PACING

ENSURE A VALID INDICATION

- symptomatic bradycardia

CONSIDER ISOPRENALINE INFUSION

ADEQUATE SEDATION IF CONSCIOUS

SWITCH ON DEFIBRILLATOR

PLACE EXTERNAL PADS

AP OVER L STERNUM AND L SPINE

PACING MODE

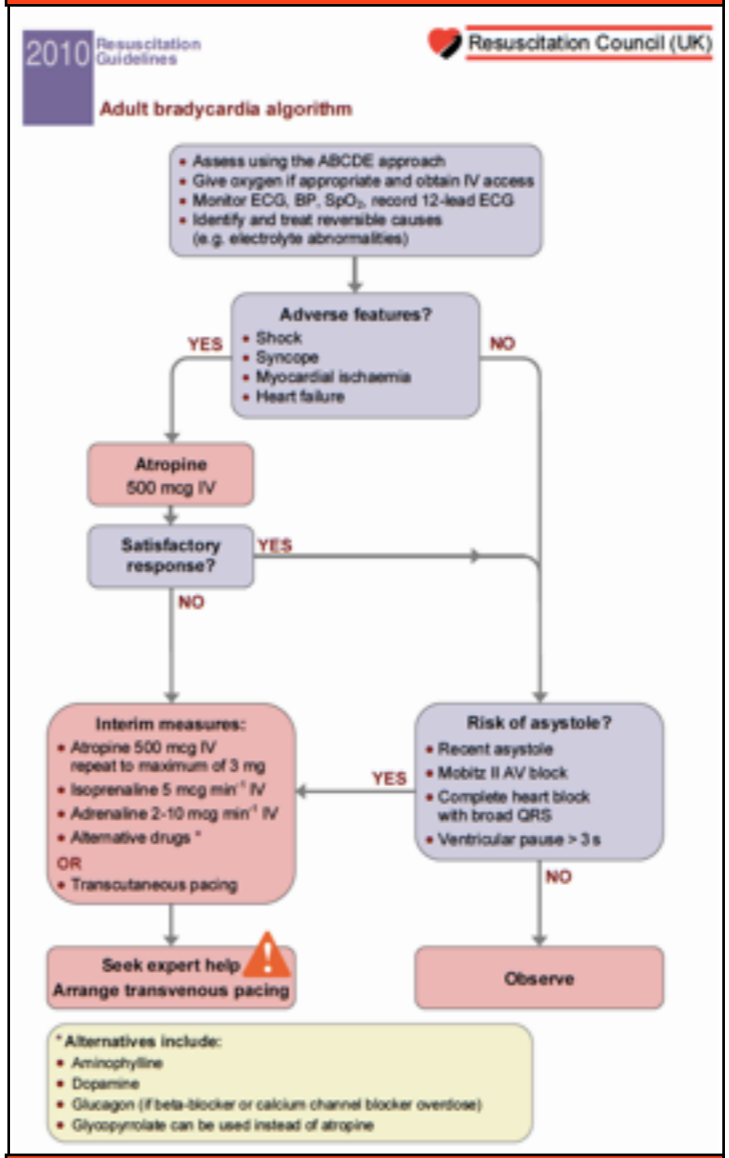
START AT 60 mAs
RATE OF 80 bpm
SET AT >10% ABOVE CAPTURE mAs

Consider alternatives & adjuncts

eg: Isoprenaline Infusion
Glucagon in beta-blocker OD

SEEK EXPERT HELP

BRADYCARDIA



See over for PACING

TACHYCARDIA

MEDICATIONS

See expert help if uncertain

AMIODARONE 300 mg IV over 10-20 mins
then infusion of 900 mg over 24 hrs

Syringe Driver - Amiodarone 600mg / 50ml (12 mg/ml)			
Use amiodarone 300 mg in 3 ml ampules Dilute 600 mg (4 x 3 ml = 12 ml) up to 50 ml with 5% Dextrose NOT NORMAL SALINE In an emergency can give 150-300 mg over 1-2 minutes, otherwise commence with a loading dose of 5 mg/kg over 20 minutes Then follow with an infusion of 0.4-0.7 mg/kg/hr over 24 hrs			
50 ml syringe	70kg ADULT	DOSE RANGE	RATE OF INFUSION (Syringe Driver)
	Loading Dose	350 mg (29 ml)	87 ml/hr for 20 mins only
	Maintenance	28 - 50 mg/ hr	2.3 - 4.2 ml/hr

