely difference being, the need to place the defibrillation pads anterior (front) and posterior (back), because of the infant's small size.

\* +/- Pulse check: pulse check after 2 minutes of CPR if potentially perfusing rhythm

Reference: ILCOR Guidelines 2015

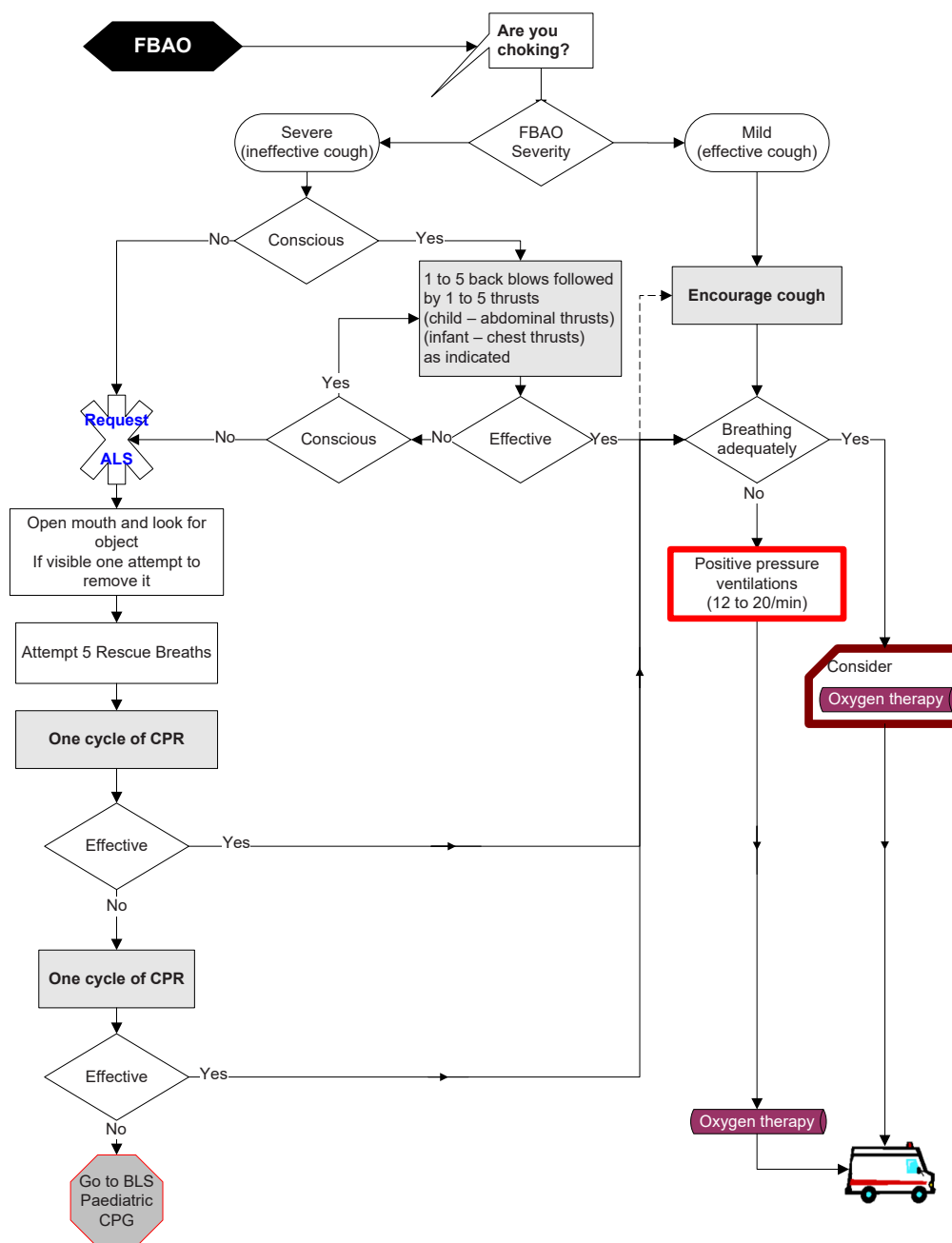
## SECTION 7 - Paediatric Emergencies

4/5.7.21  
Version 3, 03/2016

### Foreign Body Airway Obstruction – Paediatric (≤ 15 years)

EMT

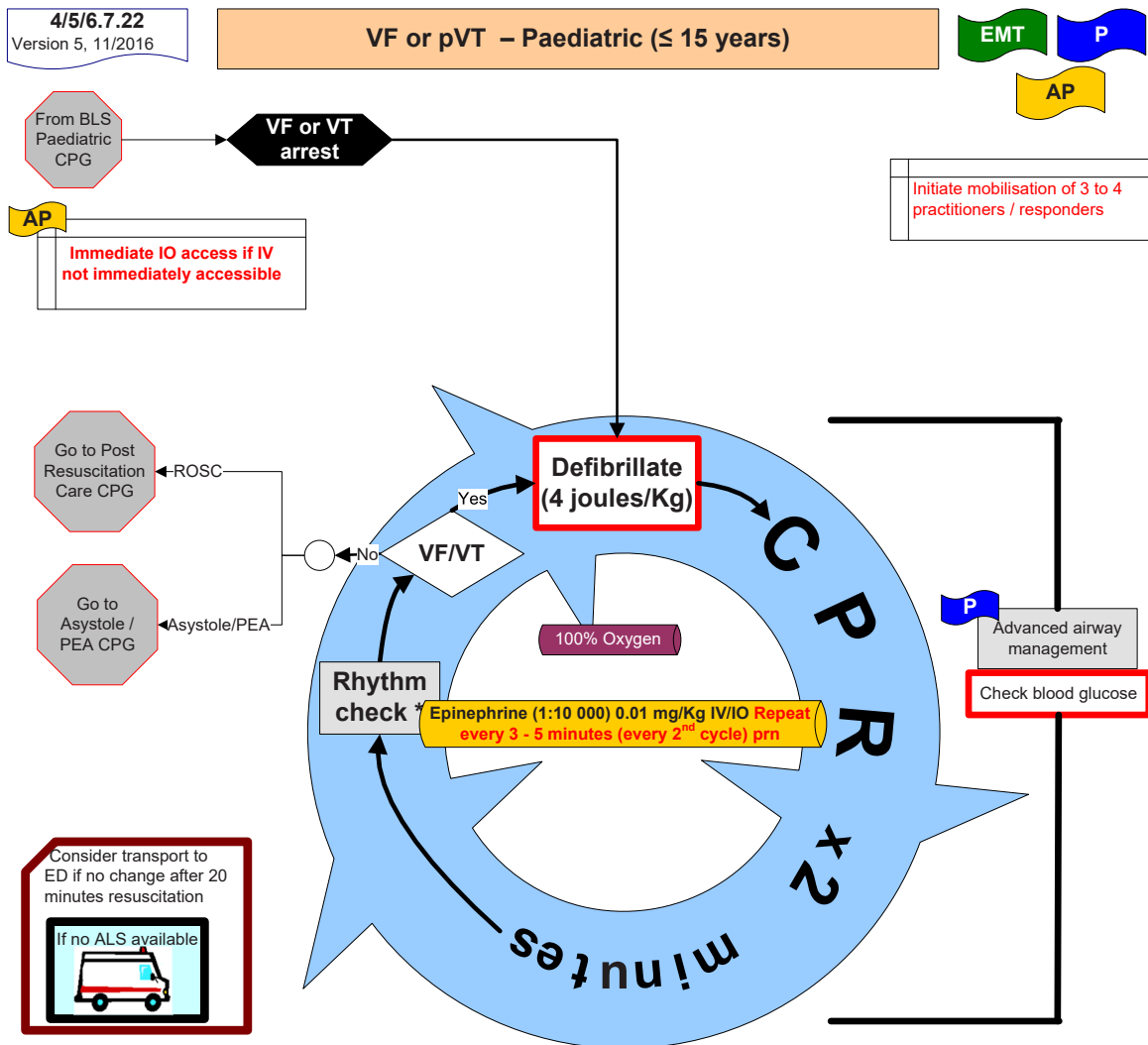
P



After each cycle of CPR open mouth and look for object.  
If visible attempt once to remove it.

Reference:  
ILCOR Guidelines 2015

## SECTION 7 – Paediatric Emergencies



**Defibrillation:**  
< 8 years use paediatric defibrillation system (if not available use adult pads)

If refractory VF/pVT post Epinephrine and 3<sup>rd</sup> shock

**Amiodarone 5 mg/Kg IV/IO**

**Special Authorisation:**  
Advanced Paramedics are authorised to substitute Amiodarone with a one off bolus of Lidocaine (1-1.5 mg/Kg IV) if Amiodarone is not available

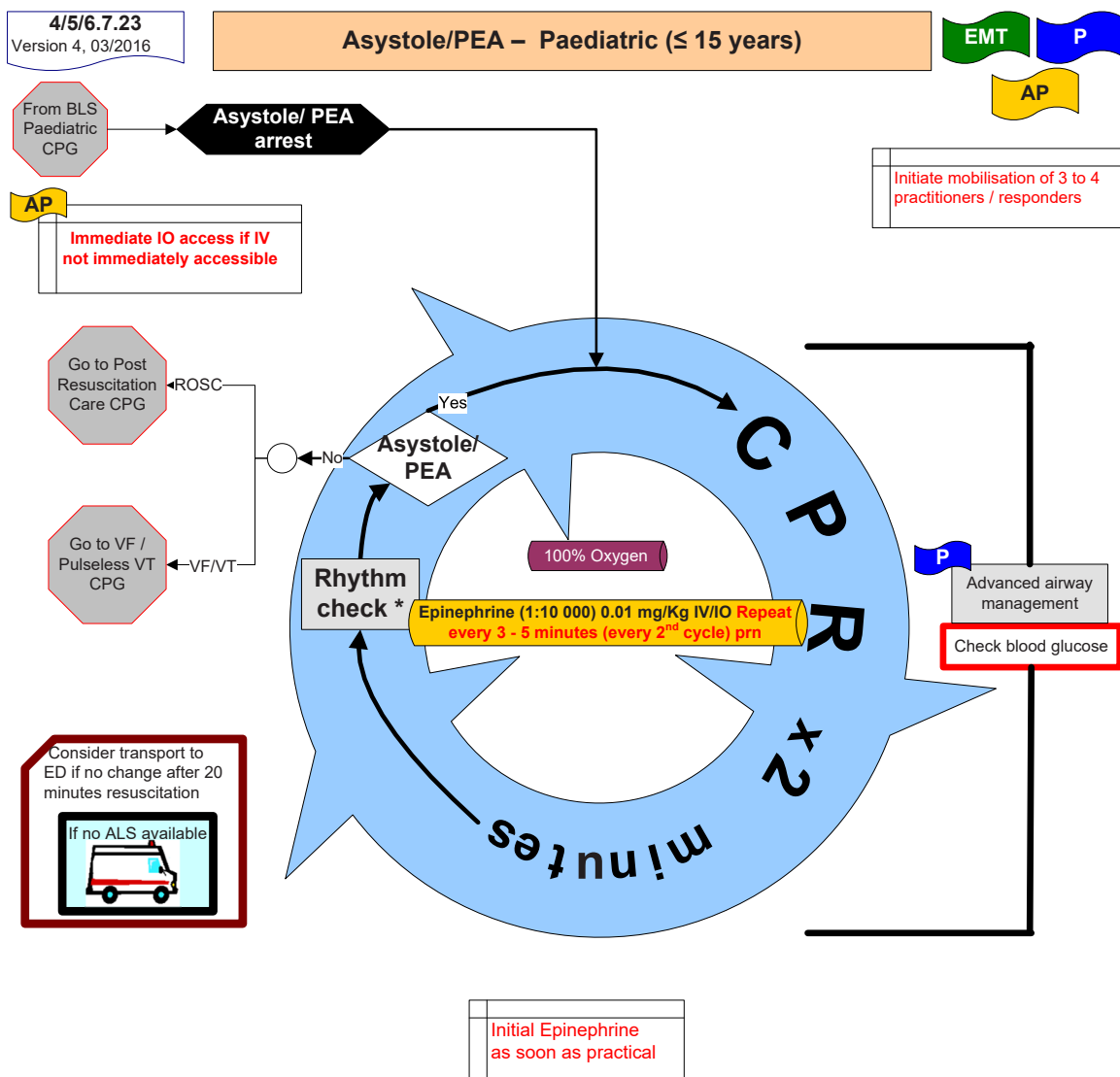
**Consider causes and treat as appropriate:**

- Hydrogen ion acidosis
- Hyper/ hypokalaemia
- Hypothermia
- Hypovolaemia
- Hypoxia
- Thrombosis – pulmonary
- Tension pneumothorax
- Thrombus – coronary
- Tamponade – cardiac
- Toxins
- Trauma

\* +/- Pulse check: pulse check after 2 minutes of CPR if potentially perfusing rhythm

Reference: ILCOR Guidelines 2015

## SECTION 7 – Paediatric Emergencies



**Consider causes and treat as appropriate:**

- Hydrogen ion acidosis
- Hyper/ hypokalaemia
- Hypothermia
- Hypovolaemia
- Hypoxia
- Thrombosis – pulmonary
- Tension pneumothorax
- Thrombus – coronary
- Tamponade – cardiac
- Toxins
- Trauma

**Consider fluid challenge**

**NaCl (0.9%) 20 mL/Kg IV/IO**

\* +/- Pulse check: pulse check after 2 minutes of CPR if potentially perfusing rhythm

Reference: ILCOR Guidelines 2015

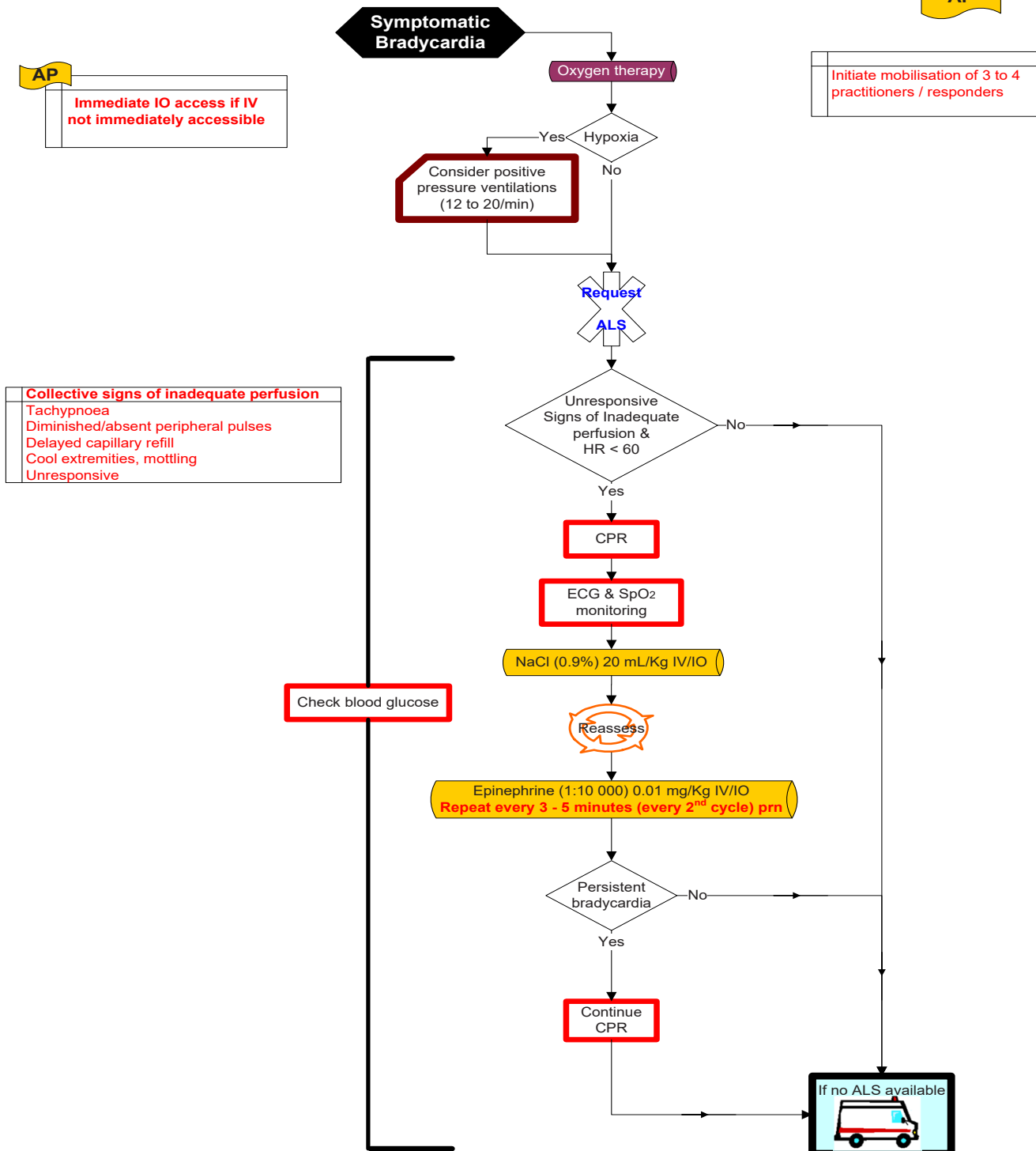
## SECTION 7 - Paediatric Emergencies

4/5/6.7.24  
Version 4, 03/2016

### Symptomatic Bradycardia – Paediatric ( $\leq 15$ years)

EMT P

AP



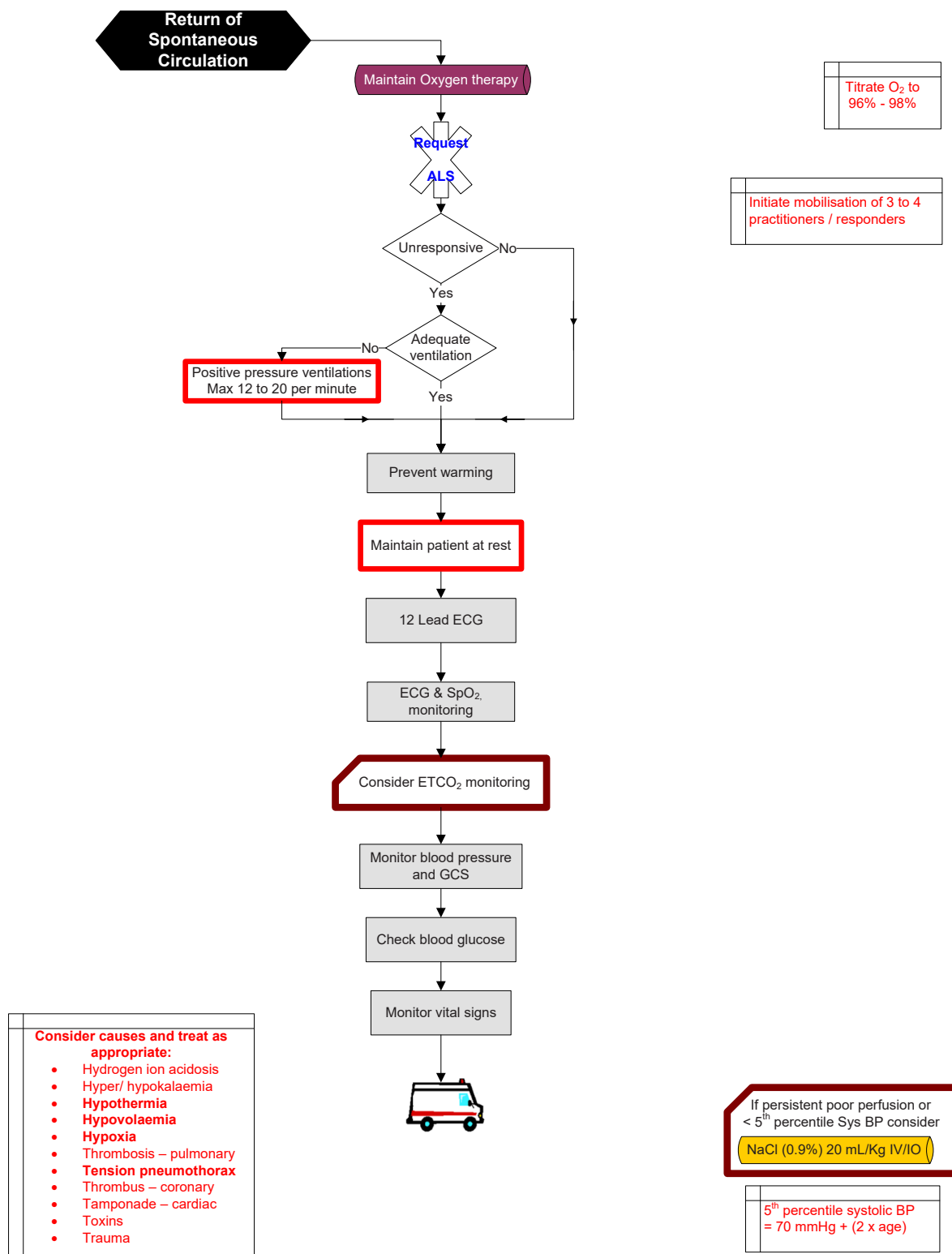
Reference: ILCOR Guidelines 2015

## SECTION 7 – Paediatric Emergencies

5/6.7.25  
Version 3, 03/2016

### Post-Resuscitation Care – Paediatric ( $\leq 15$ years)

P AP



Reference: ILCOR Guidelines 2015

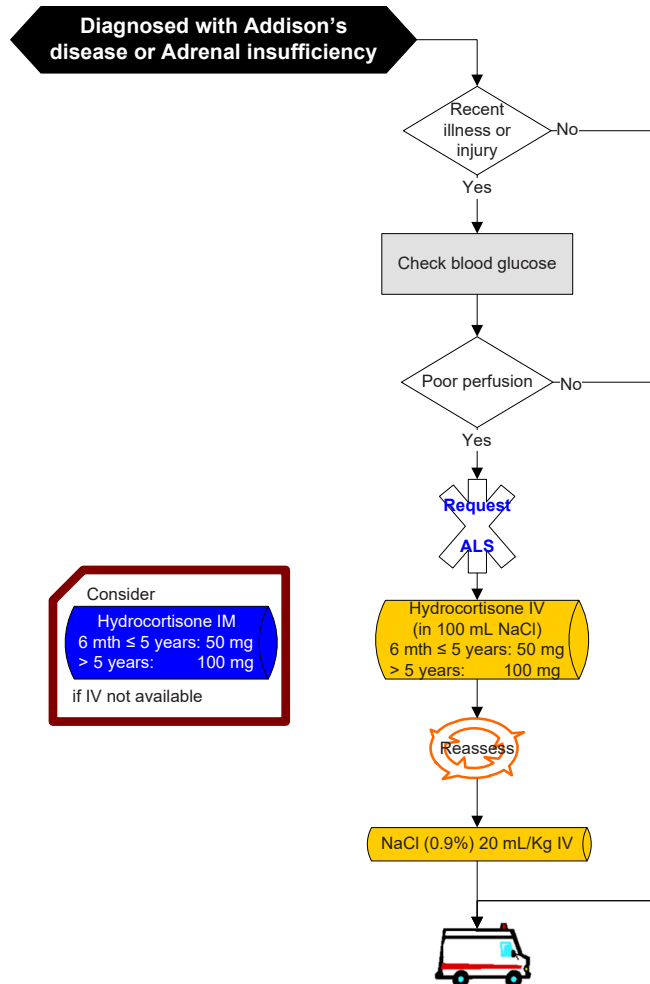
## SECTION 7 - Paediatric Emergencies

**5/6.7.30**  
Version 1, 12/2013

### Adrenal Insufficiency – Paediatric (≤ 15 years)

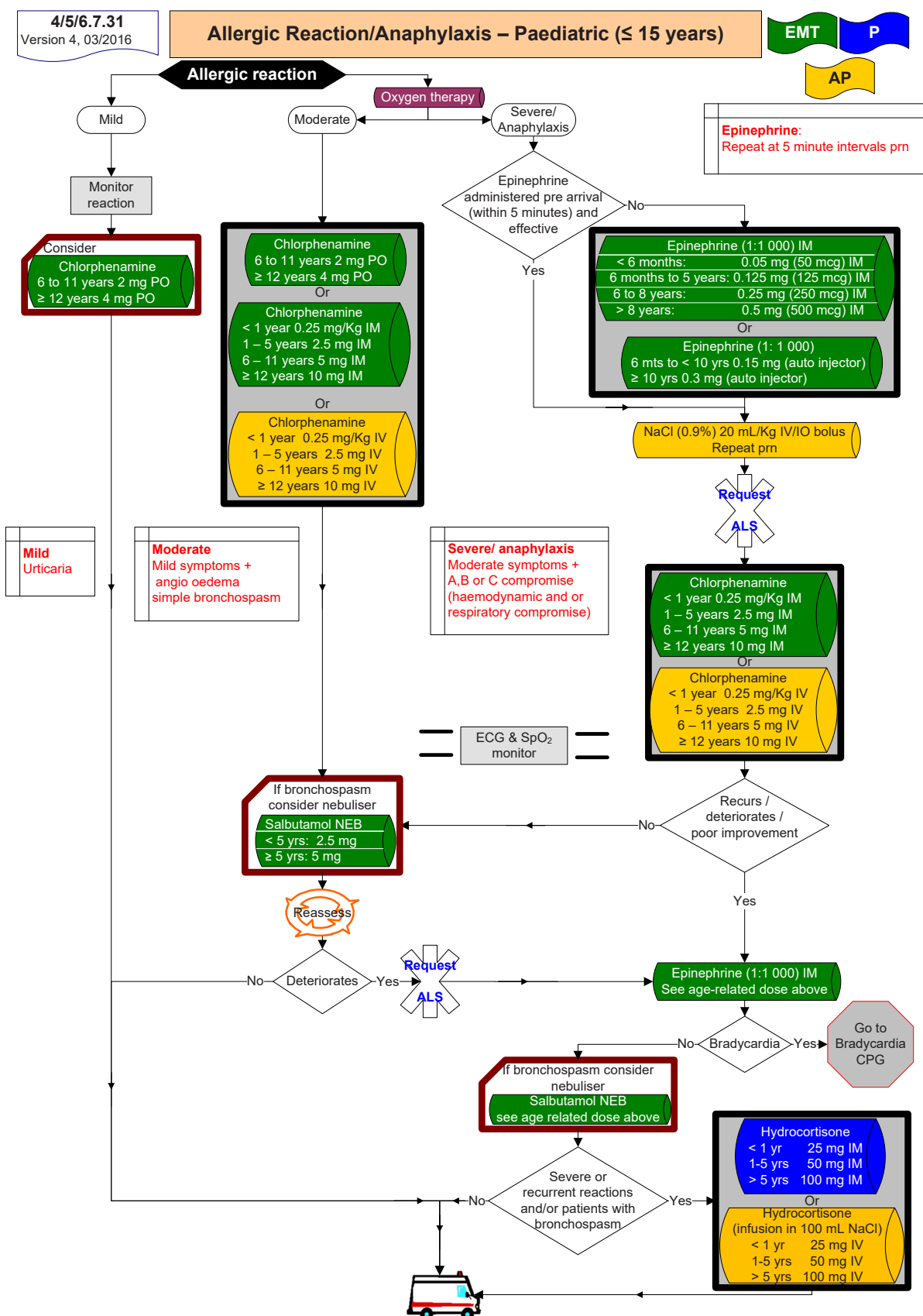
**P**

**AP**



Reference: Antal, Z. and P. Zhou (2009). "Addison disease." *Pediatr Rev* 30(12): 491-493

## SECTION 7 - Paediatric Emergencies



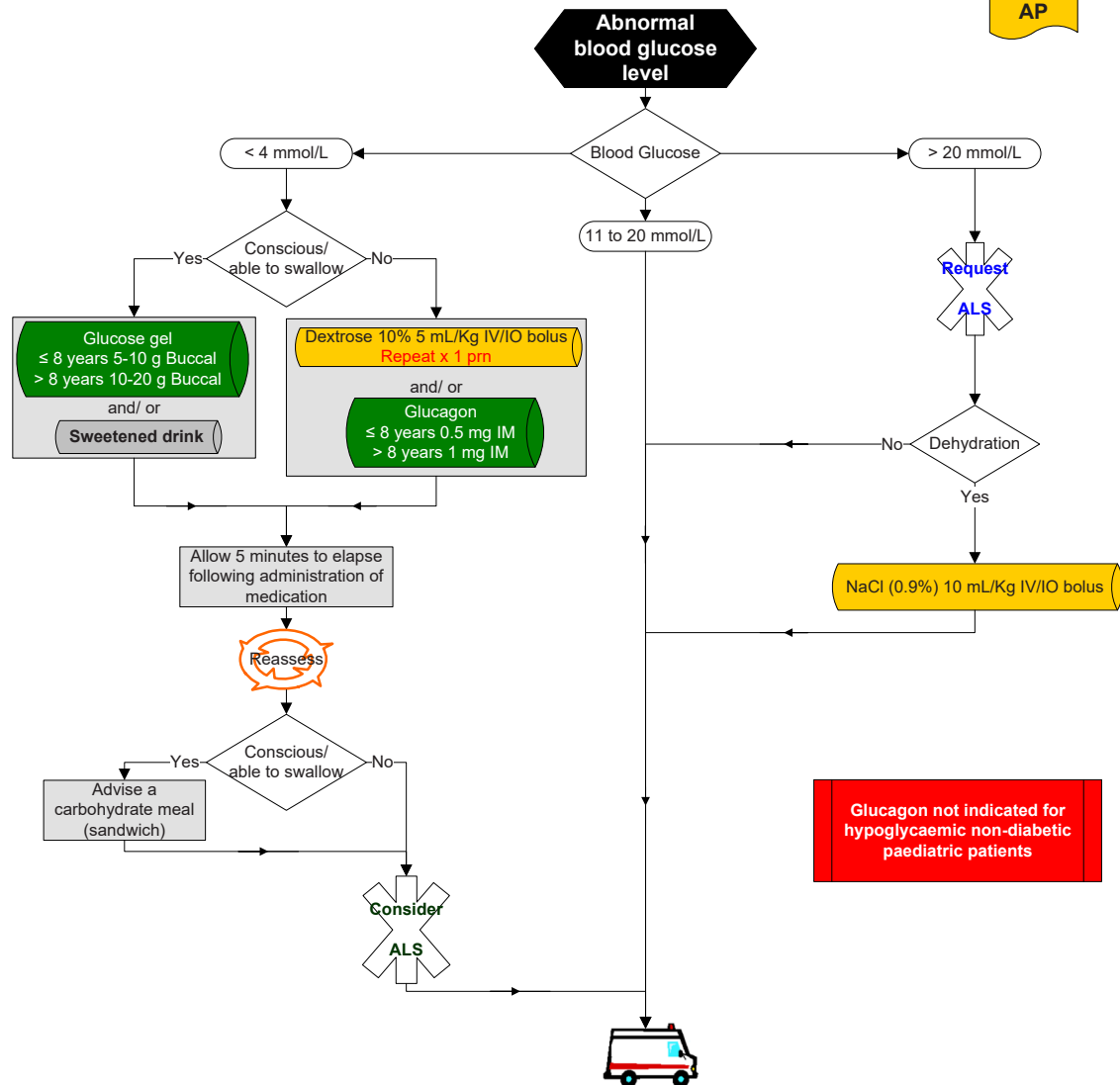
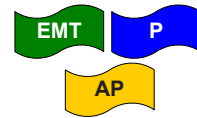
Reference: Royal College of Physicians of Ireland, 2014, National Immunisation Advisory Committee, Anaphylactic Reactions: Treatment Algorithm for First Medical Responders.



## SECTION 7 - Paediatric Emergencies

4/5/6.7.32  
Version 4, 04/2016

### Glycaemic Emergency – Paediatric ( $\leq 15$ years)



Reference: Dehydration- Paramedic Textbook 2<sup>nd</sup> E p 1229

## SECTION 7 – Paediatric Emergencies

5/6.7.33  
Version 5, 11/2016

### Seizure/Convulsion – Paediatric (≤ 15 years)

P

AP

#### Consider other causes of seizures

Meningitis  
Head injury  
Hypoglycaemia  
Fever  
Poisons  
Alcohol/drug withdrawal

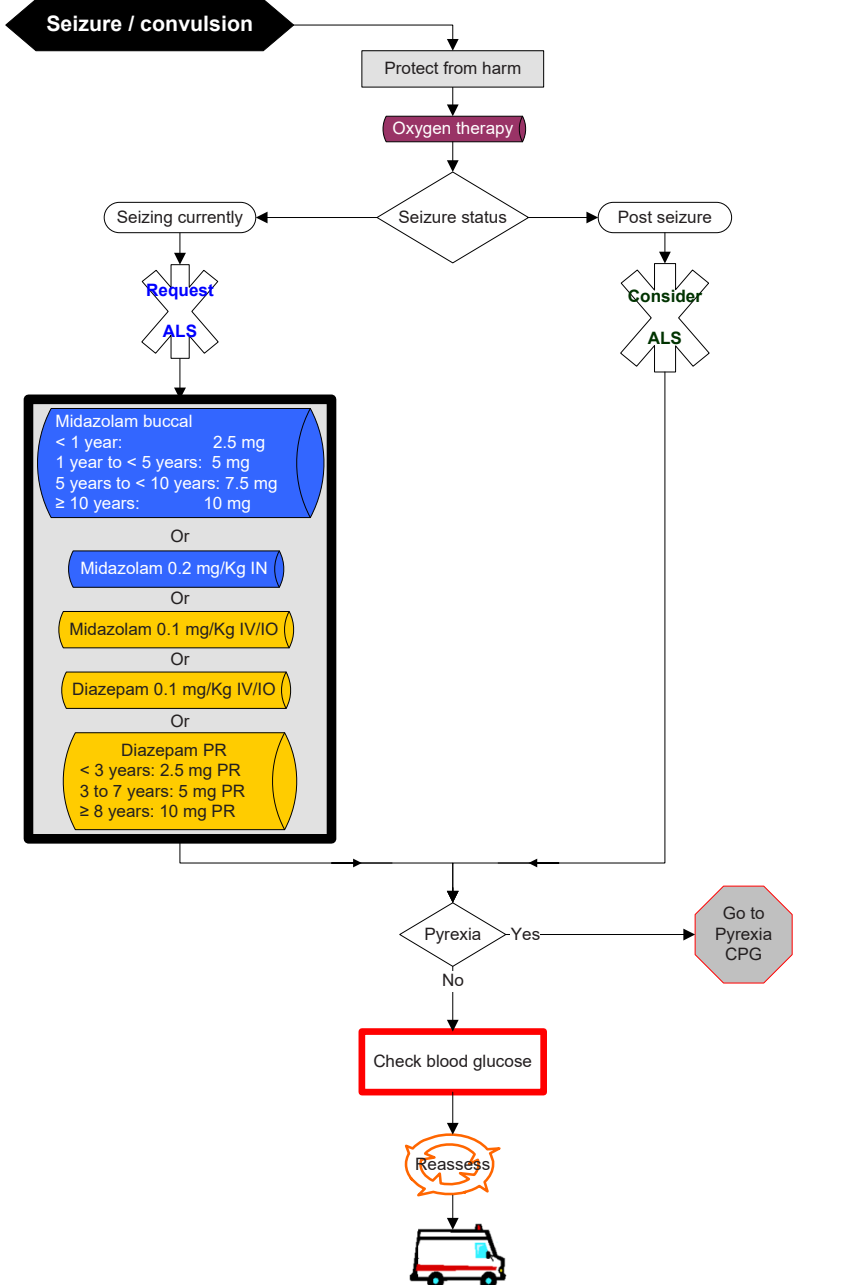
#### Benzodiazepine

Maximum 4 doses regardless of route  
(consider medical oversight)

If Benzodiazepine administered prior to arrival regard this as a dose(s)

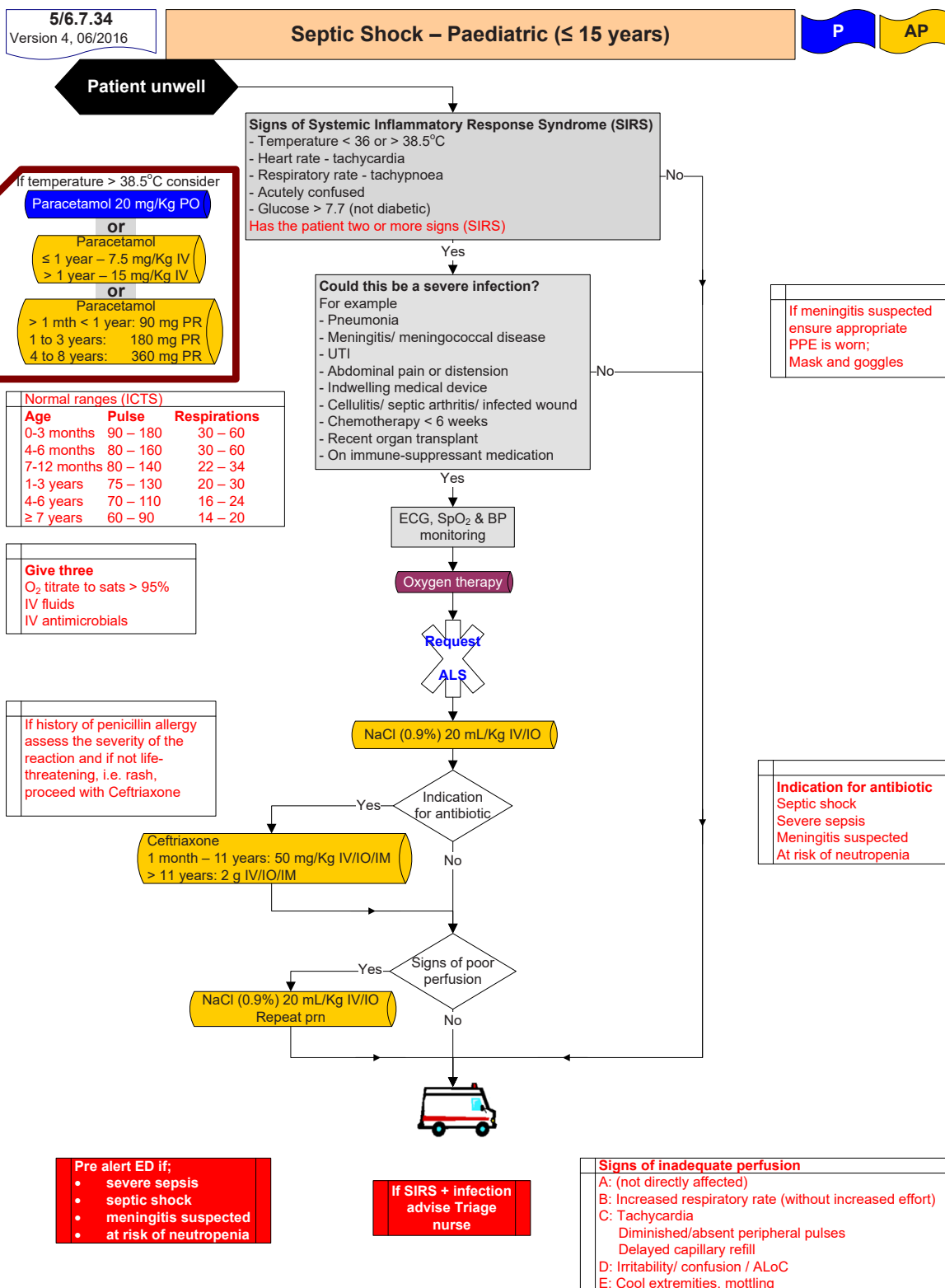
Do not exceed adult dose

#### Seizure / convulsion



Reference: Appleton, R., et al. (2008). "Drug management for acute tonic-clonic convulsions including convulsive status epilepticus in children." *Cochrane Database Syst Rev*(3): CD001905

## SECTION 7 - Paediatric Emergencies

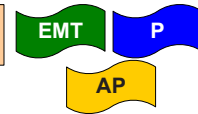


Reference: National Clinical Guideline No. 12: The Irish Paediatric Early Warning System (PEWS), National Clinical Effectiveness Committee, Department of Health, November, 2015  
 RFDS, 2013, Primary Clinical Care Manual 8<sup>th</sup> Edition

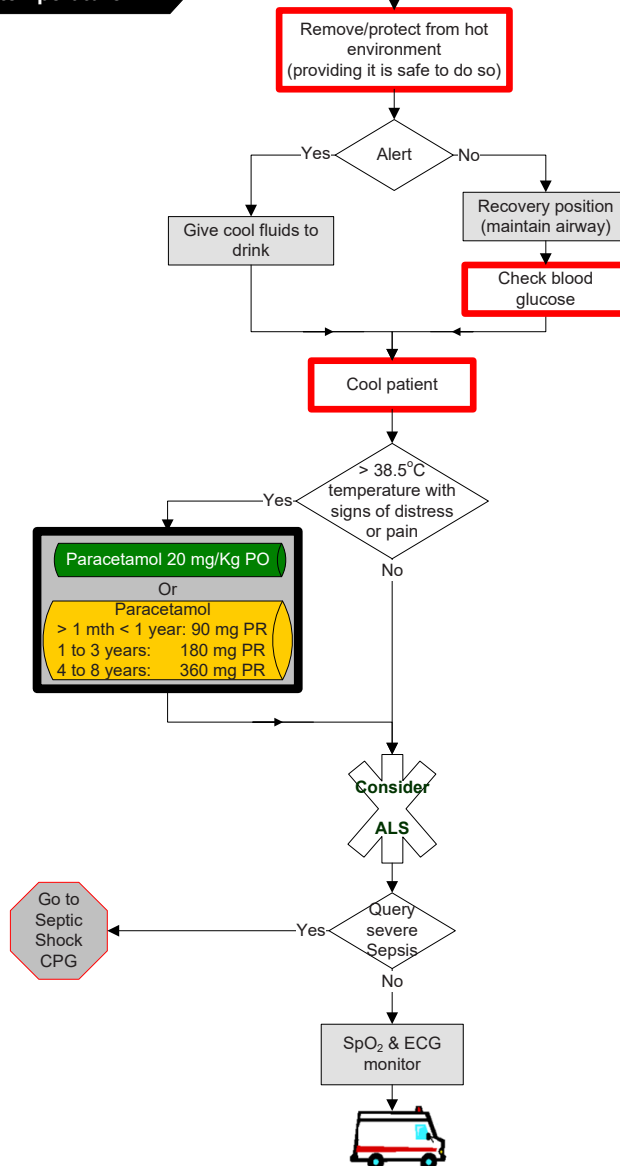
## SECTION 7 - Paediatric Emergencies

4/5/6.7.35  
Version 2, 03/2016

### Pyrexia – Paediatric ( $\leq 15$ years)

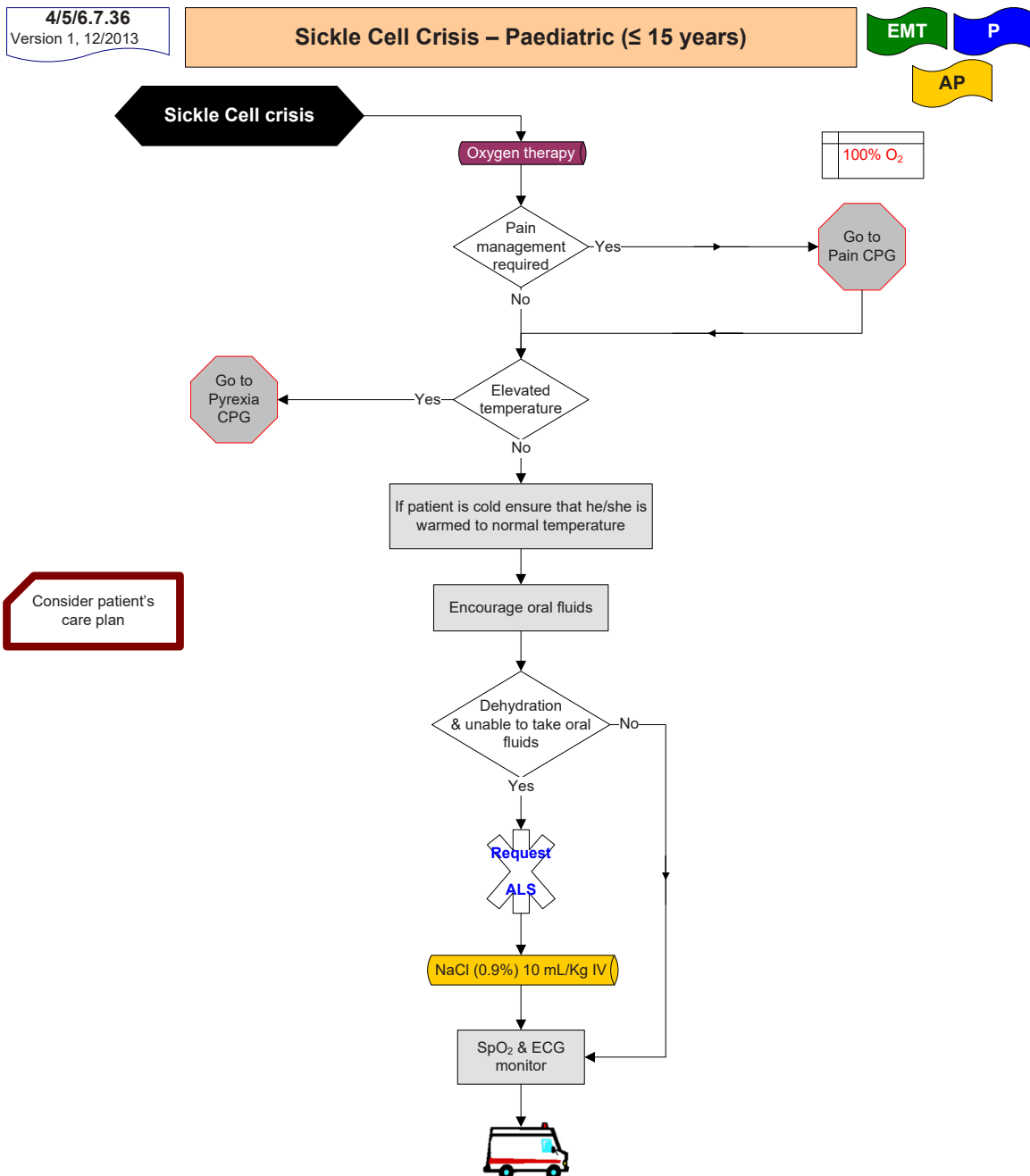


**Child with elevated temperature**



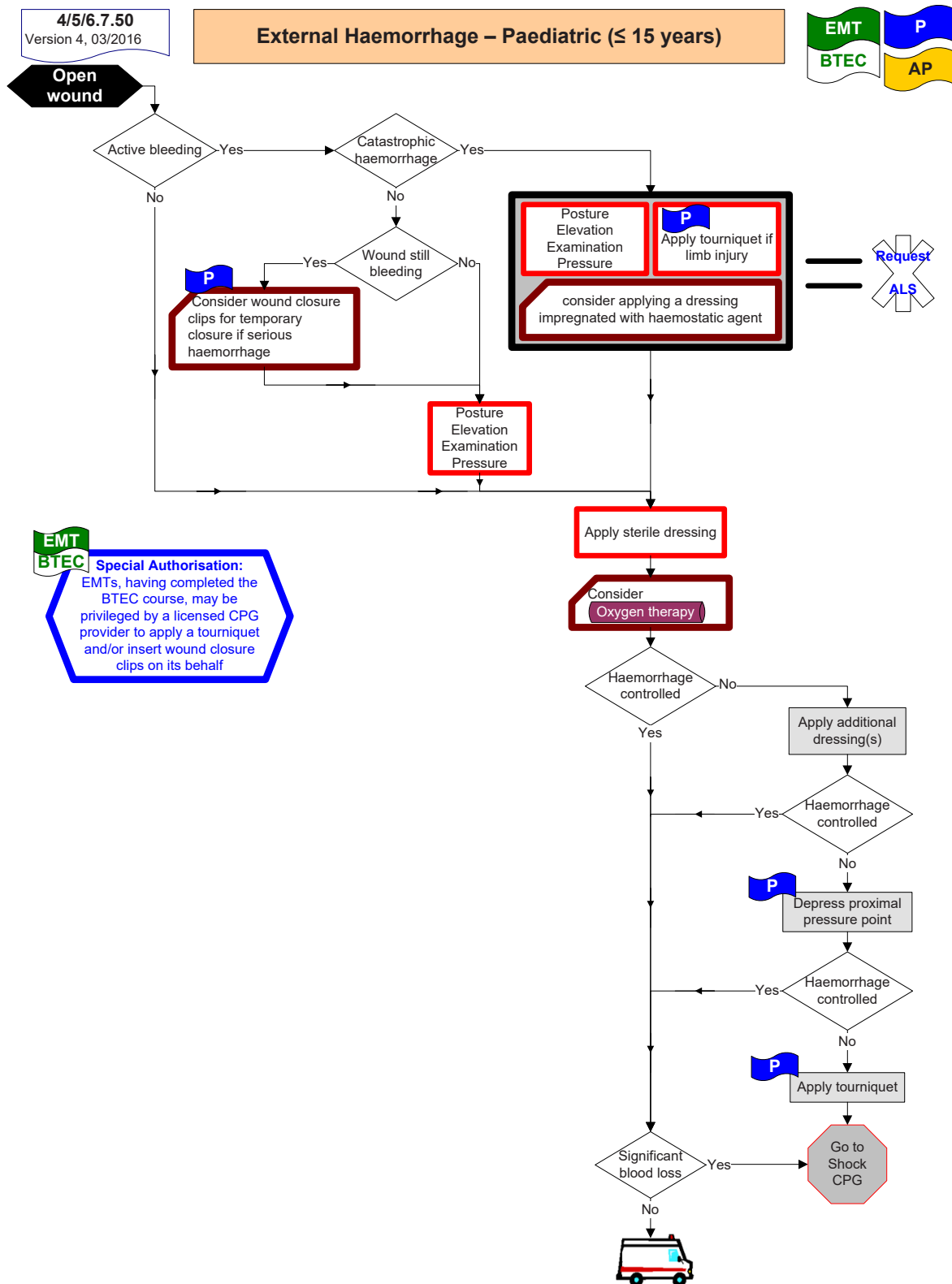
Reference: ILCOR Guidelines 2015  
RFDS, 2013, Primary Clinical Care Manual 8<sup>th</sup> Edition

## SECTION 7 - Paediatric Emergencies



Reference: Rees, D, 2003, GUIDELINES FOR THE MANAGEMENT OF THE ACUTE PAINFUL CRISIS IN SICKLE CELL DISEASE; British Journal of Haematology, 2003, 120, 744–752

## SECTION 7 - Paediatric Emergencies



Reference: ILCOR Guidelines 2015

Granville-Chapman J, et al. Pre-hospital haemostatic dressings: A systematic review. Injury (2010), doi: 10.1016/j.injury.2010.09.037