ADENOSINE : 6 mg - 12 mg - 18 mg via fast IV'

METOPROLOL : 5mg aliquots IV

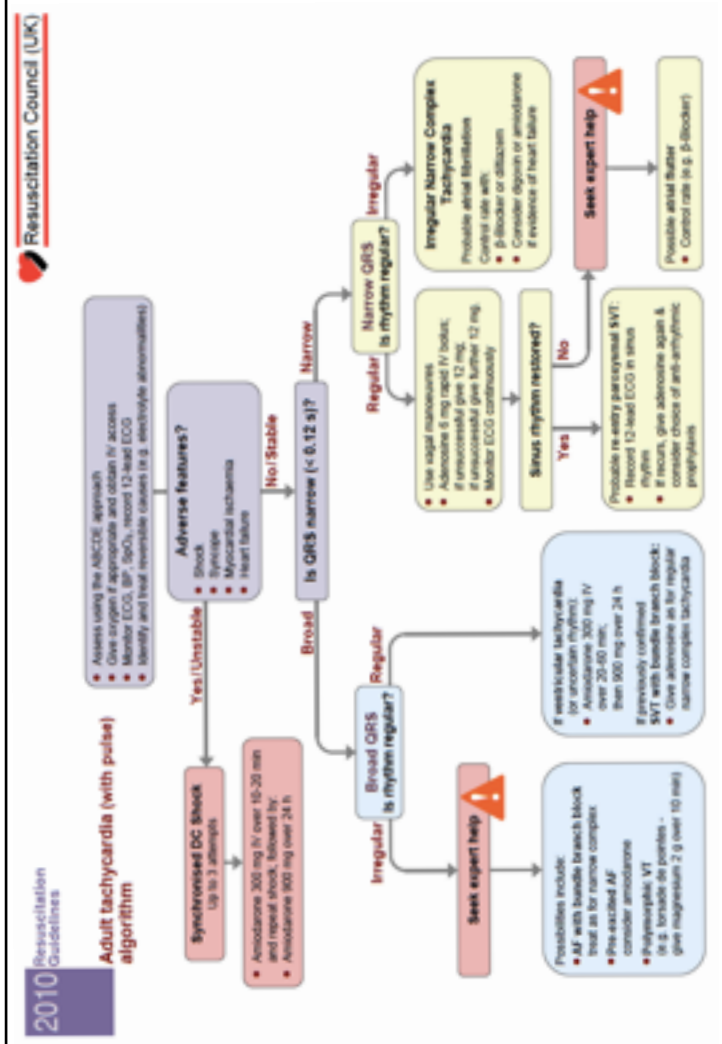
ESMOLOL : at a dose of 0.5mg/kg
100mg/ml dilute in 10ml = 10mg/ml
100kg = 50mg = 5ml