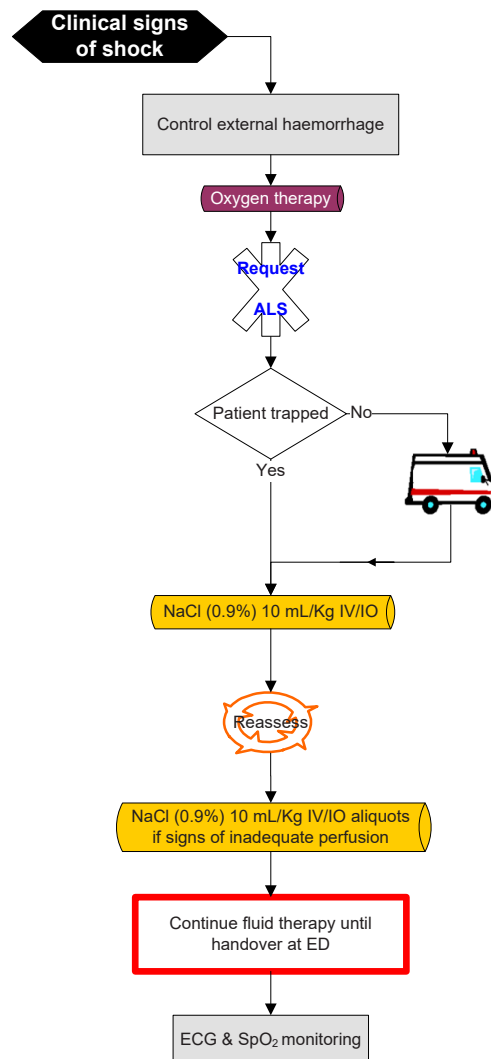
## SECTION 7 – Paediatric Emergencies

5/6.7.51  
Version 3, 12/2013

### Shock from Blood Loss – Paediatric ( $\leq 15$ years)

P

AP



#### Signs of inadequate perfusion

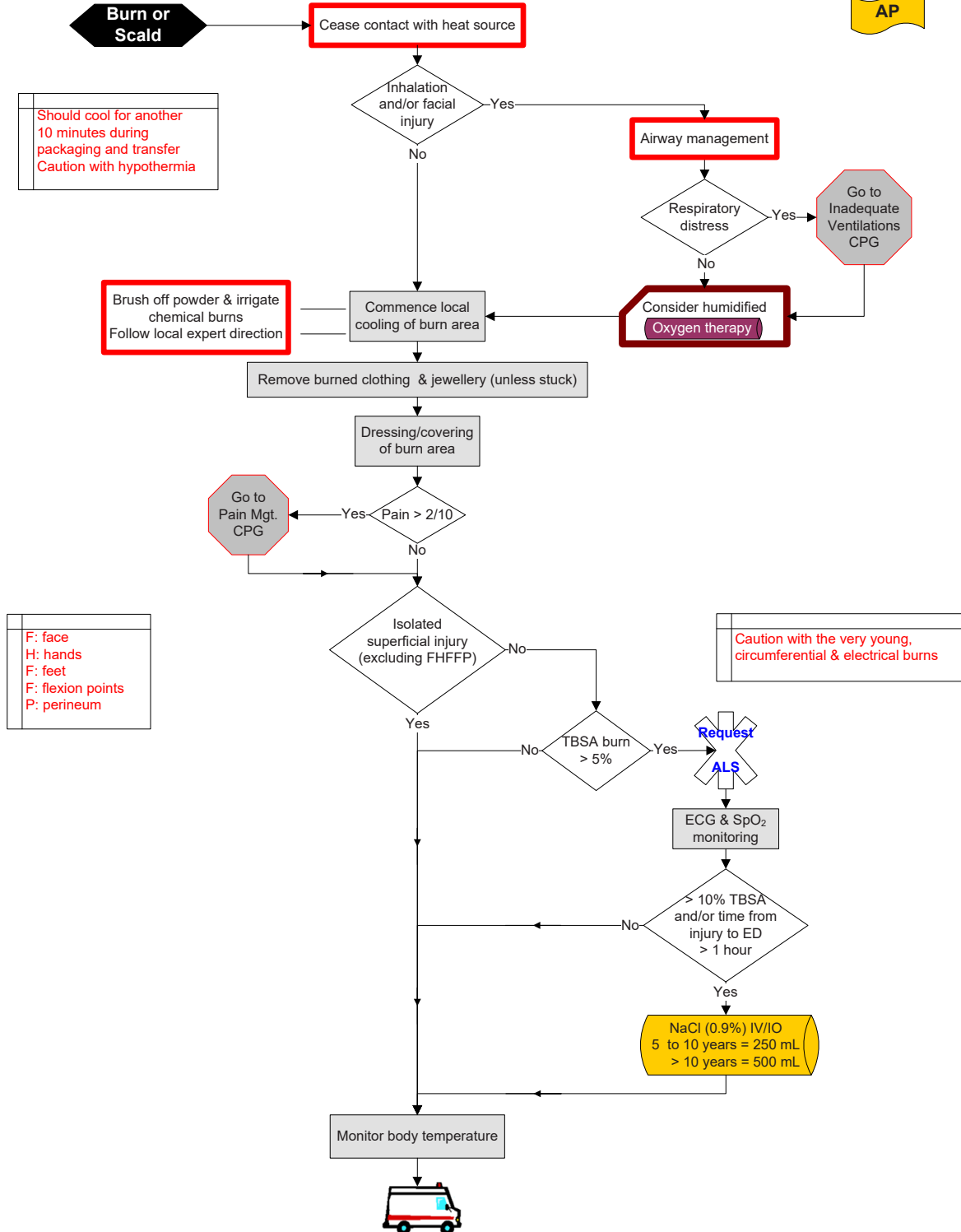
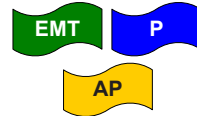
- A: (not directly affected)
- B: Increased respiratory rate (without increased effort)
- C: Tachycardia
  - Diminished/absent peripheral pulses
  - Delayed capillary refill
- D: Irritability/ confusion / ALoC
- E: Cool extremities, mottling

Reference: American Academy of Pediatrics, 2000, Pediatric Education for Prehospital Professionals, Jones and Bartlett.

## SECTION 7 - Paediatric Emergencies

4/5/6.7.53  
Version 3, 12/2013

### Burns – Paediatric (≤ 15 years)



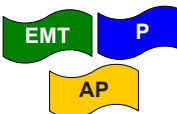
Reference: Allison, K et al, 2004, Consensus on the prehospital approach to burns patient management, Emerg Med J 2004; 21:112-114  
Sanders, M, 2001, Paramedic Textbook 2<sup>nd</sup> Edition, Mosby



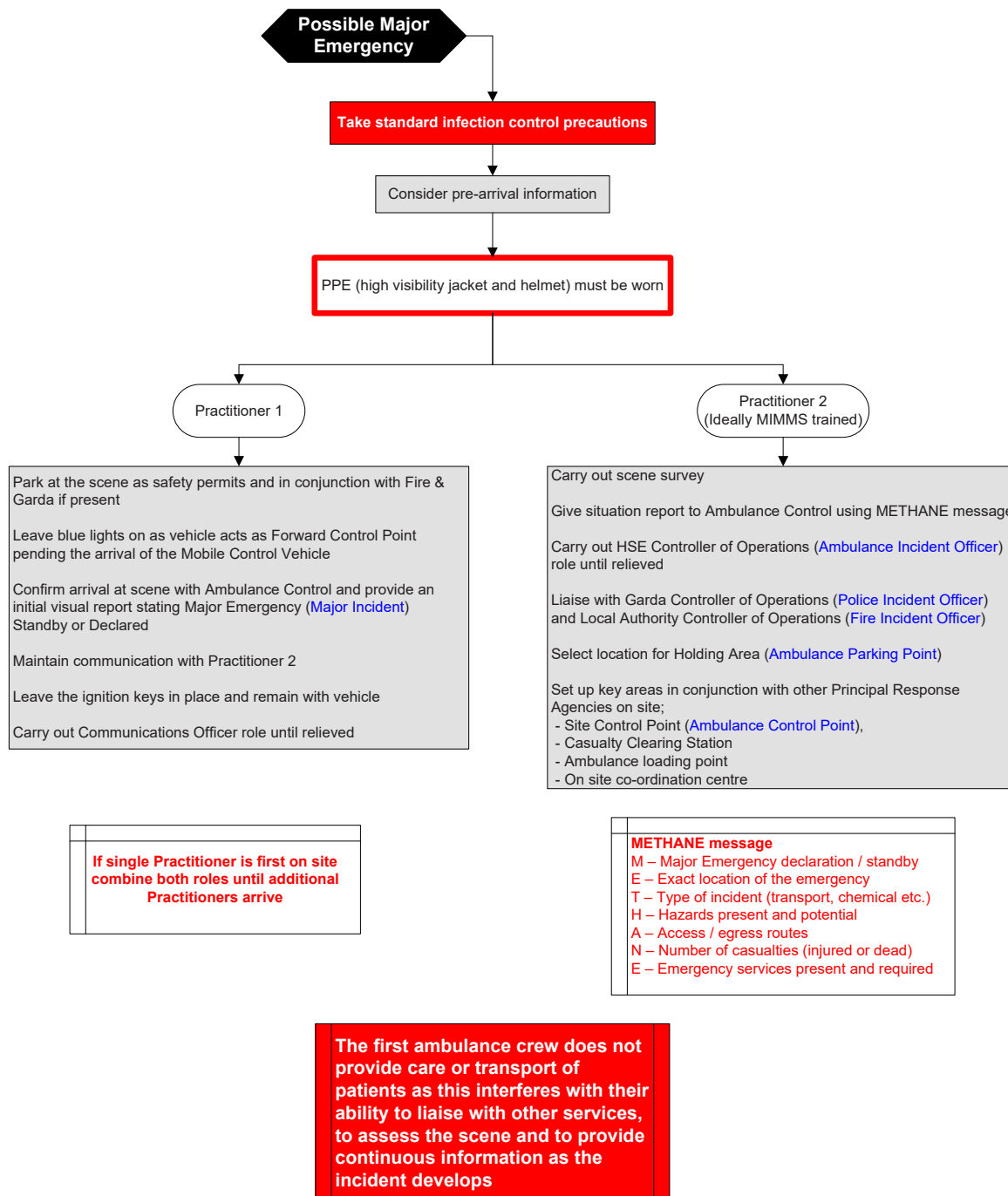
## SECTION 8 – Pre-Hospital Emergency Care Operations

**4/5/6.8.1**  
Version 2, 01/2013

### Major Emergency (Major Incident) – First Practitioners on site



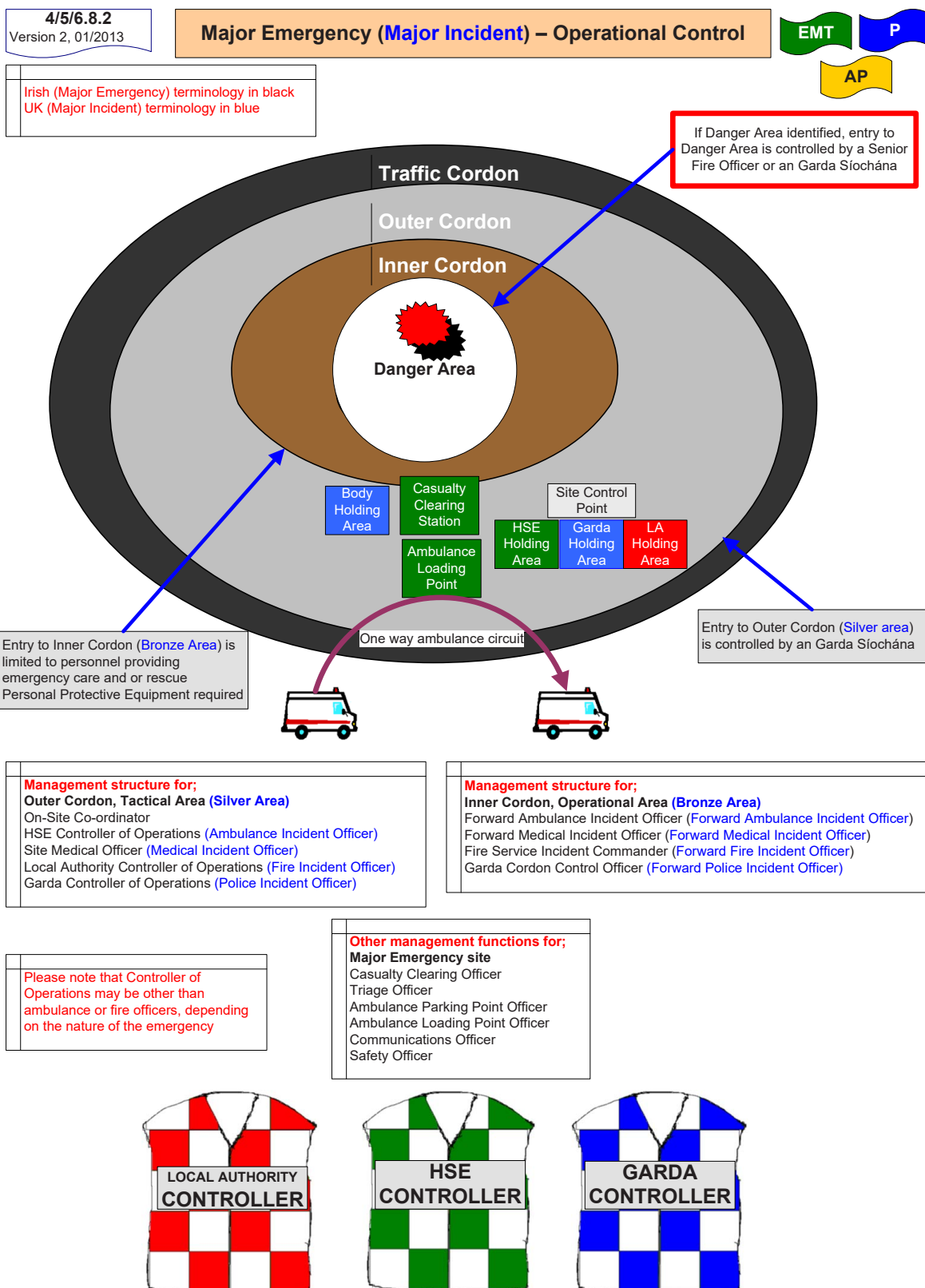
Irish (Major Emergency) terminology in black  
UK (Major Incident) terminology in blue



The principles and terminology of Major Incident Medical Management and Support (MIMMS) has been used with the kind permission of the Advanced Life Support Group, UK

Reference: A Framework for Major Emergency Management, 2006, Inter-Departmental Committee on Major Emergencies (Replaced by National Steering Group on Major Emergency Management)

## SECTION 8 - Pre-Hospital Emergency Care Operations



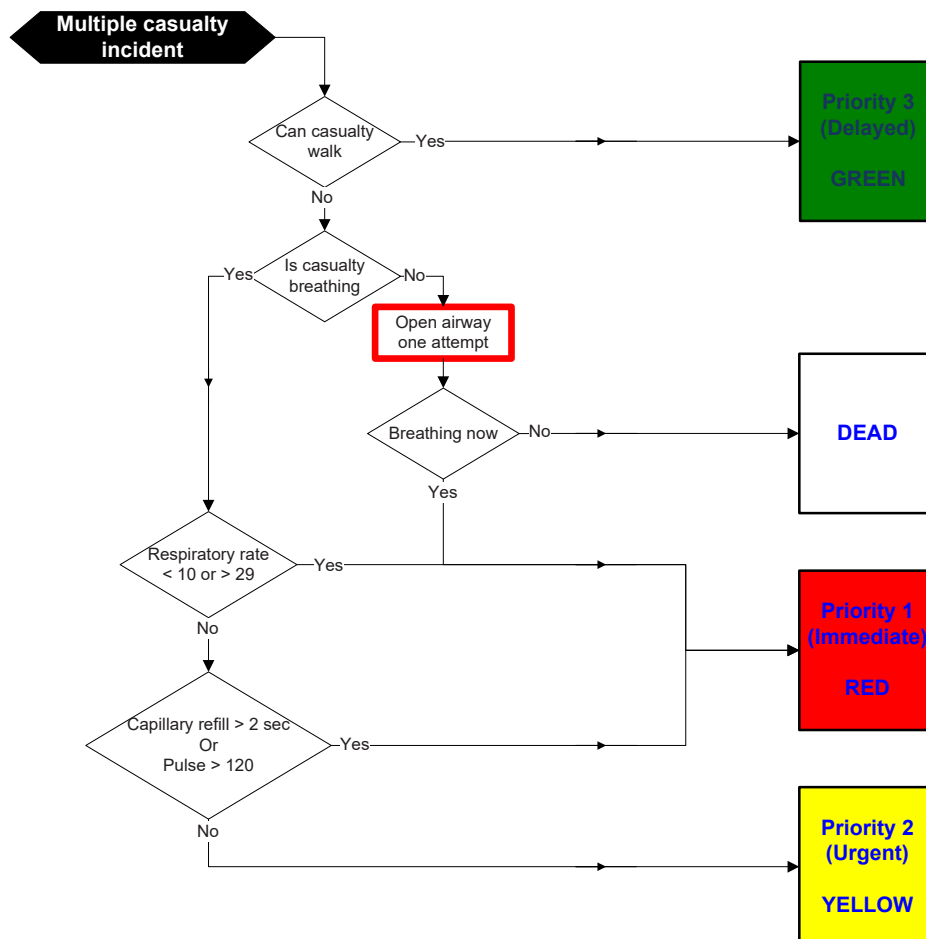
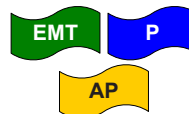
The principles and terminology of Major Incident Medical Management and Support (MIMMS) has been used with the kind permission of the Advanced Life Support Group, UK

Reference: A Framework for Major Emergency Management, 2006, Inter-Departmental Committee on Major Emergencies (Replaced by National Steering Group on Major Emergency Management)

## SECTION 8 - Pre-Hospital Emergency Care Operations

**4/5/6.8.3**  
Version 1, 05/2008

### Triage Sieve



**Triage is a dynamic process**

The principles and terminology of Major Incident Medical Management and Support (MIMMS) has been used with the kind permission of the Advanced Life Support Group, UK

## SECTION 8 - Pre-Hospital Emergency Care Operations

**5/6.8.4**  
Version 1, 05/2008

### Triage Sort

P

AP

**Multiple casualty incident**

Cardiopulmonary function	Measured value	Score	Insert score
Respiratory Rate	10 – 29 / min	4	A
	> 29 / min	3	
	6 – 9 / min	2	
	1 – 5 / min	1	
	None	0	
Systolic Blood Pressure	≥ 90 mm Hg	4	B
	76 – 89 mm Hg	3	
	50 – 75 mm Hg	2	
	1 – 49 mm Hg	1	
	No BP	0	
Glasgow Coma Scale	13 – 15	4	C
	9 – 12	3	
	6 – 8	2	
	4 – 5	1	
	3	0	
<b>Triage Revised Trauma Score</b>			<b>A+B+C</b>

Triage is a dynamic process

**Revised Trauma Score**

1 - 10

**Priority 1 (Immediate)**  
**RED**

11

**Priority 2 (Urgent)**  
**YELLOW**

12

**Priority 3 (Delayed)**  
**GREEN**

0

**DEAD**

Eye Opening	Spontaneous	4
	To Voice	3
	To Pain	2
	None	1
Verbal Response	Oriented	5
	Confused	4
	Inappropriate words	3
	Incomprehensible sounds	2
Motor Response	None	1
	Obeys commands	6
	Localises pain	5
	Withdraw (pain)	4
	Flexion (pain)	3
Glasgow Coma Scale	Extension (pain)	2
	None	1

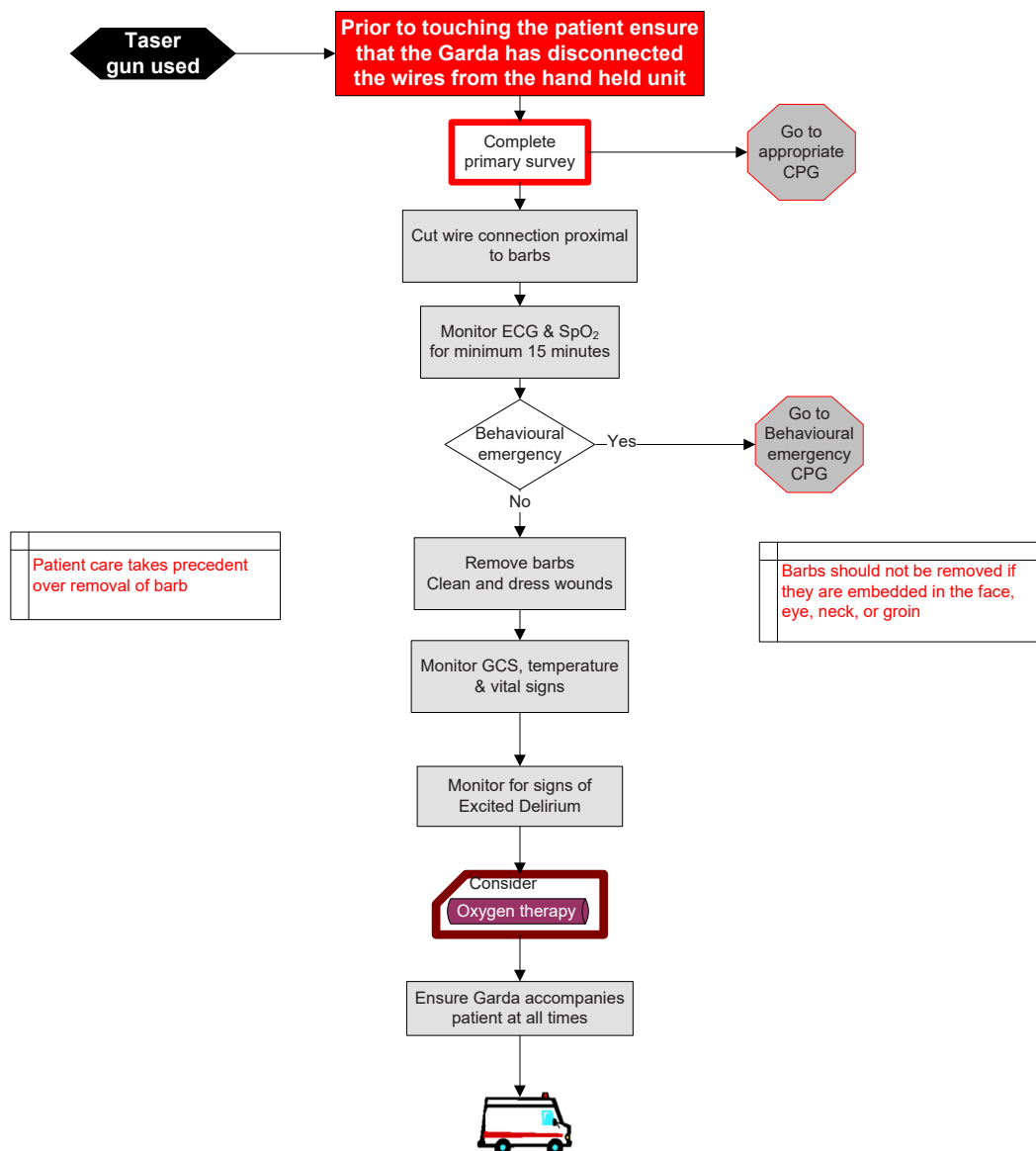
The principles and terminology of Major Incident Medical Management and Support (MIMMS) has been used with the kind permission of the Advanced Life Support Group, UK

## SECTION 8 - Pre-Hospital Emergency Care Operations

**5/6.8.5**  
Version 1, 05/2008

### Conducted Electrical Weapon (Taser)

**P** **AP**



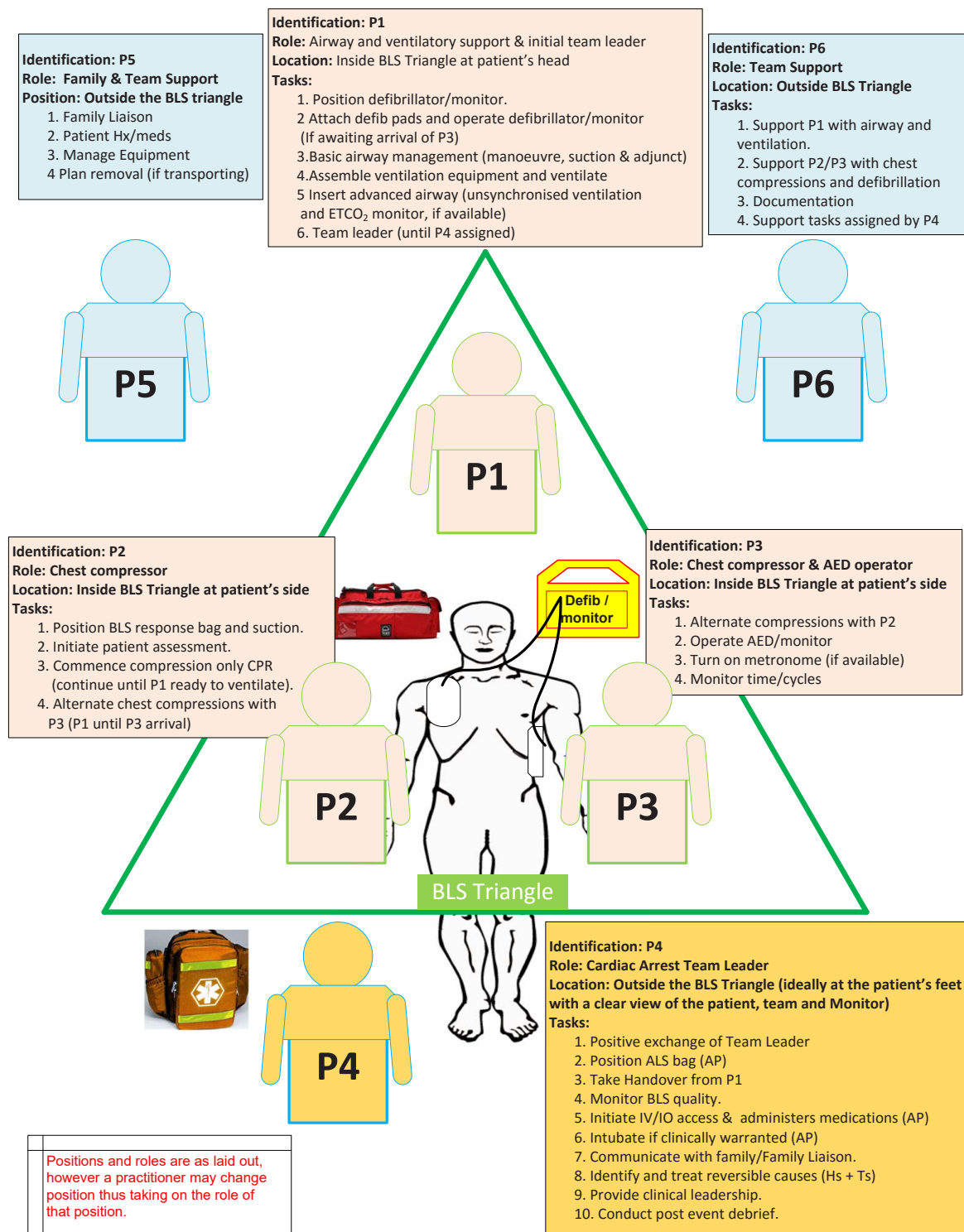
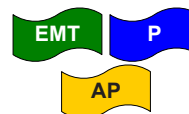
**Note:**  
This CPG was developed in conjunction with the Chief Medical Officer, An Garda Síochána

Reference:  
DSAC Sub-committee on the Medical Implications of Less-lethal Weapons 2004, Second statement on the medical implications of the use of the M26 Advanced Taser.  
United States Government Accountability Office, 2005, The use of Taser by selected law enforcement agencies  
Manitoba Health Emergency Medical Services, 2007 Taser Dart Removal Protocol

## SECTION 8 - Pre-Hospital Emergency Care Operations

**4/5/6.8.6**  
Version 1, 03/2016

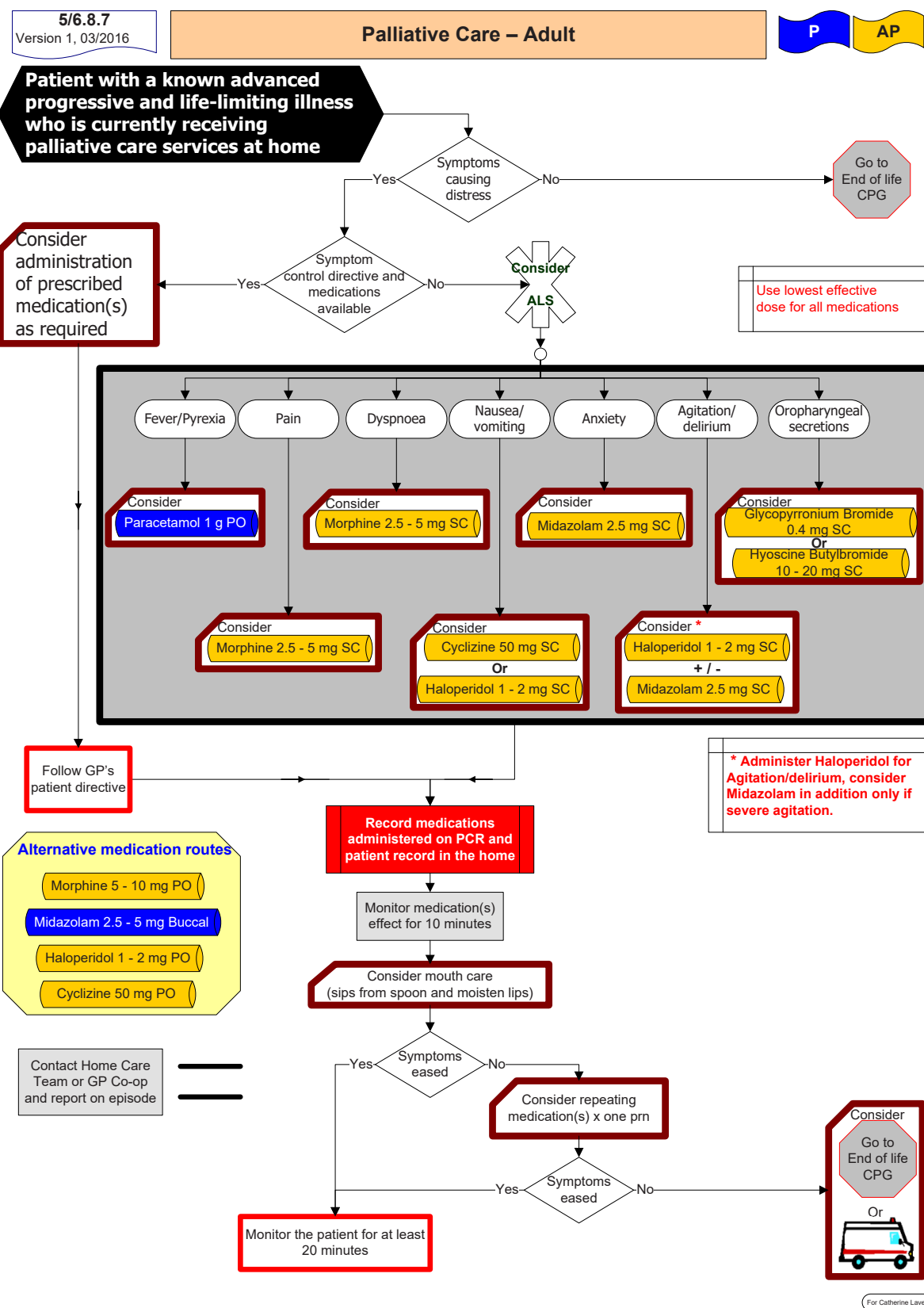
### Team Resuscitation



**If ALS are first on scene they perform BLS until sufficient BLS personnel are on scene**

Reference: ILCOR Guidelines 2015

## SECTION 8 - Pre-Hospital Emergency Care Operations



Reference: STN023 Palliative Care by PHECC registered practitioners

## SECTION 8 - Pre-Hospital Emergency Care Operations

5/6.8.8  
Version 1, 06/2016

### Verification of Death

P

AP

An unexpected death has occurred  
An expected death has occurred  
Cease resuscitation has occurred  
An obvious dead body has been found

Verification of death	
<b>CIRCULATORY</b>	No pulse present No heart sounds Asystole on ECG
<b>RESPIRATORY</b>	No respiratory effort No chest sounds
<b>CEREBRAL</b>	Pupils not responding to light No reaction to painful stimuli

Verify death using  
criteria outlined

Inform Ambulance Control

Ambulance Control to inform  
An Garda Síochána of death

Record death in patient records  
(PCR or ACR)

Complete Verification of  
Death Record Form

Provide initial support to  
family/carers

Follow local protocol in  
relation to remains

Suspicious death,  
body in public place or  
body unaccompanied by  
responsible adult

Yes

No

Await arrival of  
An Garda Síochána

Response to  
Life threatening call  
required

No

Respond to life threatening  
call as soon as practical

Exit from the scene as soon as practical  
Or  
Respond to life threatening call immediately

An Garda Síochána  
on scene

No

Yes

Ambulance Control to inform  
An Garda Síochána of departure  
of crew from scene

Follow deployment  
instructions from  
Ambulance Control

It is the responsibility of An Garda  
Síochána to organise a registered medical  
practitioner to attend the scene.

An **expected death**: a case where  
discussions have taken place between  
the medical/nursing team and the  
patient's relatives and/or the patient and a  
decision has been made and documented  
that no further intervention is appropriate.

It is not uncommon for there to be  
occasional spontaneous gasping sounds  
or occasional intermittent audible heart  
sounds soon after an expected death and  
if this is the case the patient should be left  
for 15 minutes and the full procedure  
repeated.

A legible, signed entry must be made in  
the patients record (PCR /ACR) indicating  
the time and date that death was verified.  
Additionally the Verification of Death  
Record Form (VDRF) must be completed  
and kept with the patient record.  
The top copy of the VDRF must be made  
available for An Garda Síochána.

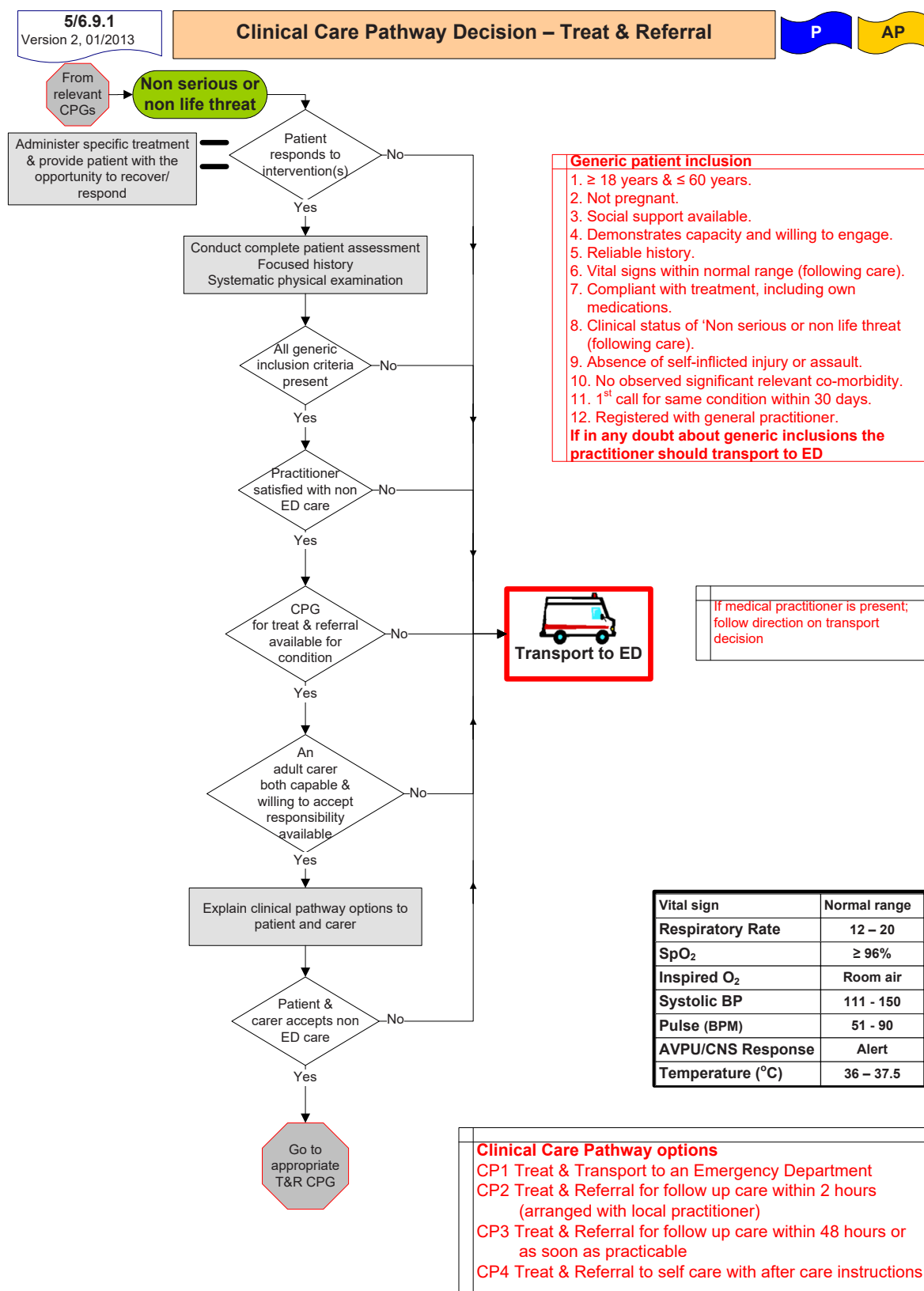
**Do not transport a body in an ambulance  
vehicle unless;**

- The body is recently deceased and in a  
public place where public concern may  
be caused if it is left there
- The emotional circumstance  
associated with the death causes  
severe distress for the family
- Prior to the transport an arrangement  
is in place to accept the body at the  
destination

Reference: POL026 Council Policy for verification of death by paramedics and advanced paramedics Version1

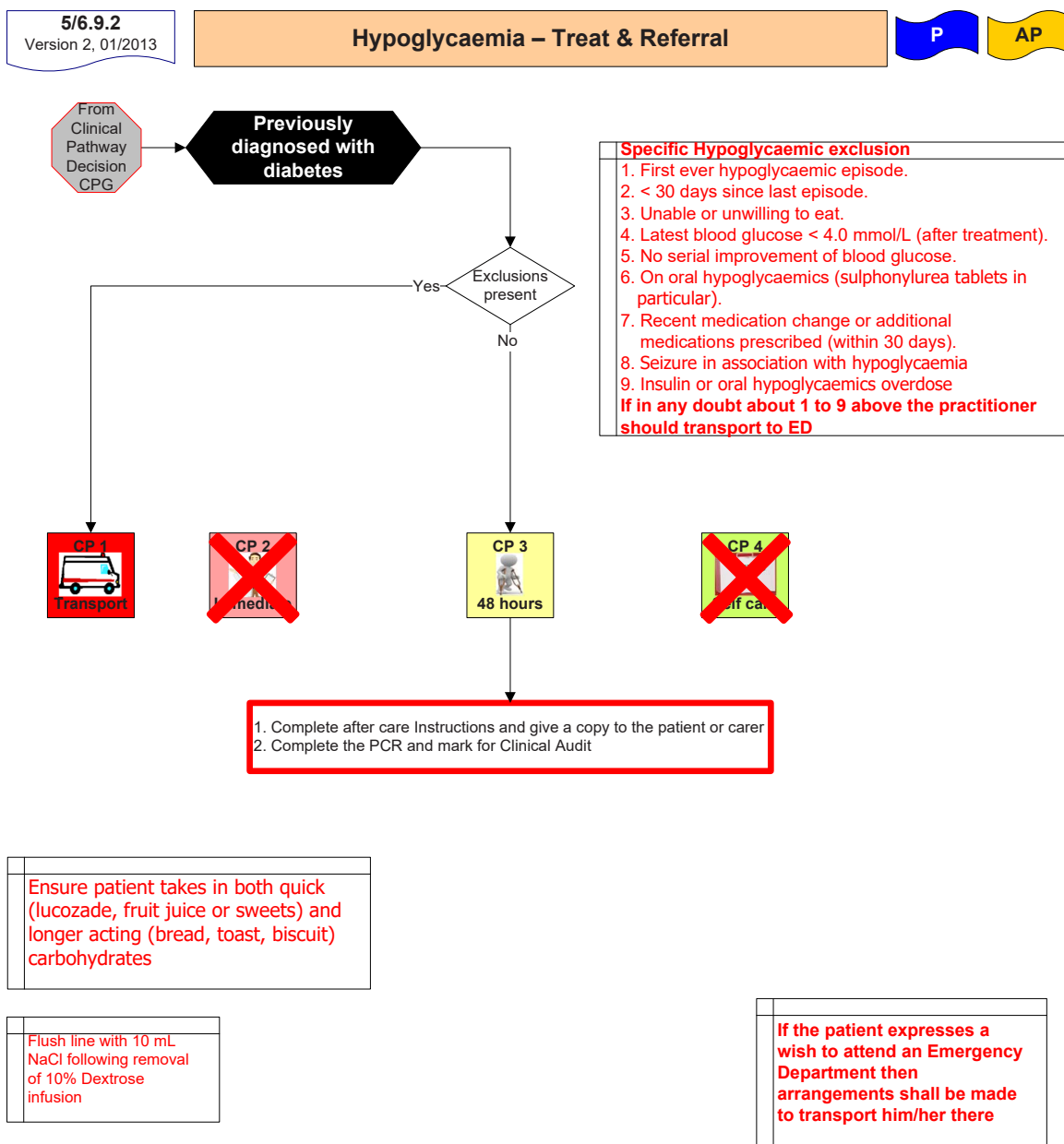


## SECTION 9 - Treat & Referral



Reference: Ambulance Service of NSW, 2008, CARE Clinical Pathways  
HSE Acute Medicine Programme, 2011, Guiding Framework and Policy for the National Early Warning Score System to Recognise and Respond to Clinical Deterioration

## SECTION 9 - Treat & Referral

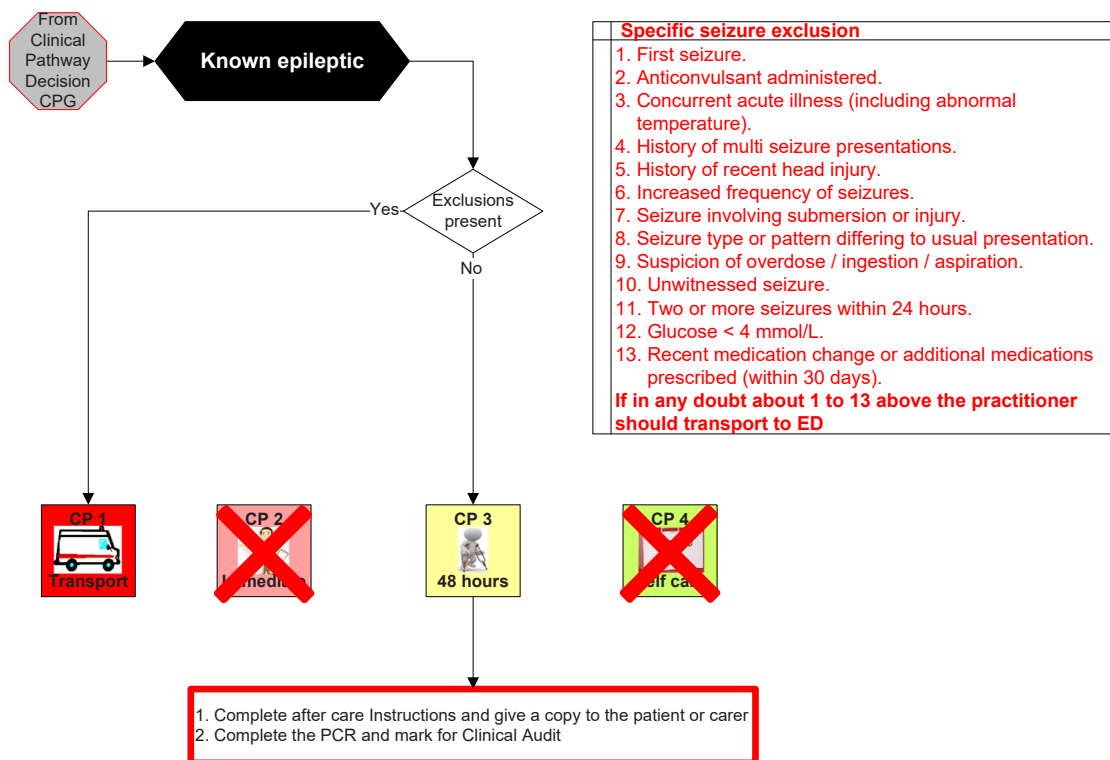


Reference: HSE Diabetes Programme, 2012  
Ambulance Service of NSW, 2008, CARE Clinical Pathways  
O'Donnell C, 2007, Hypoglycaemia Treat and Discharge Protocol (unpublished)  
Carter A, et al 2002, Transport Refusal by Hypoglycaemic Patients after On-scene Intravenous Dextrose, academic Emergency medicine, Vol. 9, No. 8:p855-857

## SECTION 9 - Treat & Referral

5/6.9.3  
Version 2, 01/2013

### Isolated seizure – Treat & Referral



Isolated seizure:  
Lasting < 5 minutes  
Similar to previous events

**If the patient expresses a wish to attend an Emergency Department then arrangements shall be made to transport him/her there**

**Reference:** HSE Epilepsy Programme 2012  
Ambulance Service of NSW, 2008, CARE Clinical Pathways  
NICHOLL, J. S. 1999. Prehospital management of the seizure patient. *Emerg Med Serv*, 28, 71-5.  
Simonson, H and Pelberg, A, 1993, Unnecessary Emergency Transport and Care of Grand Mal Seizures, *American Journal of Medical Quality*, Vol 8, No 2, p53-55.  
Mechem, CC et al, 2001, Short-term outcome of seizure patients who refuse transport after out-of-hospital evaluation, *Academy of Emergency medicine*, Mar;8(3):231-6

## APPENDIX 1 – Medication Formulary

### Medication Formulary for Paramedics

The Medication Formulary is published by the Pre-Hospital Emergency Care Council (PHECC) to enable pre-hospital emergency care practitioners to be competent in the use of medications permitted under Medicinal Products 7th Schedule (SI 300 of 2014). This is a summary document only and practitioners are advised to consult with official publications to obtain detailed information about the medications used.

The Medication Formulary is recommended by the Medical Advisory Committee (MAC) prior to publication by Council.

The medications herein may be administered provided:

- 1 The practitioner is in good standing on the PHECC practitioner's Register.
- 2 The practitioner complies with the Clinical Practice Guidelines (CPGs) published by PHECC.
- 3 The practitioner is acting on behalf of an organisation (paid or voluntary) that is a PHECC licensed CPG provider.
- 4 The practitioner is privileged, by the organisation on whose behalf he/she is acting, to administer the medications.
- 5 The practitioner has received training on, and is competent in, the administration of the medication.
- 6 The medications are listed on the Medicinal Products 7th Schedule.

The context for administration of the medications listed here is outlined in the CPGs.

Every effort has been made to ensure accuracy of the medication doses herein. The dose specified on the relevant CPG shall be the definitive dose in relation to practitioner administration of medications. The principle of titrating the dose to the desired effect shall be applied. The onus rests on the practitioner to ensure that he/she is using the latest versions of CPGs which are available on the PHECC website [www.phecc.ie](http://www.phecc.ie)

Sodium Chloride 0.9% (NaCl) is the IV/IO fluid of choice for pre-hospital emergency care.

Water for injection shall be used when diluting medications, however if not available NaCl (0.9%) may be used if not contraindicated.

All medication doses for patients  $\leq$  15 years shall be calculated on a weight basis unless an age related dose is specified for that medication.

The route of administration should be appropriate to the patient's clinical presentation. IO access is authorised for advanced paramedics for Life Threatening Emergencies (or under medical direction).

## APPENDIX 1 – Medication Formulary

**The dose for paediatric patients may never exceed the adult dose.**

**Paediatric weight estimations acceptable to PHECC are:**

Neonate =	3.5 Kg
Six months =	6 Kg
One to five years =	$(\text{age} \times 2) + 8 \text{ Kg}$
Greater than 5 years =	$(\text{age} \times 3) + 7 \text{ Kg}$

### **Pregnancy caution:**

Medications should be prescribed in pregnancy only if the expected benefit to the mother is thought to be greater than the risk to the foetus, and all medications should be avoided if possible during the first trimester.

PHECC practitioners therefore should avoid using medications in early pregnancy unless absolutely essential and where possible medical advice should be sought prior to administration.

### **Paramedic authorisation for IV infusion continuation**

PHECC registered paramedics are authorised to continue an established IV infusion in the absence of an advanced paramedic or doctor during transportation.

**This version contains 24 medications.**

Please visit [www.phecc.ie](http://www.phecc.ie) for the latest edition/version

## APPENDIX 1 – Medication Formulary

### Amendments to the Paramedic 2014 Edition:

#### *New Medications introduced:*

- Chlorphenamine
- Cyclizine
- Methoxyflurane
- Ondansetron
- Oxytocin

Aspirin		
Heading	Add	Delete
Indications	Management of unstable angina and non ST-segment elevation myocardial infarction (NSTEMI) Management of ST-segment elevation myocardial infarction (STEMI)	
Contra-Indicated	(risk of Reye's syndrome)	
Side Effects	Increased bleeding time Skin reactions in hypersensitive patients	

Glucagon:		
Heading	Add	Delete
Administration		CPG: 4.4.19, 4.7.32
Additional information	Hypoglycaemic paediatrics patients who are not diagnosed as diabetic should not be administered Glucagon (this does not preclude the administration of Glucose gel or Dextrose to treat hypoglycaemia)	

Glyceryl trinitrate (GTN)		
Heading	Add	Delete
Administration	(CPG: 1/2/3.4.10)	
Indications	EMT: Systolic BP $\geq$ 110	
Contra-Indications	Severe mitral stenosis	
Additional Information	Caution with inferior wall MI with right ventricular involvement as this may lead to profound hypotension	

## APPENDIX 1 – Medication Formulary

Hydrocortisone		
Heading	Add	Delete
Administration	(CPG: 4/5/6.4.15, 4/5/6.7.31)	
Usual Dosages	<b>Adult:</b> <b>Anaphylactic reaction:</b> (AP) 200 mg IV (infusion in 100 mL NaCl) or IM injection (P & AP) <b>Paediatric:</b> <b>Anaphylactic reaction:</b> < 1 year: (AP) – 25 mg IV (infusion in 100 mL NaCl) or IM injection (P & AP) 1 to 5 years: (AP) – 50 mg IV (infusion in 100 mL NaCl) or IM injection (P & AP) > 5 years: (AP) – 100 mg IV (infusion in 100 mL NaCl) or IM injection (P & AP)	<b>Asthma (AP) and Adrenal insufficiency (P &amp; AP):</b> 100 mg IV (infusion in 100 mL NaCl) or IM <b>6 mths to ≤ 5 yrs:</b> 50 mg IV (infusion in 100 mL NaCl) or IM <b>&gt; 5 years:</b> 100 mg IV (infusion in 100 mL NaCl) or IM

Ibuprofen		
Heading	Add	Delete
Presentation	200 mg in 5 mL	
Contra-Indications	Known renal failure / Known severe liver failure / Known severe heart failure / Concurrent NSAID use (e.g. Diclofenac, Naproxen)	
Usual Dosages	400 mg PO (Mild pain) 600 mg PO (Moderate pain)	
Additional Information	Caution if on oral anticoagulant (e.g. Warfarin, Rivaroxaban, Apixaban, Edoxaban) due to increased bleeding risk	

## APPENDIX 1 – Medication Formulary

Midazolam Solution		
Heading	Add	Delete
Administration	(CPG: 5/6.8.7, 4/5/6.4.30)	
Usual Dosages	<b>Palliative Care:</b> 2.5 – 5 mg buccal (P & AP) repeat x 1 prn  Maximum 4 doses of Benzodiazepine for adult and paediatric seizing patients regardless of route	Repeat x 1 prn
Additional Information	Contraindications, other than KSAR, refer to non-seizing patients If patient recommences seizing regard it as a new event, administer additional dose then consider medical advice (AP)	No more than two doses by practitioners

Oxygen		
Heading	Add	Delete
Administration	CPAP device	
Indications	SpO <sub>2</sub> < 90% for patients with acute onset of Pulmonary Oedema	
Usual Dosages	Neonatal Resuscitation – (< 4 weeks) Consider supplemental O <sub>2</sub> (≤ 30%)	

Paracetamol		
Heading	Add	Delete
Presentation	Rectal suppository 1 g, 500 mg, 250 mg, 240 mg, 125 mg, 120 mg, 80 mg glass vial, 1 g of Paracetamol in 100 mL solution for infusion	180 mg and 60 mg
Administration	(CPG: 5/6.8.7, 5/6.7.34)	
Indications	<b>Adult:</b> Pyrexia / Temperature > 38.3°C / Minor to moderate pain for adult patients  <b>Paediatric:</b> Pyrexia / Temperature > 38.5°C / Minor to moderate pain for paediatric patients	



## APPENDIX 1 – Medication Formulary

Salbutamol		
Heading	Add	Delete
Administration		<b>CPG:</b> 4.4.15, 2/3.4.16, 4.7.31, 3.7.12
Usual Dosages	0.1 mg metered aerosol spray (repeat aerosol x 11 prn) <b>EFR:</b> assist patient with Asthma/Anaphylaxis 0.1 mg metered aerosol spray (repeat aerosol x 11 prn) <b>Paediatric:</b> < 5 yrs - 0.1 mg metered aerosol spray (repeat aerosol x 5 prn) > 5 yrs - 0.1 mg metered aerosol spray (repeat aerosol x 11 prn) <b>EFR:</b> assist patient with Asthma/Anaphylaxis < 5 yrs - 0.1 mg metered aerosol spray (repeat aerosol x 5 prn) ≥ 5 yrs - 0.1 mg metered aerosol spray (repeat aerosol x 11 prn)	(0.1 mg metered aerosol spray x 5) <b>EFRs:</b> (0.1 mg metered aerosol spray x 2) <b>Paediatric:</b> < 5 yrs - (0.1 mg metered aerosol spray x 3) > 5 yrs - (0.1 mg metered aerosol spray x 5)

## APPENDIX 1 – Medication Formulary

### Index of medication formulary Paramedic (Adult $\geq 16$ and Paediatric $\leq 15$ unless otherwise stated)

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## APPENDIX 1 – Medication Formulary

Clinical level:



Medication	Aspirin
<b>Class</b>	Platelet aggregation inhibitor.
<b>Descriptions</b>	Anti-inflammatory agent and an inhibitor of platelet function. Useful agent in the treatment of various thromboembolic diseases such as acute myocardial infarction.
<b>Presentation</b>	300 mg dispersible tablet.
<b>Administration</b>	Orally (PO) - dispersed in water, or to be chewed - if not dispersible form. ( <b>CPG:</b> 5/6.4.10, 4.4.10, 1/2/3.4.10).
<b>Indications</b>	Cardiac chest pain or suspected myocardial infarction. Management of unstable angina and non ST-segment elevation myocardial infarction (NSTEMI). Management of ST-segment elevation myocardial infarction (STEMI).
<b>Contra-Indications</b>	Active symptomatic gastrointestinal (GI) ulcer / Bleeding disorder (e.g. haemophilia) / Known severe adverse reaction / Patients < 16 years old (risk of Reye's syndrome) .
<b>Usual Dosages</b>	<b>Adult:</b> 300 mg tablet. <b>Paediatric:</b> Contraindicated.
<b>Pharmacology / Action</b>	<b>Antithrombotic:</b> Inhibits the formation of thromboxane A <sub>2</sub> , which stimulates platelet aggregation and artery constriction. This reduces clot/thrombus formation in an MI.
<b>Side effects</b>	Epigastric pain and discomfort / Bronchospasm / Gastrointestinal haemorrhage / Increased bleeding time / Skin reactions in hypersensitive patients.
<b>Long term effects</b>	Generally mild and infrequent but incidence of gastro-intestinal irritation with slight asymptomatic blood loss, increased bleeding time, bronchospasm and skin reaction in hypersensitive patients.
<b>Additional information</b>	Aspirin 300 mg is indicated for cardiac chest pain regardless if patient is on anti-coagulants or is already on Aspirin.  If the patient has swallowed an Aspirin (enteric coated) preparation without chewing it, the patient should be regarded as not having taken any Aspirin; administer 300 mg PO.