DIGOXIN : load 125mcg - 500mcg as appropriate

DILTIAZEM : 0.25 mg/kg IV for SVT

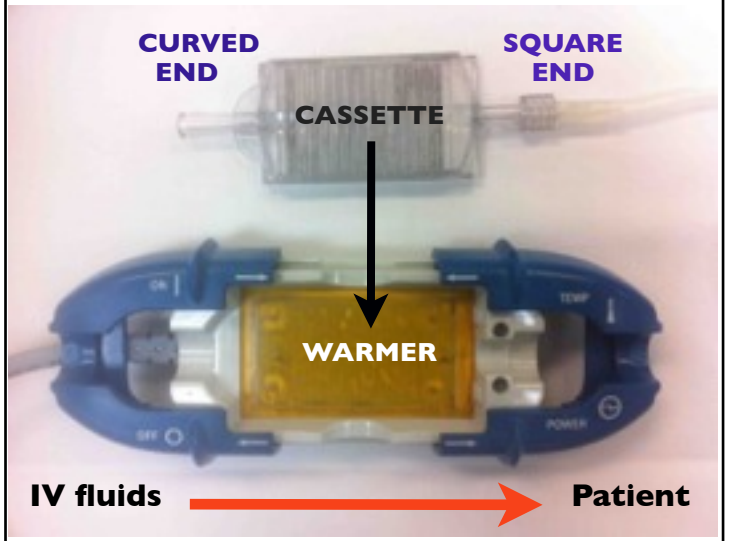
MAGNESIUM : 2g over 20 mins

TACHYCARDIA



see over for meds

EnFlo Fluid Warmer



Attach **POWER PACK** to **IV POLE**

Plug in to **MAINS ELECTRICITY**

Connect **WARMER** to the **POWER PACK**

Connect **IV CASSETTE** to **FLUIDS (upstream)** &
run a short IV extension to **PATIENT (downstream)**

Place **IV CASSETTE** into **WARMER**
- the square end is to patient

TURN ON at **POWER PACK**
Can run wide open or control via pump set

Make sure the WARMER and CASSETTE are not touching patient and are always visible - they can cause burns!

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START in VC-CMV

Can set the following as default for typical **adult** when **OFF**

Set **TIDAL VOLUME** (typically **5-7 ml/kg**)
Set **RESPIRATORY RATE** eg: **12**
Set **Pmax** eg : **50 cmH2O**
Set **FiO2** (air/O2 mix ~ 40% or **100% O2**)

Will start in **VC-CMV mode** (check is selected)

Select **TRIGGER MODE** - typically OFF for paralysed patient. If patient can make some resp effort, select a trigger value of 3-15 l/min to enable VC-AC mode

Select **PEEP VALUE 5-10 cm H2O** (default 5 cm H2O)
Select **I:E ratio** (range 1:4 to 3:1)
Select **Tplat**

Once ventilating, re-assess Pmax (Paw window) and reduce Pmax value as appropriate, as well as TV and RR etc

Adjust **ALARM parameters** as appropriate (inc. RESET)

IF PATIENT IS ABLE TO BREATH, ALBEIT IRREGULARLY, SWITCH TO VC-SIMV MODE

(SEE OVER for VC-SIMV)

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VC-SIMV

For patients with inadequate spontaneous breathing, or for patients who are to be weaned gradually. Fixed mandatory minute volume MV is set with tidal volume VT and ventilation respiratory rate RR. The patient can breathe spontaneously between the mandatory ventilation strokes and thus contribute to the total minute volume. Spontaneous breathing can be assisted with PS.

Set the ventilation pattern with the controls below the display:

- Tidal volume VT.
- Respiratory Rate RR.
- Maximum airway pressure Pmax.
- O2 setting FiO2.
- Inspiration time Ti.
- Plateau time Tplat %, in % of the inspiration time.
- Positive end expiratory pressure PEEP
- Sensitivity Trigger.

Pressure support (optional)

The following can also be set on the display for VC-SIMV / PS:

- Setting on page 1: Pressure support ΔPsupp above PEEP.

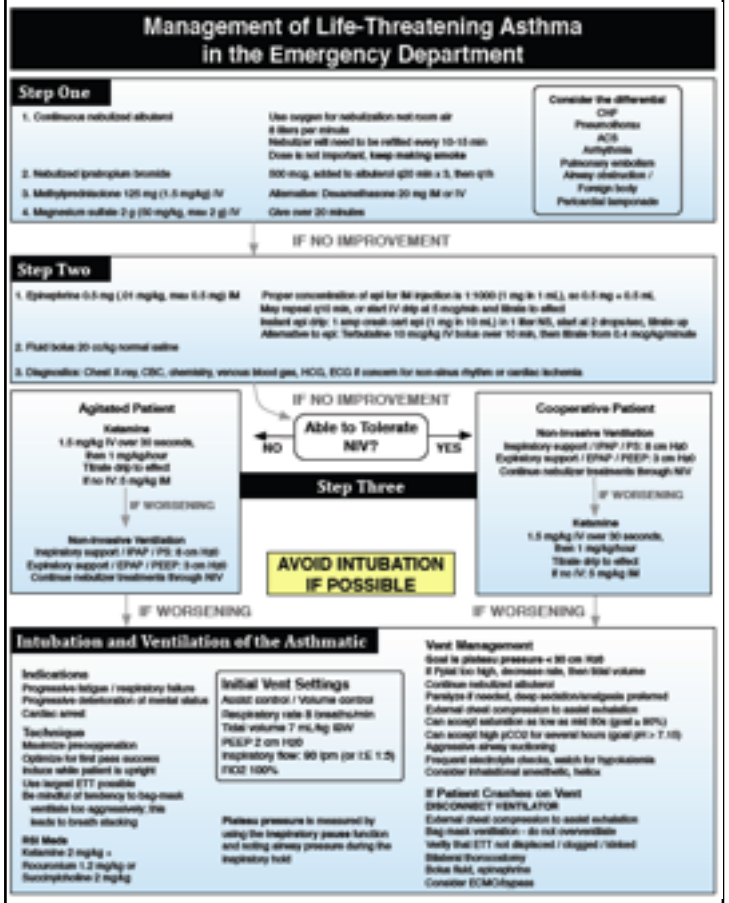
- Setting on page 2: Pressure rise time slope