## APPENDIX 1 – Medication Formulary

Clinical level:



Medication	Chlorphenamine
Class	Antihistamine
Descriptions	H <sub>1</sub> antagonist to counteract the effects of histamine release.
Presentation	10 mg in 1 mL ampoule. 4 mg tablet.
Administration	Intravenous (IV), Intramuscular (IM) and Orally (PO).  ( <b>CPG:</b> 4/5/6.4.15, 4/5/6.7.31).
Indications	Anaphylaxis or allergic reaction.
Contra-Indications	Known severe adverse reaction / Pre-coma states.
Usual Dosages	<p><b>Adult:</b>  <i>Allergic reaction</i>  Mild: - 4 mg PO (EMT / P / AP).  Moderate: - 4 mg PO or 10 mg IM (EMT / P) or 10 mg IV (AP).  Severe/Anaphylaxis: - 10 mg IM (EMT / P) or 10 mg IV (AP).</p> <p><b>Paediatric:</b>  <i>Allergic reaction:</i>  Mild: 6 to 11 years – 2 mg PO (EMT / P / AP).  ≥ 12 years – 4 mg PO (EMT / P / AP).</p> <p>Moderate: &lt; 1 year – 0.25 mg/Kg IM (EMT / P) or 0.25 mg/Kg IV (AP).  1 to 5 years – 2.5 mg IM (EMT / P) or 2.5 mg IV (AP).  6 to 11 years – 2 mg PO or 5 mg IM (EMT / P) or 5 mg IV (AP).  ≥ 12 years – 4 mg PO or 10 mg IM (EMT / P) or 10 mg IV (AP).</p> <p>Severe / &lt; 1 year – 0.25 mg/Kg IM (EMT / P) or 0.25 mg/Kg IV (AP).  Anaphylaxis: 1 to 5 years – 2.5 mg IM (EMT / P) or 2.5 mg IV (AP).  6 to 11 years – 5 mg IM (EMT / P) or 5 mg IV (AP).  ≥ 12 years – 10 mg IM (EMT / P) or 10 mg IV (AP).</p>
Pharmacology / Action	Chlorphenamine is a potent antihistamine (H <sub>1</sub> -receptor antagonist). Antihistamines diminish or abolish the action of histamine in the body by competitive reversible blockade of histamine 1 receptor sites on tissues. Chlorphenamine also has anticholinergic activity.
Side effects	Causes drowsiness and patients receiving it should not drive or operate machinery.
Additional information	Use with caution in epilepsy / Prostatic hypertrophy / Glaucoma / Hepatic disease / Bronchitis / Bronchiectasis / Thyrotoxicosis / Raised intra-ocular pressure / Severe hypertension / Cardiovascular disease / Bronchial asthma.  For IV route, administer over 1 minute.  If small dose required, dilute with NaCl 0.9%.

## APPENDIX 1 – Medication Formulary

Clinical level:



Medication	Clopidogrel
<b>Class</b>	Platelet aggregation inhibitor.
<b>Descriptions</b>	An inhibitor of platelet function.
<b>Presentation</b>	300 mg tablet. 75 mg tablet.
<b>Administration</b>	Orally (PO). ( <b>CPG:</b> 5/6.4.10).
<b>Indications</b>	ST elevation myocardial infarction (STEMI) if the patient is not for PPCI.
<b>Contra-Indications</b>	Known severe adverse reaction / Active pathological bleeding / Severe liver impairment.
<b>Usual Dosages</b>	<b>Adult:</b> 300 mg PO. (≥ 75 years: 75 mg PO). <b>Paediatric:</b> Not indicated.
<b>Pharmacology / Action</b>	Clopidogrel selectively inhibits the binding of adenosine diphosphate (ADP) to its platelet receptor, and the subsequent ADP-mediated activation of the GPIIb/IIIa complex, thereby inhibiting platelet aggregation.  Biotransformation of Clopidogrel is necessary to produce inhibition of platelet aggregation. Clopidogrel acts by irreversibly modifying the platelet ADP receptor.
<b>Side effects</b>	Abdominal pain / Dyspepsia / Diarrhoea.
<b>Additional information</b>	If a patient has been loaded with an anti-platelet medication (other than Aspirin), prior to the arrival of the practitioner, the patient should not have Clopidogrel administered.

## APPENDIX 1 – Medication Formulary

Clinical level:  

Medication	Cyclizine
Class	Antiemetic.
Descriptions	Used in management of nausea & vomiting.
Presentation	Ampoule 50 mg in 1 mL.
Administration	Intravenous (IV). Intraosseous (IO). Intramuscular (IM). Subcutaneous (SC). Oral (PO). ( <b>CPG:</b> 5/6.4.26, 5/6.8.7).
Indications	Management, prevention and treatment of nausea and vomiting.
Contra-Indications	Known severe adverse reaction.
Usual Dosages	<b>Adult:</b> 50 mg slow IV/IO or IM.  <b>Palliative Care:</b> 50 mg SC/PO. (Repeat x 1 prn - AP).  <b>Paediatric:</b> Not indicated.
Pharmacology / Action	Anti-emetic.
Side effects	Tachycardia / Dry Mouth / Sedation.
Additional information	IM route should only be utilised where IV or IO access is not available.

## APPENDIX 1 – Medication Formulary

Clinical level:



Medication	Dextrose 10% Solution
Class	Carbohydrate.
Descriptions	Dextrose is used to describe the six-carbon sugar d-glucose, which is the principal form of carbohydrate used by the body. D <sub>10</sub> W is a hypertonic solution.
Presentation	Soft pack for infusion 250 mL and 500 mL.
Administration	Intravenous (IV) Infusion/bolus. Intraosseous (IO). <b>Paramedic:</b> Maintain infusion once commenced. (CPG: 5/6.4.19, 4/5/6.7.32).
Indications	Hypoglycaemic Emergency. Blood glucose level < 4 mmol/L.
Contra-Indications	Known severe adverse reaction.
Usual Dosages	<b>Adult:</b> 250 mL IV/IO infusion (repeat x 1 prn). <b>Paediatric:</b> 5 mL/Kg IV/IO (repeat x 1 prn).
Pharmacology / Action	Hypertonic glucose solution. Dextrose is a readily utilisable energy source.
Side effects	Necrosis of tissue around IV access.
Additional information	Also called Glucose. Cannula patency will reduce the effect of tissue necrosis. Advanced Paramedics should use as large a vein as possible.

## APPENDIX 1 – Medication Formulary

Clinical level:



<b>Medication</b>	<b>DEXTROSE 5% SOLUTION</b>
<b>Class</b>	Carbohydrate.
<b>Descriptions</b>	Dextrose is used to describe the six-carbon sugar d-glucose, which is the principal form of carbohydrate used by the body. D <sub>5</sub> W is a hypertonic solution and is used as an infusion medium for Amiodarone.
<b>Presentation</b>	Soft pack for infusion 100 mL and 500 mL.
<b>Administration</b>	Intravenous (IV) infusion. Intraosseous (IO) infusion. <b>Paramedic:</b> Maintain infusion once commenced. ( <b>CPG:</b> May be used for medication dilution on CPGs).
<b>Indications</b>	Use as a dilutant for Amiodarone infusion.
<b>Contra-Indications</b>	Known severe adverse reaction.
<b>Usual Dosages</b>	<b>Adult:</b> Dilute appropriate dose of Amiodarone in 100 mL or 500 mL. <b>Paediatric:</b> Not indicated.
<b>Pharmacology / Action</b>	Dextrose 5% (D <sub>5</sub> W) is used as an infusion medium for the administration of Amiodarone.
<b>Side effects</b>	Necrosis of tissue around IV access.
<b>Additional information</b>	



## APPENDIX 1 – Medication Formulary

Clinical level:



<b>Medication</b>	<b>Epinephrine (1:1,000)</b>
<b>Class</b>	Sympathetic agonist.
<b>Descriptions</b>	Naturally occurring catecholamine. It is a potent alpha and beta adrenergic stimulant; however, its effect on beta receptors is more profound.
<b>Presentation</b>	Pre-filled syringe, ampoule or Auto injector (for EMT use). 1 mg/1 mL (1:1,000).
<b>Administration</b>	Intramuscular (IM), Intravenous (IV) and nebulisation (Neb). ( <b>CPG:</b> 2/3.4.15, 2/3.7.31, 5/6.4.7, 4/5/6.4.11, 4/5/6.4.15, 4/5/6.7.13, 4/5/6.7.31).
<b>Indications</b>	Severe anaphylaxis, Stridor, Symptomatic Bradycardia and Cardiogenic shock.
<b>Contra-Indications</b>	None known.
<b>Usual Dosages</b>	<p><b>Anaphylaxis Adult:</b> 0.5 mg (500 mcg) IM (0.5 mL of 1:1,000). <b>EFR</b> assist patient - 0.3 mg (Auto injector) (Repeat every 5 minutes prn).</p> <p><b>Anaphylaxis Paediatric:</b>                      &lt; 6 months: - 0.05 mg (50 mcg) IM (0.05 mL of 1:1,000)                      6 months to 5 years: - 0.125 mg (125 mcg) IM (0.13 mL of 1:1,000)                      6 to 8 years: - 0.25 mg (250 mcg) IM (0.25 mL of 1:1,000)                      &gt; 8 years: - 0.5 mg (500 mcg) IM (0.5 mL of 1:1,000)</p> <p><b>EFR</b> assist patient -                      6 Months &lt; 10 years: 0.15 mg (Auto injector) (repeat every 5 minutes prn).                      ≥ 10 years: 0.3 mg (Auto injector) (repeat every 5 minutes prn).</p> <p><b>Stridor (AP):</b>                      &lt; 1 Year: 2.5 mg NEB                      ≥ 1 year: 5 mg NEB                      (repeat after 30 minutes prn) (AP).</p> <p><b>Adult (AP): Symptomatic Bradycardia/Cardiogenic shock:</b> 0.01 mg IV/IO repeat prn.                      (Dilute 1 mg Epinephrine in 100 mL NaCl and draw up in 1 mL syringe, administer the dose over 1 minute).</p>
<b>Pharmacology / Action</b>	<p><b>Alpha and beta adrenergic stimulant:</b>                      Reversal of laryngeal oedema and bronchospasm in anaphylaxis.                      Antagonises the effects of histamine.</p>
<b>Side effects</b>	Palpitations / Tachyarrhythmias / Hypertension / Angina-like symptoms.
<b>Additional information</b>	<b>N.B.</b> Double check the concentration on pack before use.

## APPENDIX 1 – Medication Formulary

Clinical level:



Medication	Glucagon
Class	Hormone and Antihypoglycaemic.
Descriptions	Glucagon is a protein secreted by the alpha cells of the Islets of Langerhans in the pancreas. It is used to increase the blood glucose level in cases of hypoglycaemia in which an IV cannot be immediately placed.
Presentation	1 mg vial powder and solution for reconstitution (1 mL).
Administration	Intramuscular (IM). ( <i>CPG</i> : 4/5/6.4.19, 4/5/6.7.32).
Indications	Hypoglycaemia in patients unable to take oral glucose or unable to gain IV access, with a blood glucose level < 4 mmol/L.
Contra-Indications	Known severe adverse reaction / Pheochromocytoma.
Usual Dosages	<b>Adult:</b> 1 mg IM.  <b>Paediatric:</b> ≤ 8 years - 0.5 mg (500 mcg) IM. > 8 years - 1 mg IM.
Pharmacology / Action	<b>Glycogenolysis:</b> Increases plasma glucose by mobilising glycogen stored in the liver.
Side effects	Rare, may cause Hypotension / Dizziness / Headache / Nausea and Vomiting.
Additional information	May be ineffective in patients with low stored glycogen e.g. prior use in previous 24 hours, alcohol dependent patients with liver disease. Store in refrigerator. Protect from light. Hypoglycaemic paediatric patients who are not diagnosed as diabetic should not be administered Glucagon (this does not preclude the administration of Glucose gel or Dextrose to treat hypoglycaemia).

## APPENDIX 1 – Medication Formulary

Clinical level:



Medication	Glucose gel
Class	Antihypoglycaemic.
Descriptions	Synthetic glucose paste.
Presentation	Glucose gel in a tube or sachet.
Administration	Buccal administration: Administer gel to the inside of the patient's cheek and gently massage the outside of the cheek. ( <b>CPG:</b> 2/3.4.19, 4/5/6.4.19, 4/5/6.7.32).
Indications	Hypoglycaemia. Blood glucose < 4 mmol/L. <b>EFR</b> - Known diabetic with confusion or altered levels of consciousness.
Contra-Indications	Known severe adverse reaction.
Usual Dosages	<b>Adult:</b> 10 – 20 g buccal (repeat prn).  <b>Paediatric:</b> ≤ 8 years: 5 – 10 g buccal (repeat prn). > 8 years: 10 – 20 g buccal (repeat prn).
Pharmacology / Action	Increases blood glucose levels.
Side effects	May cause vomiting in patients under the age of 5 years if administered too quickly.
Additional information	Glucose gel will maintain glucose levels once raised but should be used secondary to Dextrose to reverse hypoglycaemia. <b>Proceed with caution:</b> Patients with airway compromise. Altered level of consciousness.

## APPENDIX 1 – Medication Formulary

Clinical level:    

Medication	<b>Glyceryl trinitrate (GTN)</b>
Class	Nitrate.
Descriptions	Special preparation of Glyceryl trinitrate in an aerosol form that delivers precisely 0.4 mg of Glyceryl trinitrate per spray.
Presentation	<b>Aerosol spray:</b> Metered dose of 0.4 mg (400 mcg).
Administration	<p><b>Sublingual:</b></p> <p>Hold the pump spray vertically with the valve head uppermost.</p> <p>Place as close to the mouth as possible and spray under the tongue.</p> <p>The mouth should be closed after each dose.</p> <p>(<b>CPG:</b> 5/6.3.5, 5/6.4.10, 4.4.10, 1/2/3.4.10).</p>
Indications	<p>Angina / suspected myocardial infarction (MI).</p> <p><b>EMT:</b> Angina / suspected myocardial infarction (MI) with systolic BP <math>\geq</math> 110 mmHg.</p> <p><b>EFR:</b> may assist with administration.</p> <p><b>Advanced Paramedics and Paramedics</b> - Pulmonary oedema.</p>
Contra-Indications	SBP < 90 mmHg / Viagra or other phosphodiesterase type 5 inhibitors (Sildenafil, Tadalafil and Vardenafil) used within previous 24 hours / Severe mitral stenosis / Known severe adverse reaction.
Usual Dosages	<p><b>Adult:</b></p> <p><b>Angina or MI:</b> 0.4 mg (400 mcg) sublingual.</p> <p>(Repeat at 3-5 min intervals, Max: 1.2 mg).</p> <p><b>EFR:</b> assist administration - 0.4 mg sublingual max.</p> <p><b>Pulmonary oedema:</b> 0.8 mg (800 mcg) sublingual (repeat x 1 prn) (P &amp; AP).</p> <p><b>Paediatric:</b> Not indicated.</p>
Pharmacology / Action	<p><b>Vasodilator:</b></p> <p>Releases nitric oxide which acts as a vasodilator. Dilates coronary arteries particularly if in spasm increasing blood flow to myocardium.</p> <p>Dilates systemic veins reducing venous return to the heart (pre-load) and thus reduces the heart's workload.</p> <p>Reduces BP.</p>
Side effects	Headache / Transient Hypotension / Flushing / Dizziness.
Additional information	<p>Caution with inferior wall MI with right ventricular involvement as this may lead to profound hypotension.</p> <p>If the pump is new or it has not been used for a week or more the first spray should be released into the air.</p>

## APPENDIX 1 – Medication Formulary

Clinical level:



Medication	Hydrocortisone
Class	Corticosteroid and anti-inflammatory.
Descriptions	Hydrocortisone is a potent corticosteroid with anti-inflammatory properties.
Presentation	Powder and solvent for solution for injection or infusion. Vial containing off-white powder and vial containing water for injections. Prepare the solution aseptically by adding not more than 2 mL of sterile water for injections to the contents of one 100 mg vial, shake and withdraw for use.
Administration	Intravenous (IV infusion). Intramuscular (IM). The preferred route for initial emergency use is intravenous. ( <b>CPG:</b> 4/5/6.3.3, 4/5/6.3.4, 5/6.4.13, 4/5/6.4.15, 4/5/6.7.12, 5/6.7.30, 4/5/6.7.31).
Indications	Severe or recurrent anaphylactic reactions. Asthma refractory to Salbutamol and Ipratropium Bromide. Exacerbation of COPD (AP). Adrenal insufficiency (P).
Contra-Indications	No major contraindications in acute management of anaphylaxis.
Usual Dosages	<b>Adult:</b> <b>Anaphylactic reaction:</b> (AP) 200 mg IV (infusion in 100 mL NaCl) or IM injection (P/AP). <b>Exacerbation of COPD:</b> 200 mg IV (infusion in 100 mL NaCl) or IM (AP). <b>Asthma:</b> 100 mg slow IV (infusion in 100 mL NaCl) (AP). <b>Adrenal insufficiency:</b> (AP) 100 mg IV (infusion in 100 mL NaCl) or IM (P/AP). <b>Paediatric:</b> <b>Anaphylactic reaction:</b> < 1 year: (AP) - 25 mg IV (infusion in 100 mL NaCl) or IM (P/AP). 1 to 5 years: (AP) - 50 mg IV (infusion in 100 mL NaCl) or IM (P/AP). > 5 years: (AP) - 100 mg IV (infusion in 100 mL NaCl) or IM (P/AP). <b>Asthma:</b> (AP) < 1 year: 25 mg IV / 1 to 5 years: 50 mg IV / > 5 years: 100 mg IV - (infusion in 100 mL NaCl). <b>Adrenal insufficiency:</b> 6 months to ≤ 5 years: (AP) 50 mg IV (infusion in 100 mL NaCl) or IM injection (P/AP). > 5 years: (AP) 100 mg IV (infusion in 100 mL NaCl) or IM injection (P/AP).
Pharmacology / Action	Potent anti-inflammatory properties and inhibits many substances that cause inflammation.
Side effects	CCF / Hypertension / Abdominal distension / Vertigo / Headache / Nausea / Malaise and hiccups.
Long term side effects	Adrenal cortical atrophy develops during prolonged therapy and may persist for months after stopping treatment.
Additional information	Intramuscular injection should avoid the deltoid area because of the possibility of tissue atrophy. Dose should not be less than 25 mg. IV is the preferred route for adrenal crisis.

## APPENDIX 1 – Medication Formulary

Clinical level:



Medication	Ibuprofen
Class	Non-Steroidal Anti-Inflammatory Drugs (NSAIDs).
Descriptions	It is an anti-inflammatory analgesic.
Presentation	Suspension 100 mg in 5 mL and 200 mg in 5 mL. 200 mg, 400 mg tablets.
Administration	Orally (PO).  ( <b>CPG:</b> 4/5/6.2.6, 4/5/6.7.5).
Indications	Mild to moderate pain.
Contra-Indications	Not suitable for children under 3 months / Patient with history of asthma exacerbated by Aspirin / Pregnancy / Peptic ulcer disease / Known renal failure / Known severe liver failure / Known severe heart failure / Concurrent NSAID use (e.g. Diclofenac, Naproxen) / Known severe adverse reaction.
Usual Dosages	<b>Adult:</b> 400 mg PO (Mild pain). 600 mg PO (Moderate pain).  <b>Paediatric:</b> 10 mg/Kg PO.
Pharmacology / Action	Suppresses prostaglandins, which cause pain via the inhibition of cyclooxygenase (COX). Prostaglandins are released by cell damage and inflammation.
Side effects	Skin rashes / Gastrointestinal intolerance and bleeding.
Long term side effects	Occasional gastrointestinal bleeding and ulceration can occur. May also cause acute renal failure / Interstitial nephritis / NSAID-associated nephropathy.
Additional information	If Ibuprofen administered in previous 6 hours, adjust the dose downward by the amount given by other sources resulting in a maximum of 10 mg/Kg. Caution with significant burns or poor perfusion due to risk of kidney failure. Caution if on oral anticoagulant (e.g. Warfarin, Rivaroxaban, Apixaban, Edoxaban) due to increased bleeding risk. Ibuprofen may be combined with Paracetamol for synergic effect.

## APPENDIX 1 – Medication Formulary

Clinical level:



Medication	<b>Ipratropium Bromide</b>
Class	Anticholinergic.
Descriptions	It is a parasympatholytic bronchodilator that is chemically related to Atropine.
Presentation	Nebuliser Solution 0.25 mg (250 mcg) in 1 mL.
Administration	Nebulised (NEB) mixed with age specific dose of Salbutamol. ( <b>CPG:</b> 4/5/6.3.3, 4/5/6.3.4, 4/5/6.7.12).
Indications	Acute moderate asthma or exacerbation of COPD not responding to initial Salbutamol dose.
Contra-Indications	Known severe adverse reaction.
Usual Dosages	<b>Adult:</b> 0.5 mg (500 mcg) NEB.  <b>Paediatric:</b> < 12 years: 0.25 mg (250 mcg) NEB. ≥ 12 years: 0.5 mg (500 mcg) NEB.
Pharmacology / Action	It blocks muscarinic receptors associated with parasympathetic stimulation of the bronchial air passageways. This results in bronchial dilation and reduced bronchial secretions.
Side effects	Transient dry mouth / Blurred vision / Tachycardia / Headache.

## APPENDIX 1 – Medication Formulary

Clinical Level:



Medication	<b>Methoxyflurane</b>
Class	Volatile anaesthetic agent.
Descriptions	Clear, almost colourless, volatile liquid, with a characteristic fruity odour that becomes a vapour or gas when used with the single use inhaler.
Presentation	3 mL vial with a tear off tamper-evident seal.
Administration	Inhaled (INH) through an activated Carbon Chamber (self-administered). ( <b>CPG:</b> 4/5/6.2.6, 4/5/6.7.5).
Indications	<b>Adult:</b> Moderate to severe pain. <b>Paediatric:</b> Moderate to severe pain.
Contra-Indications	< 5 years old Altered LOC due to head injury, drugs or alcohol. Cardiovascular instability / Respiratory depression. Known severe adverse reaction.
Usual Dosages	<b>Adult:</b> 3 mL (INH) (repeat x 1 only prn). <b>Paediatric:</b> 3 mL (INH) (repeat x 1 only prn).
Pharmacology / Action	Methoxyflurane vapour provides analgesia when inhaled at low concentrations. Methoxyflurane perturbs membrane fluidity and alters the activity of many ion channels and receptors required for cell-cell signalling across gap junctions and which underlie the action potential.
Side effects	Amnesia / Anxiety / Depression / Dizziness / Dysarthria / Dysgeusia / Euphoria / Headache / Sensory neuropathy / Somnolence / Hypotension / Coughing / Dry mouth / Nausea / Feeling drunk / Sweating. <b>Uncommon:</b> Tingling or numbness to hands and feet / Tiredness / Mouth discomfort.
Additional information	Patients with pain due to acute coronary syndrome (ACS) or migraine may not be suitable for Methoxyflurane. Methoxyflurane crosses the placenta. Consider the risk of central nervous system (CNS) and respiratory depression in an already compromised fetus. <b><u>Do not</u></b> use in patients with renal impairment or renal failure. Contains butylated hydroxytoluene (E321) as a stabiliser. Methoxyflurane has a mildly pungent odour. If used in a confined space request the patient to inhale and exhale through the inhaler tube while ensuring that the activated Carbon Chamber is attached.



## APPENDIX 1 – Medication Formulary

Clinical level:



Medication	Midazolam Solution
Class	Benzodiazepine.
Descriptions	It is a potent sedative agent. Clinical experience has shown Midazolam to be 3 to 4 times more potent per mg as Diazepam.
Presentation	<p><b>Ampoule:</b> 10 mg in 2 mL or 10 mg in 5 mL.</p> <p><b>Pre-filled syringe:</b> 2.5 mg in 0.5 mL / 5 mg in 1 mL / 7.5 mg in 1.5 mL / 10 mg in 1 mL / 10 mg in 2 mL.</p> <p><b>Buccal liquid:</b> 50 mg in 5 mL.</p>
Administration	<p>Buccal / IN / IM / IV / IO.</p> <p>Intranasal (IN) (50% in each nostril).</p> <p>(CPG: 5/6.4.23, 4/5/6.4.30, 5/6.7.33, 5/6.8.7).</p>
Indications	Seizures / Combative with hallucinations or paranoia and risk to self or others / Sedation (following medical advice).
Contra-Indications	Shock / Respiratory depression / KSAR / Depressed vital signs or alcohol-related altered level of consciousness.
Usual Dosages	<p><b>Adult:</b></p> <p><b>Seizure:</b> 10 mg buccal, 5 mg IN or 5 mg IM (P/AP). 2.5 mg IV/IO (AP).</p> <p><b>Palliative Care:</b> 2.5 mg SC (AP) Alternatively 2.5 - 5 mg buccal (P/AP) repeat x 1 prn.</p> <p><b>Paediatric:</b></p> <p>Seizure: &lt; 1 year: - 2.5 mg buccal 1 year to &lt; 5 years: - 5 mg buccal 5 years to &lt; 10 years: - 7.5 mg buccal ≥ 10 years: - 10 mg buccal Or 0.2 mg/Kg intranasal (P &amp; AP) or 0.1 mg/Kg IV/IO (AP).</p> <p>Maximum 4 doses of Benzodiazepine for adult and paediatric seizing patients regardless of route.</p> <p><b>Behavioural Emergency:</b> AP - Seek medical advice regarding sedation.</p> <p><b>Adults:</b> 5 mg IN/IM - (repeat x 2 prn) (AP).</p> <p><b>Paediatric:</b> 0.1 mg/Kg IN - (repeat x 2 prn) (AP).</p>
Pharmacology / Action	It affects the activity of a chemical that transmits impulses across nerve synapses called Gamma-AminoButyric Acid (GABA). GABA is an inhibitory neurotransmitter. Midazolam works by increasing the effects of GABA at these receptors.
Side effects	Respiratory depression / Headache / Hypotension / Drowsiness.
Additional information	<p>Midazolam IV should be titrated to effect.</p> <p>Ensure Oxygen and resuscitation equipment are available prior to administration.</p> <p>Practitioners should take into account the dose administered by carers prior to arrival of practitioner.</p> <p>Contraindications, other than KSAR, refer to non-seizing patients.</p> <p>If patient recommences seizing regard it as a new event, administer additional dose then consider medical advice (AP).</p>

## APPENDIX 1 – Medication Formulary

Clinical Level:



Medication	Naloxone
Class	Narcotic antagonist.
Descriptions	Effective in management and reversal of overdoses caused by narcotics or synthetic narcotic agents.
Presentation	Ampoules 0.4 mg in 1 mL (400 mcg /1 mL) or pre-loaded syringe.
Administration	IV / IO / IM / SC / IN.  ( <b>CPG:</b> 5/6.4.7, 4/5.4.22, 6.4.22, 5/6.5.2, 4/5/6.7.11).
Indications	Inadequate respiration and/or ALoC following known or suspected narcotic overdose.
Contra-Indications	Known severe adverse reaction.
Usual Dosages	<p><b>Adult:</b></p> <p>0.4 mg (400 mcg) IV/IO (AP) (repeat after 3 min prn to a Max dose of 2 mg).</p> <p>0.4 mg (400 mcg) IM/SC (P) (repeat after 3 min prn to a Max dose of 2 mg).</p> <p>0.8 mg (800 mcg) IN (EMT) (repeat x 1 after 3 min prn).</p> <p><b>Paediatric:</b></p> <p>0.01 mg/Kg (10 mcg/Kg) IV/IO (AP).</p> <p>0.01 mg/Kg (10 mcg/Kg) IM/SC (P).</p> <p>0.02 mg/Kg (20 mcg/Kg) IN (EMT).</p> <p>(Repeat dose prn to maintain opioid reversal to Max 0.1 mg/Kg or 2 mg).</p>
Pharmacology / Action	<p><b>Narcotic antagonist:</b></p> <p>Reverse the respiratory depression and analgesic effect of narcotics.</p>
Side effects	Acute reversal of narcotic effect ranging from nausea and vomiting to agitation and seizures.
Additional information	<p>Use with caution in pregnancy.</p> <p>Administer with caution to patients who have taken large dose of narcotics or are physically dependent.</p> <p>Rapid reversal will precipitate acute withdrawal syndrome.</p> <p>Prepare to deal with aggressive patients.</p>

## APPENDIX 1 – Medication Formulary

Clinical Level:



Medication	Nitrous Oxide 50% and Oxygen 50% (Entonox®)
Class	Analgesic.
Descriptions	Potent analgesic gas contains a mixture of both Nitrous Oxide and Oxygen.
Presentation	Cylinder, coloured blue with white and blue triangles on cylinder shoulders. <b>Medical gas:</b> 50% Nitrous Oxide & 50% Oxygen.
Administration	Self-administered. Inhalation by demand valve with face-mask or mouthpiece. ( <b>CPG:</b> 4/5/6.2.6, 5/6.5.1, 5/6.5.6, 4/5/6.7.5).
Indications	Moderate to severe pain.
Contra-Indications	Altered level of consciousness / Chest Injury / Pneumothorax / Shock / Recent scuba dive / Decompression sickness / Intestinal obstruction / Inhalation Injury / Carbon monoxide (CO) poisoning / Known severe adverse reaction.
Usual Dosages	<b>Adult:</b> Self-administered until pain tolerable.  <b>Paediatric:</b> Self-administered until pain tolerable.
Pharmacology / Action	<b>Analgesic agent gas:</b> CNS depressant. Pain relief.
Side effects	Disinhibition / Decreased level of consciousness / Light headedness.
Additional information	Do not use if patient unable to understand instructions. In cold temperatures warm cylinder and invert to ensure mix of gases. Advanced Paramedics may use discretion with minor chest injuries. <b>Brand name:</b> Entonox®. Has an addictive property. Caution when using Entonox® for greater than one hour for sickle cell crisis.

## APPENDIX 1 – Medication Formulary

Clinical level:



Medication	Ondansetron
Class	Antiemetic.
Descriptions	Used in management of nausea and vomiting. Potent, highly selective 5 HT3 receptor-antagonist.
Presentation	Ampoule 2 mL (4 mg in 2 mL).
Administration	IM/IV. ( <b>CPG:</b> 5/6.4.26, 4/5/6.7.5).
Indications	Management, prevention and treatment of significant nausea and vomiting.
Contra-Indications	Known severe adverse reaction.
Usual Dosages	<b>Adult:</b> 4 mg slow IV or IM (AP/P).  <b>Paediatric:</b> 0.1 mg/Kg. 0.1 mg/Kg slow IV or IM to a Max of 4 mg (AP).
Pharmacology / Action	Precise mode of action in the control of nausea and vomiting is not known.
Side effects	<b>General:</b> Flushing / Headache / Sensation of warmth/ Injection site reactions (rash, urticaria, itching).  <b>Uncommon:</b> Arrhythmias / Bradycardia / Hiccups / Hypotension / Seizures.
Additional information	Caution in patients with a known history or family history of cardiac conduction intervals (QT prolongation) or if patient has history of arrhythmias or electrolyte imbalance.

## APPENDIX 1 – Medication Formulary

Clinical Level:    

<b>Medication</b>	<b>Oxygen</b>
<b>Class</b>	Gas.
<b>Descriptions</b>	Odourless / Tasteless / Colourless gas necessary for life.
<b>Presentation</b>	<b>Medical gas:</b> D, E or F cylinders, coloured black with white shoulders. <b>CD cylinder:</b> White cylinder.
<b>Administration</b>	<b>Inhalation via:</b> High concentration reservoir (non-rebreather) mask / Simple face mask / Venturi mask / Tracheostomy mask / Nasal cannulae / CPAP device / Bag Valve Mask. <b>(CPG: Oxygen is used extensively throughout the CPGs).</b>
<b>Indications</b>	Absent / Inadequate ventilation following an acute medical or traumatic event. SpO <sub>2</sub> < 94% adults and < 96% paediatrics. SpO <sub>2</sub> < 92% for patients with acute exacerbation of COPD. SpO <sub>2</sub> < 90% for patients with acute onset of Pulmonary Oedema.
<b>Contra-Indications</b>	Bleomycin lung injury.
<b>Usual Dosages</b>	<b>Adult:</b> Cardiac and respiratory arrest or sickle cell crisis; 100%. Life threats identified during primary survey; 100% until a reliable SpO <sub>2</sub> measurement obtained then titrate O <sub>2</sub> to achieve SpO <sub>2</sub> of 94% - 98%. For patients with acute exacerbation of COPD, administer O <sub>2</sub> titrate to achieve SpO <sub>2</sub> 92% or as specified on COPD Oxygen Alert Card. All other acute medical and trauma titrate O <sub>2</sub> to achieve SpO <sub>2</sub> 94% - 98%. <b>Paediatric:</b> Cardiac and respiratory arrest or sickle cell crisis; 100%. Life threats identified during primary survey; 100% until a reliable SpO <sub>2</sub> measurement obtained then titrate O <sub>2</sub> to achieve SpO <sub>2</sub> of 96% - 98%. Neonatal resuscitation (< 4 weeks) consider supplemental O <sub>2</sub> (≤ 30%). All other acute medical and trauma titrate O <sub>2</sub> to achieve SpO <sub>2</sub> of 96% - 98%.
<b>Pharmacology / Action</b>	Oxygenation of tissue/organs.
<b>Side effects</b>	Prolonged use of O <sub>2</sub> with chronic COPD patients may lead to reduction in ventilation stimulus.
<b>Additional information</b>	A written record must be made of what oxygen therapy is given to every patient. Documentation recording oximetry measurements should state whether the patient is breathing air or a specified dose of supplemental Oxygen. Consider humidifier if oxygen therapy for paediatric patients is > 30 minutes duration. Caution with paraquat poisoning, administer Oxygen if SpO <sub>2</sub> < 92%. Avoid naked flames, powerful oxidising agent.

## APPENDIX 1 – Medication Formulary

Clinical Level:



Medication	<b>Oxytocin</b>
<b>Class</b>	Synthetic hormone.
<b>Descriptions</b>	Synthetic Oxytocin 5 international units per mL.
<b>Presentation</b>	5 international units in 1 mL ampoule.
<b>Administration</b>	IM. ( <b>CPG:</b> 4/5/6.5.4).
<b>Indications</b>	Control of post-partum haemorrhage.
<b>Contra-Indications</b>	Severe cardiac dysfunction / Known severe adverse reaction.
<b>Usual Dosages</b>	<b>Adult:</b> 5 international units IM.  <b>Paediatric:</b> Not indicated.
<b>Pharmacology / Action</b>	Causes rhythmic contraction of uterine smooth muscle, thereby constricting uterine blood vessels. It acts rapidly with a latency period of 2 to 4 minutes following IM injection. The oxytocic response lasts for 30 to 60 minutes.
<b>Side effects</b>	Cardiac arrhythmias / Headache / Nausea and vomiting / Hypotension / Abdominal pain / Dizziness.
<b>Additional information</b>	Ensure that a second foetus is not in the uterus prior to administration. Avoid rapid intravenous injection (may transiently reduce blood pressure). Store at 2 – 8°C, shelf life un-refrigerated; 3 months.

## APPENDIX 1 – Medication Formulary

Clinical Level:



Medication	Paracetamol												
Class	Analgesic and antipyretic.												
Descriptions	Paracetamol is used to reduce pain and body temperature.												
Presentation	Rectal suppository 1 g, 500 mg, 250 mg, 180 mg, 125 mg, 80 mg. Suspension 120 mg in 5 mL or 250 mg in 5 mL. 500 mg tablet. Glass vial, 1 g of Paracetamol in 100 mL solution for infusion.												
Administration	Per Rectum (PR). Orally (PO). IV infusion.  ( <b>CPG:</b> 4/5/6.2.6, 4/5/6.4.24, 4/5/6.7.5, 5/6.7.34, 4/5/6.7.35, 5/6.8.7).												
Indications	<b>Adult:</b> Pyrexia - Temperature > 38.3°C / Minor to moderate pain.  <b>Paediatric:</b> Pyrexia - Temperature > 38.5°C / Minor to moderate pain.												
Contra-Indications	< 1 month old / Known severe adverse reaction / Chronic liver disease.												
Usual Dosages	<b>Adult:</b> 1 g PO (EMT, P/AP). 1 g IV infusion (AP), if estimated weight < 50 Kg, 15 mg/Kg.  <b>Palliative Care:</b> 1 g PO (Repeat x 1 prn).  <b>Paediatric:</b> <table><tr><td><b>PO</b> (EMT, P/AP)</td><td><b>PR</b> (AP)</td><td><b>IV Infusion</b> (AP)</td></tr><tr><td>20 mg/Kg PO</td><td>&gt;1 month &lt; 1 year - 90 mg PR</td><td>&lt; 1 year – 7.5 mg/Kg IV</td></tr><tr><td></td><td>1-3 years - 180 mg PR</td><td>≥ 1 year – 15 mg/Kg IV</td></tr><tr><td></td><td>4-8 years - 360 mg PR</td><td></td></tr></table>	<b>PO</b> (EMT, P/AP)	<b>PR</b> (AP)	<b>IV Infusion</b> (AP)	20 mg/Kg PO	>1 month < 1 year - 90 mg PR	< 1 year – 7.5 mg/Kg IV		1-3 years - 180 mg PR	≥ 1 year – 15 mg/Kg IV		4-8 years - 360 mg PR	
<b>PO</b> (EMT, P/AP)	<b>PR</b> (AP)	<b>IV Infusion</b> (AP)											
20 mg/Kg PO	>1 month < 1 year - 90 mg PR	< 1 year – 7.5 mg/Kg IV											
	1-3 years - 180 mg PR	≥ 1 year – 15 mg/Kg IV											
	4-8 years - 360 mg PR												
Pharmacology / Action	Analgesic – central prostaglandin inhibitor. Antipyretic – prevents the hypothalamus from synthesising prostaglandin E, inhibiting the body temperature from rising further.												
Side effects	None.												
Long term side effects	Long term use at high dosage or over dosage can cause liver damage and less frequently renal damage.												
Additional information	<b>Note:</b> Paracetamol is contained in Paracetamol suspension and other over the counter drugs. Consult with parent / guardian in relation to medication administration prior to arrival on scene. For PR use be aware of the modesty of the patient, should be administered in the presence of a 2 <sup>nd</sup> person. If Paracetamol administered in the previous 4 hours, adjust the dose downward by the amount given by other sources resulting in a maximum of 20 mg/Kg.												

## APPENDIX 1 – Medication Formulary

Clinical Level:



Medication	Salbutamol
Class	Sympathetic agonist.
Descriptions	Sympathomimetic that is selective for beta-2 adrenergic receptors.
Presentation	Nebule 2.5 mg in 2.5 mL. Nebule 5 mg in 2.5 mL. <i>Aerosol inhaler:</i> Metered dose 0.1 mg (100 mcg).
Administration	NEB. Inhalation via aerosol inhaler. ( <b>CPG:</b> 4/5/6.3.3, 3.3.4, 4/5/6.3.4, 2/3.4.15, 4/5/6.4.15, 4/5/6.6.10, 4/5/6.7.12, 2/3.7.31, 4/5/6.7.31).
Indications	Bronchospasm / Exacerbation of COPD / Respiratory distress following submersion incident.
Contra-Indications	Known severe adverse reaction.
Usual Dosages	<b>Adult:</b> 5 mg NEB or 0.1 mg metered aerosol spray (repeat aerosol x 11) Repeat at 5 minute intervals prn <b>EFR</b> assist patient with Asthma/ Anaphylaxis. - 0.1 mg metered aerosol spray (repeat aerosol x 11 prn)  <b>Paediatric:</b> < 5 yrs - 2.5 mg NEB or 0.1 mg metered aerosol spray (repeat aerosol x 5). ≥ 5 yrs - 5 mg NEB or 0.1 mg metered aerosol spray (repeat aerosol x 11). (Repeat at 5 minute intervals prn).  <b>EFR:</b> assist patient with Asthma/ Anaphylaxis – < 5 yrs - 0.1 mg metered aerosol spray (repeat aerosol x 5 prn). ≥ 5 yrs - 0.1 mg metered aerosol spray (repeat aerosol x 11 prn).
Pharmacology / Action	Beta-2 agonist / Bronchodilation / Relaxation of smooth muscle.
Side effects	Tachycardia / Tremors / Tachyarrhythmias / High doses may cause Hypokalaemia.
Additional information	It is more efficient to use a volumiser in conjunction with an aerosol inhaler when administering Salbutamol.  If an oxygen driven nebuliser is used to administer Salbutamol for a patient with acute exacerbation of COPD it should be limited to 6 minutes maximum.



## APPENDIX 1 – Medication Formulary

Clinical Level:



<b>Medication</b>	<b>Sodium Chloride 0.9% (NaCl)</b>
<b>Class</b>	Isotonic crystalloid solution.
<b>Descriptions</b>	Solution of Sodium and Chloride, also known as normal saline (NaCl).
<b>Presentation</b>	Soft pack for infusion 100 mL, 500 mL and 1,000 mL. Ampoules 10 mL / pre-filled syringe 10 mL.
<b>Administration</b>	IV infusion / IV flush / IO. <b>Paramedic:</b> maintain infusion once commenced. <b>(CPG: Sodium Chloride 0.9% is used extensively throughout the CPGs).</b>
<b>Indications</b>	IV/IO fluid for pre-hospital emergency care.
<b>Contra-Indications</b>	Known severe adverse reaction.
<b>Usual Dosages</b>	<p><b>Adult:</b> Keep vein open (KVO) or medication flush for cardiac arrest prn.</p> <p><b>Asystole / PEA</b> - Consider fluid challenge 1 L IV/IO (repeat prn).</p> <p><b>Crush injury</b> - 20 mL/Kg IV/IO infusion.</p> <p><b>Suspension Trauma</b> - 2 L IV (Maintain systolic BP &gt; 90 mmHg).</p> <p><b>Hypothermia:</b> 250 mL IV/IO infusion (warmed to 40°C approx.) (Repeat to max 1 L).</p> <p><b># Neck of femur / Sepsis / Symptomatic bradycardia / Tachycardia</b> -Torsades de pointes: 250 mL IV infusion.</p> <p><b>Decompression illness / Sepsis with poor perfusion:</b> 500 mL IV/IO infusion.</p> <p><b>Shock from blood loss:</b> 500 mL IV/IO infusion. Repeat in aliquots of 250 mL IV/IO to maintain SBP of 90-100 mmHg. For associated <b>Head injury</b> with GCS ≤ 8 maintain SBP of 120 mmHg.</p> <p><b>Burns:</b> &gt; 25% TBSA and / or 1 hour from time of injury to ED, 1000 mL IV/IO infusion. &gt; 10% TBSA consider 500 mL IV/IO infusion.</p> <p><b>Adrenal insufficiency / Glycaemic Emergency / Heat Related Emergency / Sickle Cell Crisis:</b> 1,000 mL IV/IO infusion.</p> <p><b>Anaphylaxis and Postpartum Haemorrhage:</b> 1,000 mL IV/IO infusion (repeat x 1 prn).</p> <p><b>Post-resuscitation care:</b> 250 mL IV/IO infusion, if persistent hypotension to maintain SBP &gt; 100 mmHg or MAP &gt; 70 mmHg.</p> <p><b>Paediatric:</b></p> <p><b>Glycaemic Emergency / Neonatal Resuscitation / Sickle Cell Crisis:</b> 10 mL/Kg IV/IO infusion.</p> <p><b>Hypothermia:</b> 10 mL/Kg IV/IO infusion (warmed to 40°C approx.) (repeat x 1 prn).</p> <p><b>Haemorrhagic shock:</b> 10 mL/Kg IV/IO repeat prn if signs of inadequate perfusion.</p> <p><b>Anaphylaxis:</b> 20 mL/Kg IV/IO infusion (repeat x 1 prn).</p> <p><b>Adrenal insufficiency / Crush injury / Septic shock / Suspension Trauma / Symptomatic Bradycardia / Suspension Trauma:</b> 20 mL/Kg IV/IO infusion.</p> <p><b>Asystole / PEA</b> – Consider fluid challenge 20 mL/Kg IV/IO.</p> <p><b>Post-resuscitation care:</b> 20 mL/Kg IV/IO infusion if persistent poor perfusion or &lt; 5<sup>th</sup> percentile SBP.</p> <p><b>Burns:</b> &gt; 10% TBSA and / or &gt; 1 hour from time of injury to ED:</p> <ul style="list-style-type: none"> <li>• <b>5 – 10 years:</b> 250 mL IV/IO /</li> <li>• <b>&gt; 10 years:</b> 500 mL IV/IO.</li> </ul>
<b>Pharmacology / Action</b>	Isotonic crystalloid solution / Fluid replacement.
<b>Side effects</b>	Excessive volume replacement may lead to heart failure.
<b>Additional information</b>	Sodium Chloride 0.9% (NaCl) is the IV/IO fluid of choice for pre-hospital emergency care. For KVO use 500 mL pack only. Medication flush used in adult and paediatric cardiac arrest.

## APPENDIX 1 – Medication Formulary

Clinical level:



Medication	Ticagrelor
<b>Class</b>	Platelet aggregation inhibitor.
<b>Descriptions</b>	An inhibitor of platelet function.
<b>Presentation</b>	90 mg tablets.
<b>Administration</b>	PO. ( <i>CPG</i> : 5/6.4.10).
<b>Indications</b>	Identification of ST elevation myocardial infarction (STEMI) if transporting to PPCI centre.
<b>Contra-Indications</b>	Hypersensitivity to the active substance (Ticagrelor) or to any of the excipients / Active pathological bleeding / History of intracranial haemorrhage / Moderate to severe hepatic impairment.
<b>Usual Dosages</b>	<b>Adult:</b> Loading dose 180 mg PO. <b>Paediatric:</b> Not indicated.
<b>Pharmacology / Action</b>	Ticagrelor is a selective adenosine diphosphate (ADP) receptor antagonist acting on the P2Y <sub>12</sub> ADP-receptor that can prevent ADP-mediated platelet activation and aggregation. Ticagrelor is orally active, and reversibly interacts with the platelet P2Y <sub>12</sub> ADP-receptor. Ticagrelor does not interact with the ADP binding site itself, but interacts with platelet P2Y <sub>12</sub> ADP-receptor to prevent signal transduction.
<b>Side effects</b>	<b>Common:</b> Dyspnoea / Epistaxis / Gastrointestinal haemorrhage / Subcutaneous or dermal bleeding / Bruising and Procedural site haemorrhage. <b>Other undesirable effects include:</b> Intracranial bleeding / Elevations of serum creatinine and uric acid levels. Consult SmPC for a full list of undesirable effects.
<b>Additional information</b>	<b>Special authorisation:</b> Advanced Paramedics and Paramedics are authorised to administer Ticagrelor 180 mg PO following identification of STEMI and medical practitioner instruction. If a patient has been loaded with an anti-platelet medication (other than Aspirin), prior to the arrival of the practitioner, the patient should not have Ticagrelor administered.

## APPENDIX 2 – Medications & Skills Matrix

### New Medications and Skills for 2017

CLINICAL LEVEL	CFR-C	CFR-A	FAR/OFA	EFR	EMT	P	AP
Active Spinal Motion Restriction				✓	✓	✓	✓
Epinephrine (1:1,000) IM					✓		
Chest auscultation					✓		
Wound closure clips					BTEC	✓	✓
Methoxyflurane INH					✓	✓	✓
Chlorphenamine PO IM					✓	✓	✓
Passive Spinal Motion Restriction						✓	✓
Lateral dislocation of patella – reduction						✓	
Cyclizine IM						✓	
Ondansetron IM						✓	
Oxytocin IM						✓	
Management of presenting umbilical cord (finger control)						✓	
Adenosine IV							✓
Chlorphenamine IV							✓
Ceftriaxone IV/IO/IM							✓
Glycopyrronium Bromide SC							✓
Hyoscine Butylbromide SC							✓
Haloperidol SC PO							✓
Paracetamol IV							✓
Ketamine IV							✓

**Care management including the administration of medications as per level of training and division on the PHECC Register and Responder levels.**

Pre-Hospital Responders and Practitioners shall only provide care management including medication administration for which they have received specific training. Practitioners must be privileged by a licensed CPG provider to administer specific medications and perform specific clinical interventions.

#### Key:

- ✓ = Authorised under PHECC CPGs
- URMPIO = Authorised under PHECC CPGs under registered medical practitioner's instructions only
- APO = Authorised under PHECC CPGs to assist practitioners only (when applied to EMT, to assist Paramedic or higher clinical levels)
- ✓SA = Authorised subject to special authorisation as per CPG
- BTEC = Authorised subject to Basic Tactical Emergency Care rules

#### Paramedic authorisation for IV continuation

Practitioners should note that PHECC registered paramedics are authorised to continue an established IV infusion in the absence of an advanced paramedic or doctor during transportation.

## APPENDIX 2 – Medications & Skills Matrix

### MEDICATIONS

CLINICAL LEVEL	CFR-C	CFR-A	FAR/OFA	EFR	EMT	P	AP
Aspirin PO	✓	✓	✓	✓	✓	✓	✓
Oxygen		✓		✓	✓	✓	✓
Glucose gel Buccal				✓	✓	✓	✓
GTN SL				✓ SA	✓	✓	✓
Epinephrine (1:1,000) auto injector				✓ SA	✓	✓	✓
Salbutamol Aerosol				✓ SA	✓	✓	✓
Chlorphenamine PO IM					✓	✓	✓
Epinephrine (1:1,000) IM					✓	✓	✓
Glucagon IM					✓	✓	✓
Ibuprofen PO					✓	✓	✓
Methoxyflurane INH					✓	✓	✓
Naloxone IN					✓	✓	✓
Nitrous Oxide & Oxygen (Entonox®)					✓	✓	✓
Paracetamol PO					✓	✓	✓
Salbutamol nebule					✓	✓	✓
Clopidogrel PO						✓	✓
Cyclizine IM						✓	✓
Hydrocortisone IM						✓	✓
Ipratropium Bromide nebule						✓	✓
Midazolam IM/Buccal/IN						✓	✓
Naloxone IM/SC						✓	✓
Ondansetron IM						✓	✓
Oxytocin IM						✓	✓
Ticagrelor						✓	✓
Sodium Chloride 0.9% IV/IO						✓ SA	✓
Adenosine IV							✓
Amiodarone IV/IO							✓
Atropine IV/IO							✓
Ceftriaxone IV/IO/IM							✓
Chlorphenamine IV							✓
Cyclizine IV							✓
Dextrose 10% IV							✓
Dextrose 5% IV							✓
Diazepam IV/PR							✓
Epinephrine (1:10,000) IV/IO							✓
Fentanyl IN/IV							✓
Furosemide IV/IM							✓
Glycopyrronium Bromide SC							✓
Haloperidol SC PO							✓
Hartmann's Solution IV/IO							✓
Hydrocortisone IV							✓

## APPENDIX 2 – Medications & Skills Matrix

Hyoscine Butylbromide SC							✓
Ketamine IV							✓
Lorazepam PO							✓
Magnesium Sulphate IV							✓
Midazolam IV							✓
Morphine IV/PO/IM							✓
Naloxone IV/IO							✓
Nifedipine PO							✓
Ondansetron IV							✓
Paracetamol IV/PR							✓
Sodium Bicarbonate IV/IO							✓
Tranexamic Acid							✓
Enoxaparin IV/SC							✓ SA
Lidocaine IV							✓ SA
Tenecteplase IV							✓ SA

## AIRWAY & BREATHING MANAGEMENT

CLINICAL LEVEL	CFR-C	CFR-A	FAR/OFA	EFR	EMT	P	AP
FBAO management	✓	✓	✓	✓	✓	✓	✓
Head tilt chin lift	✓	✓	✓	✓	✓	✓	✓
Pocket mask	✓	✓	✓	✓	✓	✓	✓
Recovery position	✓	✓	✓	✓	✓	✓	✓
Non rebreather mask		✓		✓	✓	✓	✓
OPA		✓		✓	✓	✓	✓
Suctioning		✓		✓ SA	✓	✓	✓
Venturi mask		✓		✓	✓	✓	✓
BVM		✓		✓	✓	✓	✓
SpO <sub>2</sub> monitoring				✓	✓	✓	✓
Jaw thrust				✓	✓	✓	✓
Nasal cannula		✓		✓	✓	✓	✓
Oxygen humidification				✓	✓	✓	✓
NPA				BTEC	BTEC	✓	✓
Supraglottic airway adult (uncuffed)		✓			✓	✓	✓
Supraglottic airway adult (cuffed)					✓ SA	✓	✓
CPAP / BiPAP						✓	✓
Non-invasive ventilation device						✓	✓
Peak Expiratory Flow						✓	✓

## APPENDIX 2 – Medications & Skills Matrix

### AIRWAY & BREATHING MANAGEMENT (contd.)

CLINICAL LEVEL	CFR-C	CFR-A	FAR/OFA	EFR	EMT	P	AP
End Tidal CO <sub>2</sub> monitoring						✓	✓
Supraglottic airway paediatric						✓	✓
Endotracheal intubation							✓
Laryngoscopy and Magill forceps							✓
Needle cricothyrotomy							✓
Needle thoracocentesis							✓

### CARDIAC

CLINICAL LEVEL	CFR-C	CFR-A	FAR/OFA	EFR	EMT	P	AP
AED adult & paediatric	✓	✓	✓	✓	✓	✓	✓
CPR adult, child & infant	✓	✓	✓	✓	✓	✓	✓
Recognise death and resuscitation not indicated	✓	✓	✓	✓	✓	✓	✓
Neonate resuscitation					✓	✓	✓
ECG monitoring (lead II)					✓	✓	✓
Mechanical assist CPR device					✓	✓	✓
Cease resuscitation - adult					✓ SA	✓	✓
12 lead ECG						✓	✓
Manual defibrillation						✓	✓
Right sided ECG in ACS						✓	✓

### HAEMORRHAGE CONTROL

CLINICAL LEVEL	CFR-C	CFR-A	FAR/OFA	EFR	EMT	P	AP
Direct pressure			✓	✓	✓	✓	✓
Nose bleed			✓	✓	✓	✓	✓
Haemostatic agent				BTEC	✓	✓	✓
Tourniquet use				BTEC	BTEC	✓	✓
Wound closure clips					BTEC	✓	✓
Nasal pack						✓	✓
Pressure points						✓	✓

## APPENDIX 2 – Medications & Skills Matrix

### MEDICATION ADMINISTRATION

CLINICAL LEVEL	CFR-C	CFR-A	FAR/OFA	EFR	EMT	P	AP
Oral	✓	✓	✓	✓	✓	✓	✓
Buccal route				✓	✓	✓	✓
Per aerosol (inhaler) + spacer				✓SA	✓	✓	✓
Sublingual				✓SA	✓	✓	✓
Intramuscular injection					✓	✓	✓
Intranasal					✓	✓	✓
Per nebuliser					✓	✓	✓
Subcutaneous injection					✓	✓	✓
IV & IO Infusion maintenance						✓	✓
Infusion calculations							✓
Intraosseous injection/infusion							✓
Intravenous injection/infusion							✓
Per rectum							✓

### TRAUMA

CLINICAL LEVEL	CFR-C	CFR-A	FAR/OFA	EFR	EMT	P	AP
Burns care			✓	✓	✓	✓	✓
Application of a sling			✓	✓	✓	✓	✓
Soft tissue injury			✓	✓	✓	✓	✓
Active Spinal Motion Restriction			✓	✓	✓	✓	✓
Hot packs for active rewarming (hypothermia)			✓	✓	✓	✓	✓
Cervical collar application				✓	✓	✓	✓
Helmet stabilisation/removal				✓	✓	✓	✓
Splinting device application to upper limb				✓	✓	✓	✓
Splinting device application to lower limb				✓	✓	✓	✓
Log roll				APO	✓	✓	✓
Move patient with a carrying sheet				APO	✓	✓	✓
Extrication using a long board				✓SA	✓	✓	✓
Rapid Extrication				✓SA	✓	✓	✓
Secure and move a patient with an extrication device				✓SA	✓	✓	✓
Move a patient with a split device (Orthopaedic stretcher)				✓SA	✓	✓	✓
Passive Spinal Motion Restriction						✓	✓

## APPENDIX 2 – Medications & Skills Matrix

### TRAUMA (contd.)

CLINICAL LEVEL	CFR-C	CFR-A	FAR/OFA	EFR	EMT	P	AP
Pelvic Splinting device				BTEC	✓	✓	✓
Move and secure patient into a vacuum mattress				BTEC	✓	✓	✓
Move and secure a patient to a paediatric board					✓	✓	✓
Traction splint application					APO	✓	✓
Lateral dislocation of patella – reduction						✓	✓
Taser gun barb removal						✓	✓

### OTHER

CLINICAL LEVEL	CFR-C	CFR-A	FAR/OFA	EFR	EMT	P	AP
Use of Red Card	✓	✓	✓	✓	✓	✓	✓
Assist in the normal delivery of a baby				APO	✓	✓	✓
De-escalation and breakaway skills					✓	✓	✓
ASHICE radio report					✓	✓	✓
IMIST-AMBO handover					✓	✓	✓
External massage of uterus						✓	✓
Broselow tape						✓	✓
Management of presenting umbilical cord (finger control)						✓	✓
Verification of Death						✓	✓
Intraosseous cannulation							✓
Intravenous cannulation							✓
Urinary catheterisation							✓

### PATIENT ASSESSMENT

CLINICAL LEVEL	CFR-C	CFR-A	FAR/OFA	EFR	EMT	P	AP
Assess responsiveness	✓	✓	✓	✓	✓	✓	✓
Check breathing	✓	✓	✓	✓	✓	✓	✓
FAST assessment	✓	✓	✓	✓	✓	✓	✓
Capillary refill			✓	✓	✓	✓	✓
AVPU			✓	✓	✓	✓	✓
Pulse check			✓	✓	✓	✓	✓
Breathing & pulse rate		✓SA	✓	✓	✓	✓	✓



## APPENDIX 2 – Medications & Skills Matrix

### PATIENT ASSESSMENT (contd.)

CLINICAL LEVEL	CFR-C	CFR-A	FAR/OFA	EFR	EMT	P	AP
Primary survey			✓	✓	✓	✓	✓
SAMPLE history			✓	✓	✓	✓	✓
Secondary survey			✓	✓	✓	✓	✓
CSM assessment				✓	✓	✓	✓
Rule of Nines				✓	✓	✓	✓
Assess pupils				✓	✓	✓	✓
Blood pressure				✓ SA	✓	✓	✓
Capacity evaluation					✓	✓	✓
Chest auscultation					✓	✓	✓
Glucometry					✓	✓	✓
Paediatric Assessment Triangle					✓	✓	✓
Pain assessment					✓	✓	✓
Patient Clinical Status					✓	✓	✓
Temperature °C					✓	✓	✓
Triage sieve					✓	✓	✓
Glasgow Coma Scale (GCS)						✓	✓
Pre-hospital Early Warning Score						✓	✓
Treat and referral						✓	✓
Triage sort						✓	✓

## APPENDIX 3 – Critical Incident Stress Management

### Your Psychological Well-Being

It is extremely important for your psychological well-being that you do not expect to save every critically ill or injured patient that you treat. For a patient who is not in hospital, whether they survive a cardiac arrest or multiple traumas depends on a number of factors including any other medical condition the patient has. Your aim should be to perform your interventions well and to administer the appropriate medications within your scope of practice. However, sometimes you may encounter a situation which is highly stressful for you, giving rise to Critical Incident Stress (CIS). A critical incident is an incident or event which may overwhelm or threaten to overwhelm our normal coping responses. As a result of this we can experience CIS.

#### How do I know when I am adversely affected by a critical incident(s)?

Listed below are some common ways in which people react to incidents like this:

- Feeling of distress
- Feeling of sadness
- Strong feeling of anger
- Feeling of disillusionment
- Feeling of guilt
- Feeling of apprehension/anxiety/fear of:
  - losing control/breaking down or
  - something similar happening again
  - not having done all I think I could have done
- Avoidance of the scene of incident/trauma or of anything that reminds you of it
- Bad dreams or nightmares
- Distressing memories or 'flashbacks' of the incident
- Feeling 'on edge', irritable, angry, under threat/pressure
- Feeling emotionally fragile – unable to experience your normal range of emotions
- Feeling cut off from your family or close friends – "I can't talk to them" or "I don't want to upset them"

#### SOME DOS AND DON'TS

- DO** express your emotions
- DO** talk about what has happened as often as you need to
- DO** find opportunities to review the experience
- DO** discuss what happened with colleagues
- DO** look to friends and colleagues for support
- DO** listen sympathetically if a colleague wants to speak with you, unless it is too distressing
- DO** advise colleagues who need more help where they can get appropriate help
- DO** try to keep your life as normal as possible
- DO** keep to daily routines
- DO** drive more carefully
- DO** be more careful around the home
- DON'T** use alcohol, nicotine or other drugs to hide your feelings
- DON'T** simply stay away from work – seek help and support
- DON'T** allow anger and irritability to mask your feelings
- DON'T** bottle up feelings
- DON'T** be afraid to ask for help
- DON'T** think your feelings are signs of weakness

Everyone may have these feelings. Experience has shown that they may vary in intensity according to circumstance. Nature heals through allowing these feelings to come out. This will not lead to loss of control, but stopping these feelings may lead to other and possibly more complicated problems.

#### WHEN TO FIND HELP

1. If you feel you cannot cope with your reactions or feelings.
2. If your stress reactions do not lessen in the two or three weeks following the event.
3. If you continue to have nightmares and poor sleep.
4. If you have no-one with whom to share your feelings when you want to do so.
5. If your relationships seem to be suffering badly, or sexual problems develop.
6. If you become clumsy or accident prone.
7. If, in order to cope after the event, you smoke, drink or take more medication, or other drugs.
8. If your work performance suffers.
9. If you are tired all the time.
10. If things get on top of you and you feel like giving up.
11. If you take it out on your family.
12. If your health deteriorates.

## APPENDIX 3 – Critical Incident Stress Management

### Experiencing signs of excessive stress?

If the range of physical, emotional and behavioural signs and symptoms already mentioned do not reduce over time (for example after two weeks), it is important that you seek support and help.

#### Where to find help?

Your own licensed CPGs provider will have a CISM support network or system.

We recommend that you contact them for help and advice (i.e. your peer support worker/coordinator/staff support officer).

- For a self-help guide, please go to [www.cismnetworkireland.ie](http://www.cismnetworkireland.ie)
- The NAS CISM and CISM Network published a booklet called 'Critical Incident Stress Management for Emergency Personnel'.

It can be purchased by emailing:

[info@cismnetworkireland.ie](mailto:info@cismnetworkireland.ie)

- Consult your own GP or see a health professional who specialises in traumatic stress.
- The NAS CISM Committee in partnership with PHECC developed an eLearning CISM Stress Awareness Training (SAT) module. It can be accessed by the following personnel:
  - PHECC registered practitioners at all levels
  - National Ambulance Service-linked community first responders
  - NAS non-PHECC registered personnel
- SAT modules in development for CISM Network member organisations.

## APPENDIX 4 – CPG Updates for Paramedics

### New Paramedic CPGs in 2017 Edition

To support upskilling of the 2017 CPGs new CPGs are identified below.

New CPGs	The new skills and medications incorporated into the CPGs are:
CPG 5/6.4.26 Significant Nausea & Vomiting – Adult	This CPG outlines the management of significant nausea and vomiting and authorises paramedics to administer Cyclizine or Ondansetron IM.
CPG 4/5/6.8.6 Team Resuscitation	This CPG outlines the team approach to resuscitation and defines specific roles for team members.
CPG 5/6.8.7 Palliative Care – Adult	This CPG outlines the care of a patient with a known life-limiting illness, who is currently receiving palliative care services under the direction of a GP.
CPG 5/6.8.8 Verification of Death	This CPG outlines the procedure for verification of death following ceasing of resuscitation or recognition of death.

### Deleted Paramedic CPG in 2017 Edition

CPG Deleted	
CPG 5/6.7.52 Spinal Immobilisation – Paediatric	This CPG has been deleted. Both Adult and Paediatric Spinal Injury Management CPGs have been incorporated into one Spinal Injury Management CPG 5/6.6.9.

## APPENDIX 4 – CPG Updates for Paramedics

### Updated Paramedic CPGs from the 2014 version

To support upskilling of the 2017 CPGs, the changes are outlined below.

**Practitioners should also be advised that there are updated care principles in this edition.**

#### Paramedic authorisation for IV infusion continuation

In an attempt to reduce unnecessary content on CPGs, the authorisation for PHECC registered paramedics to continue an established IV infusion in the absence of an advanced paramedic or doctor during transportation, has been specified in the medication formulary and deleted from the CPGs. Similarly, the list of equipment has been deleted from all CPGs.

CPGs	The principal differences are:
CPG 4/5/6.2.6 Pain Management – Adult	<p>The CPG layout has been changed significantly</p> <p><b>Deleted</b></p> <p>‘And/or’ – for Paracetamol and Ibuprofen for moderate pain</p> <p>Scores depicting severe, moderate and mild pain</p> <p><b>Added</b></p> <p>Pathway to nausea &amp; vomiting CPG</p> <p>Management of severe pain classified into 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> line administration of analgesia</p> <p>Methoxyflurane 3 mL INH for moderate pain</p> <p><b>Medication updates</b></p> <p>Ibuprofen for mild pain</p> <p>Ibuprofen dose increased to 600 mg PO for moderate pain in conjunction with Paracetamol 1 g PO</p>
CPG 5/6.3.1 Advanced Airway Management – Adult	<p><b>Deleted</b></p> <p>Information box regarding CPR hands-off time</p>
CPG 4/5/6.3.4 Asthma – Adult	<p><b>Added</b></p> <p>Consider CO<sub>2</sub> monitoring</p> <p>‘Consider PEFR prior to Salbutamol administration’ – advice box</p> <p><b>Medication update</b></p> <p>Salbutamol aerosol 0.1 mg repeat increased from 5 to 11 times</p>
CPG 4/5/6.4.1 Basic Life Support – Adult	<p><b>Deleted</b></p> <p>‘Commence CPR while defibrillator is being prepared only if 2<sup>nd</sup> person available’</p> <p>Chest compression depth: at least 5 cm</p>

## APPENDIX 4 – CPG Updates for Paramedics

CPGs	The principal differences are:
CPG 4/5/6.4.1 Basic Life Support – Adult (Contd.)	<p><b>Added</b></p> <p>‘Commence continuous chest compressions (or CPR) while defibrillator is being prepared’</p> <p>1 practitioner on site = continuous chest compressions</p> <p>2 or more practitioners / responders on site = CPR</p> <p>Chest compression depth: 5 to 6 cm</p> <p>Oxygen therapy de-emphasised during initial resuscitation to minimise chest compression delay</p>
CPG 4/5/6.4.3 VF or pVT – Adult	<p>Renamed from ‘VF or Pulseless VT – Adult’ to ‘VF or pVT – Adult’</p> <p><b>Deleted</b></p> <p>Driving graphic and information box regarding mechanical CPR device</p> <p><b>Added</b></p> <p>Defibrillate – (escalating energy)</p>
CPG 5/6.4.4 Asystole – Adult	<p><b>Deleted</b></p> <p>Information box regarding CPR hands-off time</p> <p>Consider waveform capnography</p>
CPG 4/5/6.4.6 Pulseless Electrical Activity – Adult	<p><b>Deleted</b></p> <p>Driving graphic and information box regarding mechanical CPR device</p> <p>Information box regarding CPR hands-off time</p> <p>Consider waveform capnography</p>
CPG 5/6.4.7 Post-Resuscitation Care – Adult	<p><b>Deleted</b></p> <p>‘Positive pressure ventilations’ mandatory box</p> <p>Titrate O<sub>2</sub> to 94% - 98%</p> <p>Avoid hyperthermia and commence cooling (target 32°C to 34°C)</p> <p><b>Added</b></p> <p>‘Airway’ to first decision box</p> <p>‘Consider advanced airway and positive pressure ventilations’</p> <p>‘ETCO<sub>2</sub>’ added to ECG and SpO<sub>2</sub> monitoring</p> <p>Special instruction box added for STEMI identification, contact Primary PCI facility for direction (follow ACS CPG)</p> <p>‘Avoid warming’</p> <p>Naloxone, for suspected opioid OD</p>
CPG 5/6.4.10 Acute Coronary Syndrome	<p><b>Deleted</b></p> <p>ST elevation in two or more contiguous leads (2 mm in leads V2 and V3, or 1 mm in any other leads) or LBBB with clinical symptoms of AMI</p>

## APPENDIX 4 – CPG Updates for Paramedics

CPGs	The principal differences are:
CPG 5/6.4.10 Acute Coronary Syndrome (Contd.)	<p><b>Added</b></p> <p>ST elevation <math>\geq 1</math> mm in <math>\geq 2</math> adjacent limb leads and/or <math>\geq 2</math> mm in <math>\geq 2</math> adjacent chest leads OR (presumably) new LBBB with clinical symptoms of AMI</p> <p>Assess for right ventricular infarction in suspected inferior MI</p> <p><b>Medication update</b></p> <p>Oxygen therapy has been changed to 'consider oxygen therapy'</p>
CPG 5/6.4.12 Tachycardia – Adult	<p>The algorithm flow through the CPG has been modified extensively</p> <p><b>Deleted</b></p> <p>Symptomatic – decision diamond</p> <p><b>Added</b></p> <p>'non-sinus tachycardia' – new entry point to CPG</p> <p>'Adverse signs' decision diamond (replacing 'symptomatic')</p>
CPG 4/5/6.4.15 Allergic Reaction/Anaphylaxis – Adult	<p><b>Deleted</b></p> <p>'Angio-oedema' from mild allergic signs</p> <p>'No improvement' from re-occurs decision diamond</p> <p>'Asthma' replaced with 'bronchospasm'</p> <p><b>Added</b></p> <p>EMT level – all three practitioner levels now combined</p> <p>'Effective' to pre-arrival Epinephrine decision diamond</p> <p>'improvement poor' into re-occurs decision diamond (replacing 'no improvement')</p> <p>Bradycardia decision diamond</p> <p>'Bronchospasm' replacing 'asthma'</p> <p>'Angio-oedema' to moderate allergic signs</p> <p>'ABC compromise' to severe allergic reaction/anaphylaxis signs and symptoms</p> <p>Epinephrine auto injector (1:1,000) 0.3 mg IM</p> <p><b>New Medications</b></p> <p>Hydrocortisone IM</p> <p>Chlorphenamine PO/IM</p>
CPG 4/5/6.4.19 Glycaemic Emergency – Adult	<p>The algorithm flow through the CPG has been modified</p> <p><b>Added</b></p> <p>EMT level – all three practitioner levels now combined</p> <p>'Conscious/able to swallow' decision diamond for hypoglycaemia</p> <p>Yes - Glucose gel 10 - 20 g buccal, sweetened drink</p> <p>No - Dextrose or Glucagon 1 mg IM</p> <p>'Advise a carbohydrate meal (sandwich)'</p>

## APPENDIX 4 – CPG Updates for Paramedics

CPGs	The principal differences are:
CPG 5/6.4.23 Seizure/Convulsion – Adult	<p><b>Deleted</b> IV access (yes/no) – decision diamond</p> <p><b>Medication updates</b> Benzodiazepine - maximum 4 doses regardless of route Consider medical advice if more than 4 doses indicated</p>
CPG 4/5/6.4.24 Sepsis – Adult	<p><b>Deleted</b> Commence with 100% O<sub>2</sub></p> <p><b>Added</b> 'advise triage nurse if SIRS + infection' 'On immune-suppressant medication' – Could this be severe infection? 'BP monitoring' O<sub>2</sub> titrate to sats &gt; 94% Risk stratifier instruction box Penicillin allergy instruction box Pre-alert ED updated with criteria; severe sepsis, septic shock, meningitis suspected or at risk of neutropenia Indications for antibiotic; severe sepsis, septic shock, meningitis suspected or at risk of neutropenia Signs of shock/poor perfusion updated to include; heart rate &gt; 130, RR &gt; 30, altered mental status and oligo or anuria</p> <p><b>Medication update</b> 38.3°C new temperature for consideration for Paracetamol</p>
CPG 5/6.4.28 Stroke	<p><b>Deleted</b> Notifying ED prior to arrival following negative FAST assessment Oxygen therapy advice box</p> <p><b>Added</b> 'T' in FAST changed to 'time of onset' from 'time to transport'</p>
CPG 4/5.4.29 Mental Health Emergency	<p>The wording of the CPG entry point updated to read; 'abnormal behaviour with a history of psychiatric illness'</p> <p><b>Added</b> Capacity assessment updated to reflect Assisted Decision Making (Capacity) Act 2015 requirements</p>
CPG 4/5/6.4.30 Behavioural Emergency	<p>The algorithm flow through the CPG has been modified extensively</p> <p><b>Deleted</b> 'Saloon of ambulance' to reflect other modes of transport when considering two or more people accompanying the patient</p>



## APPENDIX 4 – CPG Updates for Paramedics

CPGs	The principal differences are:
CPG 4/5/6.4.30 Behavioural Emergency (Contd.)	<p><b>Added</b></p> <p>Capacity assessment updated to reflect Assisted Decision Making (Capacity) Act 2015 requirements</p> <p>Three potential causes of behavioural emergency; mental health, medical or traumatic causation and intoxication or withdrawal</p> <p>Decision diamond for patients 'aggressive/violent and/or risk to self or others and uncooperative with practitioner'</p> <p>For patients who are aggressive/violent and/or risk to self or others and uncooperative with practitioner;</p> <ul style="list-style-type: none"> <li>• ensure practitioner safety (await Garda if any doubt)</li> <li>• request ALS</li> <li>• consider verbal de-escalation</li> <li>• hand-over to Garda care if the patient has capacity and declines care</li> <li>• hand-over to registered medical practitioner/Garda care if the patient has capacity and is ill</li> <li>• consider treating reversible causes with Garda assistance</li> <li>• AP to seek medical advice regarding sedation and document shared decision, if aggression continuing</li> </ul>
CPG 5/6.5.1 Pre-Hospital Emergency Childbirth	<p><b>Deleted</b></p> <p>Gestation period &lt; 28 weeks – decision diamond</p> <p><b>Added</b></p> <p>Gestation period &lt; 32 weeks – decision diamond</p> <p>Preference for skin to skin (when wrapping baby and presenting to mother)</p>
CPG 5/6.5.2 Basic & Advanced Life Support – Neonate (< 4 weeks)	<p><b>Deleted</b></p> <p>Gestation period &lt; 28 weeks – decision diamond</p> <p>Give supplementary O<sub>2</sub></p> <p><b>Added</b></p> <p>Gestation period &lt; 32 weeks – decision diamond</p> <p>Record time of birth</p> <p>Following birth, all elements up to the 'provision of 5 positive pressure ventilations' to be completed within 60 seconds</p> <p>ECG monitor to assess heart rate</p> <p>'Gasping breaths' added to 'apnoeic or HR &lt; 100'</p> <p>'(room air)' - Provide 5 positive pressure ventilations</p> <p>30 second PPV (40 - 60 breaths per minute) - until breathing well, HR &gt; 100</p> <p>Consider supplemental O<sub>2</sub> (≤ 30%)</p> <p>'Monitor heart rate' decision diamond changed from 'assess heart rate'</p> <p>'Pulse oximetry' changed to mandatory from consider</p>

## APPENDIX 4 – CPG Updates for Paramedics

CPGs	The principal differences are:
CPG 4/5/6.5.3 PV Haemorrhage in Pregnancy	<p>Renamed from 'Haemorrhage in Pregnancy Prior to Delivery' to 'PV Haemorrhage in Pregnancy'.</p> <p><b>Deleted</b> 'Query' from entry point</p> <p><b>Added</b> EMT level ECG &amp; SPO<sub>2</sub> monitoring</p>
CPG 4/5/6.5.4 Postpartum Haemorrhage	<p><b>Deleted</b> Go to Shock CPG</p> <p><b>Added</b> EMT level External massage of the uterus</p> <p><b>New Medication</b> Oxytocin 5 international units IM</p>
CPG 4/5/6.5.5 Umbilical Cord Complications	<p><b>Deleted</b> 'Knee chest position' 'Clamp the cord in two places and cut between both clamps'</p> <p><b>Added</b> EMT level 'Head down left lateral position' new terminology replacing 'knee chest position' 'Hold presenting part off the cord using fingers' introduced for paramedic level 'as shoulders are delivered' added to 'Ease the cord from around the neck'</p>
CPG 5/6.5.6 Breech Birth	<p><b>Deleted</b> 'Oxygen therapy' The restriction on paramedic assisting directly with breech birth</p> <p><b>Added</b> 'Consider Oxygen therapy'</p>
CPG 4/5/6.6.3 External Haemorrhage – Adult	<p><b>Added</b> 'Consider wound closure clips for temporary closure if still bleeding' – AP, P &amp; EMT-BTEC level</p>
CPG 4/5/6.6.6 Heat Related Emergency – Adult	<p><b>Deleted</b> 'Exercise related dehydration should be treated with oral fluids (caution with over-hydration with water)'</p>
CPG 4/5/6.6.7 Limb Injury – Adult	<p><b>Deleted</b> 'Consider paramedic'</p>

## APPENDIX 4 – CPG Updates for Paramedics

CPGs	The principal differences are:
CPG 4/5/6.6.7 Limb Injury – Adult (Contd.)	<b>Added</b> ‘Request ALS’ – following mid shaft femur fracture Reduction of isolated lateral dislocation of patella
CPG 5/6.6.8 Actual/Potential Shock from Blood Loss (trauma) – Adult	Renamed from ‘Shock from Blood Loss (trauma) – Adult’ to ‘Actual/Potential Shock from Blood Loss (trauma) – Adult’  <b>Added</b> Second entry route to CPG (mechanism suggestive of significant risk of haemorrhage) ‘Prioritise transport’ - for non-trapped patients ‘Clinical signs of shock’ - decision diamond Clinical pathway for transport of patients where there is no suspected significant internal/external haemorrhage
CPG 5/6.6.9 Spinal Injury Management	Renamed from ‘Spinal Immobilisation – Adult’ to ‘Spinal Injury Management’ incorporating both adult and paediatric patients This CPG has had significant alterations with a change in philosophy from ‘spinal rule out’ to ‘spinal rule in’ <b>Practitioners are referred to Appendix 6 – Spinal Injury Management Recommendations for supporting information</b> <b>Full PHECC policy statement available at <a href="http://www.phecc.ie">www.phecc.ie</a></b>
CPG 4/5/6.7.4 Secondary Survey – Paediatric (≤ 15 years)	<b>Deleted</b> ‘Check for normal patterns of feeding, toilet, sleeping, interaction with guardian’ Head-to-toe examination list  <b>Added</b> Take SAMPLE history Irish Children’s Triage System normal range of vital signs
CPG 4/5/6.7.5 Pain Management – Paediatric (≤ 15 years)	The CPG layout has been changed significantly  <b>Deleted</b> ‘And/or’ - for Paracetamol and Ibuprofen for moderate pain Scores depicting severe, moderate and mild pain  <b>Added</b> ‘Consider medical support’ Pathway to nausea & vomiting CPG Management of severe pain classified into 1 <sup>st</sup> , 2 <sup>nd</sup> and 3 <sup>rd</sup> line administration of analgesia Request ALS if pain management is not resolved Methoxyflurane 3 mL INH for moderate pain (≥ 5 year olds)

## APPENDIX 4 – CPG Updates for Paramedics

CPGs	The principal differences are:
CPG 4/5/6.7.5 Pain Management – Paediatric (≤ 15 years) (Contd.)	<b>Medication updates</b> Ibuprofen 10 mg/Kg PO for mild pain Ibuprofen 10 mg/Kg PO in conjunction with Paracetamol 20 mg/Kg PO for moderate pain
CPG 5.7.10 Advanced Airway Management – Paediatric (≤ 15 years)	<b>Deleted</b> 'Prolonged CPR' – entry point 'Adequate ventilation & oxygenation' – information box 'Minimum interruption of chest compressions' – information box  <b>Added</b> Age profile ≥ 2 years to ≤ 15 years 'Apnoea or special clinical considerations' – entry point 'Maximum two attempts at supraglottic airway insertion' – instruction box
CPG 4/5/6.7.12 Asthma – Paediatric (≤ 15 years)	<b>Added</b> 'Consider PEFR prior to Salbutamol administration' – advice box
CPG 4/5/6.7.13 Stridor – Paediatric (≤ 15 years)	'Humidified O <sub>2</sub> ' and 'Do not distress' moved to earlier in the treatment algorithm  <b>Added</b> 'Request ALS' 'Check temperature and if > 38.5° C - go to Sepsis CPG'
CPG 4/5/6.7.20 Basic Life Support – Paediatric (≤ 15 years)	<b>Deleted</b> 'Minimum interruption of chest compressions' – information box 'Continue CPR while defibrillator is charging' – information box 'Minimal interruptions of chest compressions and maximum hands-off time 10 seconds' – information box  <b>Added</b> 'Chest compression depth of 5 cm for a child and 4 cm for a small child or infant' – information box '4 J/Kg' – Shockable rhythms
CPG 4/5/6.7.22 VF or pVT – Paediatric (≤ 15 years)	Renamed from 'VF or Pulseless VT – Paediatric (≤ 15 years)' to 'VF or pVT – Paediatric (≤ 15 years)'  <b>Deleted</b> 'With CPR ongoing maximum hands-off chest 10 seconds and CPR during charging' – information box 'Transport to ED if no change after 10 minutes resuscitation if no ALS available' Driving graphic 'Mechanical CPR device' – information box

## APPENDIX 4 – CPG Updates for Paramedics

CPGs	The principal differences are:
CPG 4/5/6.7.22 VF or pVT – Paediatric (≤ 15 years) (Contd.)	<p><b>Added</b></p> <p>‘100% Oxygen’</p> <p>‘Transport to ED if no change after 20 minutes resuscitation if no ALS available’</p> <p>Paramedic flag for advanced airway management</p>
CPG 4/5/6.7.23 Asystole/PEA – Paediatric (≤ 15 years)	<p><b>Deleted</b></p> <p>‘With CPR ongoing maximum hands-off chest 10 seconds and CPR during charging - information box’</p> <p>‘Transport to ED if no change after 10 minutes resuscitation if no ALS available’</p> <p>Driving graphic</p> <p>‘Mechanical CPR device - information box’</p> <p><b>Added</b></p> <p>‘100% Oxygen’</p> <p>‘Transport to ED if no change after 20 minutes resuscitation if no ALS available’</p> <p>Paramedic flag for advanced airway management</p>
CPG 5/6.7.25 Post-Resuscitation Care – Paediatric (≤ 15 years)	<p><b>Deleted</b></p> <p>‘Commence active cooling’</p> <p><b>Added</b></p> <p>‘Prevent warming’</p> <p>12 Lead ECG</p> <p>‘Consider ETCO<sub>2</sub> monitoring’</p>
CPG 4/5/6.7.31 Allergic Reaction/Anaphylaxis – Paediatric (≤ 15 years)	<p><b>Deleted</b></p> <p>‘Angio-oedema’ from mild allergic signs</p> <p>‘No improvement’ from re-occurs decision diamond</p> <p>‘Asthma’ replaced by ‘bronchospasm’</p> <p><b>Added</b></p> <p>EMT level – all three practitioner levels now combined</p> <p>‘Effective’ to pre-arrival Epinephrine decision diamond</p> <p>‘Poor improvement’ into re-occurs decision diamond (replacing ‘no improvement’)</p> <p>Bradycardia - decision diamond</p> <p>‘Bronchospasm’ replacing ‘asthma’</p> <p>‘Angio-oedema’ to moderate allergic signs</p> <p>‘ABC compromise’ to severe allergic reaction/anaphylaxis signs and symptoms</p> <p>Epinephrine auto injector (1:1,000) (age specific dose) IM</p> <p><b>New Medications</b></p> <p>Hydrocortisone (age specific dose) IM</p> <p>Chlorphenamine PO/IM</p>

## APPENDIX 4 – CPG Updates for Paramedics

CPGs	The principal differences are:
CPG 4/5/6.7.32 Glycaemic Emergency – Paediatric (≤ 15 years)	<p>The algorithm flow through the CPG has been modified</p> <p><b>Deleted</b> IV access – decision diamond</p> <p><b>Added</b> EMT level – all three practitioner levels now combined 'Conscious/able to swallow' decision diamond for hypoglycaemia Yes - Glucose gel (age specific dose) buccal, sweetened drink No - Dextrose 5 mL/Kg IV or Glucagon (age specific dose) IM 'Advise a carbohydrate meal (sandwich)'</p>
CPG 4/5/6.7.33 Seizure/Convulsion – Paediatric (≤ 15 years)	<p><b>Deleted</b> IV access (yes/no) – decision diamond</p> <p><b>Medication updates</b> Benzodiazepine - maximum 4 doses regardless of route Consider medical advice if more than 4 doses indicated</p>
CPG 5/6.7.34 Septic Shock – Paediatric (≤ 15 years)	<p><b>Deleted</b> Benzylpenicillin Commence with 100% O<sub>2</sub></p> <p><b>Added</b> 'advise triage nurse if SIRS + infection' 'On immune-suppressant medication' – Could this be severe infection? 'BP monitoring' O<sub>2</sub> titrate to sats &gt; 95% Penicillin allergy instruction box Pre-alert ED updated with criteria; severe sepsis, septic shock, meningitis suspected or at risk of neutropenia Indications for antibiotic; severe sepsis, septic shock, meningitis suspected or at risk of neutropenia</p> <p><b>Medication update</b> 38.5°C new temperature for consideration for Paracetamol</p> <p><b>New Medication</b> Paracetamol (age specific dose) PO</p>
CPG 4/5/6.7.35 Pyrexia – Paediatric	<p><b>Deleted</b> Temperature ≥ 38°C – decision diamond</p> <p><b>Added</b> Temperature &gt; 38.5°C – decision diamond</p>

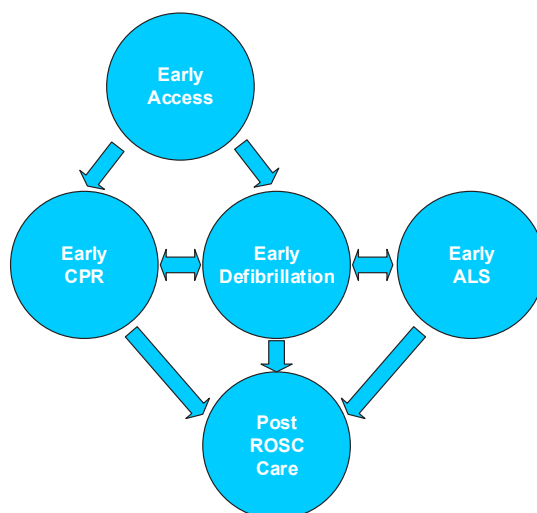
## APPENDIX 4 – CPG Updates for Paramedics

CPGs	The principal differences are:
CPG 4/5/6.7.50 External Haemorrhage – Paediatric (≤ 15 years)	<b>Added</b>  'Consider wound closure clips for temporary closure if still bleeding' – AP, P & EMT-BTEC level

## APPENDIX 5 – Pre-Hospital Defibrillation Position Paper

Defibrillation is a lifesaving intervention for victims of sudden cardiac arrest (SCA). Defibrillation in isolation is unlikely to reverse SCA unless it is integrated into the chain of survival. The chain of survival should not be regarded as a linear process with each link as a separate entity but once commenced with 'early access' the other links, other than 'post-return of spontaneous circulation (ROSC) care', should be operated in parallel subject to the number of people and clinical skills available.

### Cardiac arrest management process



ILCOR guidelines 2015 identified that without ongoing CPR, survival with good neurological function from SCA is highly unlikely. Defibrillators in AED mode can take up to 30 seconds between analysing and charging during which time no CPR is typically being performed. The position below is outlined to ensure maximum resuscitation efficiency and safety.

### Position

#### 1. Defibrillation mode

- 1.1 Paramedics, advanced paramedics, and health care professionals whose scope of practice permits, should use defibrillators in manual mode for all age groups.
- 1.2 EMTs and responders shall use defibrillators in AED mode for all age groups.

#### 2. Hands-off time (time when chest compressions are stopped)

- 2.1 Minimise hands-off time, absolute maximum 10 seconds.
- 2.2 Rhythm and/or pulse checks in manual mode should take no more than 5 to 10 seconds and CPR should be recommenced immediately.
- 2.3 When defibrillators are charging CPR should be ongoing and only stopped for the time it takes to press the defibrillation button and recommenced immediately without reference to rhythm or pulse checks.
- 2.4 It is necessary to stop CPR to enable some AEDs to analyse the rhythm. Unfortunately this time frame is not standard with all AEDs. As soon as the analysing phase is completed and the charging phase has begun CPR should be recommenced.



## APPENDIX 5 – Pre-Hospital Defibrillation Position Paper

### 3. Energy

- 3.1 Biphasic defibrillation is the method of choice.
- 3.2 Biphasic truncated exponential (BTE) waveform energy commencing at 150 to 360 joules shall be used.
- 3.3 If unsuccessful, the energy on second and subsequent shocks shall be as per manufacturer of defibrillator instructions.
- 3.4 Monophasic defibrillators currently in use, although not as effective as biphasic defibrillators, may continue to be used until they reach the end of their lifespan.

### 4. Safety

- 4.1 For the short number of seconds while a patient is being defibrillated, no person should be in contact with the patient.
- 4.2 The person pressing the defibrillation button is responsible for defibrillation safety.
- 4.3 Defibrillation pads should be used as opposed to defibrillation paddles for pre-hospital defibrillation.

### 5. Defibrillation pad placement

- 5.1 The right defibrillation pad should be placed mid-clavicular directly under the right clavicle.
- 5.2 The left defibrillation pad should be placed mid-axillary with the top border directly under the left nipple. If the defibrillation pads are oblong the pad should be placed in the horizontal line of the body.
- 5.3 If a pacemaker or Implantable Cardioverter Defibrillator (ICD) is fitted, defibrillator pads should be placed at least 8 cm away from these devices. This may result in anterior and posterior pad placement which is acceptable.

### 6. Paediatric defibrillation

- 6.1 Paediatric defibrillation refers to patients less than 8 years of age.
- 6.2 Manual defibrillator energy shall commence and continue with 4 joules/Kg.
- 6.3 AEDs should use paediatric energy attenuator systems.
- 6.4 If a paediatric energy attenuator system is not available, an adult AED may be used.
- 6.5 It is extremely unlikely to ever have to defibrillate a child less than 1-year-old. Nevertheless, if this were to occur the approach would be the same as for a child over the age of 1. The only likely difference being, the need to place the defibrillation pads anterior and posterior, because of the infant's small size.

### 7. Implantable Cardioverter Defibrillator (ICD)

- 7.1 If an Implantable Cardioverter Defibrillator (ICD) is fitted in the patient, treat as per CPG. It is safe to touch a patient with an ICD fitted even if it is firing.

### 8. Cardioversion

- 8.1 Advanced Paramedics are authorised to use synchronised cardioversion for unresponsive patients with a tachyarrhythmia greater than 150.
- 8.2 For narrow complexes commence cardioversion at 50 joules.
- 8.3 For wide complexes commence cardioversion at 100 joules.
- 8.4 If unsuccessful with cardioversion escalate energy by 50 joules.

## APPENDIX 6 – Spinal Injury Management Recommendations

### Pre-Hospital Spinal Injury Management – PHECC standard

#### Introduction

The Pre-Hospital Emergency Care Council (PHECC) has a unique position internationally in pre-hospital emergency care as it sets not only practitioner standards but also responder standards. A seminar was hosted by PHECC in 2015 at which international and national speakers gave their perspective on pre-hospital spinal injury management. The Centre for Prehospital Research (C.P.R.) at the University of Limerick (UL) was tasked to complete a systematic literature review on pre-hospital spinal injury management, the results of which were presented at the seminar. The seminar was followed by surveys of PHECC Facilitators, Tutors, Assistant Tutors, Consultants in Emergency Medicine and Chief Fire Officers on pre-hospital spinal injury management. The information collated helped to inform the Medical Advisory Committee in making the recommendations on pre-hospital spinal injury management to Council.

The recommendations set out in this Appendix are for Paramedics and Advanced Paramedics. The full details are published in STN024 and are available on the PHECC website [www.phecc.ie](http://www.phecc.ie)

#### Recommendations

##### Practitioners at Paramedic and Advanced Paramedic level

##### Recommendation 1

Change terminology from 'spinal immobilisation' to 'spinal motion restriction' when referring to the management of pre-hospital spinal injuries.

The aim of this recommendation is to instigate a change of culture and allow practitioners to consider alternative methods of patient extrication and packaging.

##### Recommendation 2

**Following trauma should any of the following factors be present:**

- dangerous mechanism of injury
- fall from a height of greater than 1 metre or 5 steps
- axial load to the head or base of the spine – for example diving, high-speed motor vehicle collision, rollover motor accident, ejection from a motor vehicle, accident involving motorised recreational vehicle, bicycle collision, horse riding accident, pedestrian v vehicle
- impaired awareness (alcohol/drug intoxication, confused/uncooperative or ALoC)
- age 65 years or older, with any of the above
- age 2 years or younger, incapable of verbal communication, with any of the above the patient should be regarded as 'high risk' and have active spinal motion restriction applied until assessment is complete

There are two aims to this recommendation: the first is to ensure that 'high risk' patients minimise movement until a detailed assessment occurs: the second allows an informed decision about the most appropriate method of patient extrication and packaging, even though the patient has initially presented as 'high risk'.

## APPENDIX 6 – Spinal Injury Management Recommendations

### Recommendation 3

**Following trauma, if no 'high risk' factors are present, and where any two or more of the following factors are present:**

- involved in a minor rear-end motor vehicle collision
- comfortable in a sitting position
- ambulatory at any time since the injury
- no midline cervical spine tenderness
- no spinal column/midline pain

**and are able to actively rotate their neck 45 degrees to the left and right, the patient should be regarded as 'low risk' and have passive spinal motion restriction applied until assessment is complete**

The aim of this recommendation is to ensure that practitioners are confident to permit 'low risk' patients to self-splint or have passive support until a detailed assessment enables an informed decision in relation to the most appropriate method of patient extrication and packaging.

### Recommendation 4

**Following a trauma assessment, should a patient present with any of the following 'spinal injury rule in' considerations:**

- any significant distracting injuries
- impaired awareness (alcohol/drug intoxication, confused/uncooperative or ALoC)
- immediate onset of spinal/midline back pain
- hand or foot weakness (motor issue)
- altered or absent sensation in the hands or feet (sensory issue)
- priapism
- history of spinal problems, including previous spinal surgery or conditions that predispose to instability of the spine
- unable to actively rotate their neck 45 degrees to the left and right (P & AP only)

**or an appropriate assessment cannot be completed, a 'spinal injury rule in' shall apply.**

**Active spinal motion restriction shall thereafter be implemented until arrival at ED.**

The aims of recommendation 4 are to identify the 'spinal injury rule in' considerations for active spinal motion restriction and to increase awareness that appropriate patient assessment may not be feasible in all circumstances when making the decision on spinal motion restriction.

### Recommendation 5

**Uncooperative patients shall not be forced into active spinal motion restriction as this is a greater risk to the patient.**

The aim of recommendation 5 is to ensure that additional unnecessary motion is not applied to a potentially unstable injury through forced spinal motion restriction.

## APPENDIX 6 – Spinal Injury Management Recommendations

### Recommendation 6

**There is no requirement to carry out or maintain active or passive spinal motion restriction following trauma if patients:**

- are deemed to have minimal risk factors
- do not present with any of the 'spinal injury rule in' considerations
- are pain free and are able to actively rotate their neck 45 degrees left and right

The aim of recommendation 6 is to enable practitioners be confident to exclude a potential spinal injury for patients with 'minimal risk' and without 'spinal injury rule in' considerations.

### Recommendation 7

**If a decision is made, after the primary survey is complete and significant injuries stabilised, to continue active spinal motion restriction, a rigid cervical collar may be considered at this point prior to lifting/moving the patient.**

The aim of recommendation 7 is to ensure that 'high risk' patients and 'low risk' patients with 'spinal injury rule in' considerations present have minimised cervical spine movement during initial assessment and that cervical collar application is a secondary process.

### Recommendation 8

**If mechanism of injury suggests a possible isolated lumbar or thoracic injury without cervical injury involved, cervical motion restriction is not indicated.**

The aim of recommendation 8 is to remove the requirement for practitioners to apply cervical motion restriction for isolated thoracic or lumbar trauma.

### Recommendation 9

**Patients with 'high' or 'low risk' factors and in the absence of 'spinal injury rule in' considerations may be requested to self-extricate from a vehicle and be instructed to lie down on a trolley stretcher in a position of comfort.**

**For patients not meeting these criteria, use active spinal motion restriction practice for extrication.**

The aim of recommendation 9 is to permit practitioners to implement self-extrication techniques for 'high risk' and 'low risk' patients who present without 'spinal injury rule in' considerations.

### Recommendation 10

**If a patient with a suspected spinal injury is ambulatory following trauma, request the patient lies down on the trolley stretcher if he/she is able to do so. If unable to comply, consider alternative methods.**

The aim of recommendation 10 is to remove 'standing take down' as the standard of care for ambulatory patients.

## APPENDIX 6 – Spinal Injury Management Recommendations

### Recommendation 11

Supine patients with suspected spinal injuries, where active spinal motion restriction is being continued, should be lifted with a split device in preference to a log roll.

The aim of recommendation 11 is to minimise unnecessary patient movement, particularly on multisystem trauma/pelvic injury patients to avoid clot disruption, for packaging.

### Recommendation 12

A long board is primarily an extrication device and should be used primarily for this purpose.

The aim of recommendation 12 is to minimise secondary injury and discomfort for patients by strongly discouraging the practice of transport on long board.

### Recommendation 13

The preferred mode for the transport of a patient with active spinal motion restriction is on a vacuum mattress. It is acknowledged that other devices may be utilised.

The aim of recommendation 13 is, following international evidence, to promote the use of vacuum mattress as the preferred option for transport of patients with query spinal injury.

### Recommendation 14

Patients presenting with penetrating trauma and without neurological signs should not have spinal motion restriction applied. Rapid transport to ED is essential to reduce mortality.

The aim of recommendation 14 is to minimise on-scene times for treatment and packaging of penetrating trauma patients.

### Recommendation 15

For patients with non-standard spinal anatomy e.g. ankylosing spondylitis, permit them to find a position where they are comfortable with manual spinal motion restriction. Non-standard methods such as rolled blankets may be utilised to accomplish spinal motion restriction.

The aim of recommendation 15 is to enable practitioners to use their judgement to package the patient appropriately for the patient's individual needs and particularly to reduce the incidence of inappropriate use of rigid cervical collars and other spinal injury devices on patients with non-standard spinal anatomy.

### Recommendation 16

When possible, the highest PHECC registered practitioner level on-scene will determine if spinal motion restriction is to be used or discontinued i.e. cease active spinal motion restriction.

The aim of recommendation 16 is to enable practitioners to use their clinical judgement to discontinue active spinal motion restriction initiated by another practitioner or responder.

## APPENDIX 6 – Spinal Injury Management Recommendations

### Recommendation 17

Paediatric patients following trauma should be assessed for spinal injury using the 'spinal injury rule in' considerations.

The aim of recommendation 17 is to enable the practitioner to assess and package the paediatric trauma patient using the adult criteria for spinal motion restriction. However, clinical judgement should err on the side of caution due to difficulties with assessment of paediatric trauma.

### Recommendation 18

The preferred mode for the transport of a paediatric patient with active spinal motion restriction is on a vacuum mattress or appropriately sized vacuum device. It is acknowledged that other options may be used.

Non-standard methods such as rolled blankets may be utilised to accomplish spinal motion restriction.

The aim of recommendation 18 is to enable vacuum mattress to be used as the primary option for spinal motion restriction for paediatric patients.

### Recommendation 19

Uncooperative paediatric patients shall not be forced into active spinal motion restriction as this is a greater risk to the patient.

The aim of recommendation 19 is to ensure that distressed or uncooperative paediatric patients are supported in a position of comfort and not have forced active spinal motion restriction applied.

### Recommendation 20

Very young conscious paediatric patients with suspected spinal injury may have spinal motion restriction applied using the child's own car seat if it is intact following a collision, however they should not be forced into this position.

The aim of recommendation 20 is to enable undamaged child car seats to be used for spinal motion restriction for appropriately aged paediatric patients.

Paramedic and Advanced Paramedic level	Mechanism of injury	
	High Risk	Low Risk
'Spinal injury rule in' considerations	Active SMR	Active SMR
No 'spinal injury rule in' considerations	Passive SMR	Passive SMR



# PARAMEDIC

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