flat ramp	=	long pressure rise time
medium ramp	=	medium pressure rise time
steep ramp	=	short pressure rise time.

Transfer ABCs

A - Airway	Intubated on arrival for GCS 5 (M3V1E1) - RSI - grade I view. Airway now patent, protected with size 8.5 ETT tube 22cm teeth and tied. Cervical collar in situ.
B - Breathing	Paralysed with vecuronium and on volume control TV 600 RR 12 R sided HTX and a 34 Fr intercostal catheter in place, drained 400ml blood. SpO2 now 96%
C - Circulation	Haemodynamically stable after 750ml crystalloid titrated to radial pulse in 250ml aliquots (permissive hypotension). HR 90 BP 74/50 Bleeding likely from HTX, abdomen and pelvis.
D - Disability/ Drugs	M3V1E1 PEARLA initially, now M1VTE1 on propofol/vecuronium infusion.
E - Exposure	R HTX drained as above. Abdomen tense and tender in LUQ, suspect splenic injury. No other injuries on log roll, pelvic binder applied. Warm blankets and Bair hugger
F - Fluids	3 x 250ml crystalloid aliquots titrated to radial pulse (SBP 70) IDC in situ and drained 300ml clear urine
G - Gut	Last ate 7pm. NG passed and on free drainage.
H - Haem	Hb 114 on iStat, INR 1.0 No ACoTS.
I - Infusions	Not needed vasopressors On propofol and vecuronium infusions for transport
J - JVP	Not elevated - no signs tPTX/tamponade.
K - Kelvin	Temp is 36 degrees with active warming
L - Lines	14G IV R wrist 8Fr rapid infuser L ACF
M - Micro	Has been given ADT
N - Notes/ NOK	His notes are in this envelope, including copies of plain X-rays NOK are aware and here are their contact details.

ASTHMA in ED



IF YOU HAVE TO INTUBATE

Maximise preoxygenation - Optimise first pass success
Largest ETT possible - Beware breath stacking
Ketamine 2mg/kg IV
Rocuronium 1.2 mg/kg or Sux 2mg/kg IV
Assist control / Volume control
RR 8 TV 5-7 ml/kg IBW
PEEP 2cm H2O IE 1:5 FiO2 100%

permissive hypercarbia
Ext chest compression
Pplat < 30cm H2O
Aggressive suctioning, check K

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Continuous Positive Airway Pressure

Set up as per usual ie :TV/RR/Pmax/FiO2 - **SELECT SpnCPAP** mode

The following can additionally be set on the display for SpnCPAP / PS :

- Pressure support ΔPsupp above PEEP.
- Sensitivity Trigger (for synchronization with patient's spontaneous breathing efforts). Successful patient triggering is briefly indicated by an asterisk(*) in the middle of the status alarm messages

Apnea back-up ventilation is only applicable when using the SpnCPAP mode. In the event of an apnea, the ventilator will automatically activate volume controlled mandatory ventilation (VC-CMV).

SELECT SETTING FOR APNEA VENTILATION

1 Press the Settings key until page 2/3 appears.
2 Set Tapn with the rotary knob to a value between 15 and 60 sec.
3 Set RRapn and VTapn.
4 Set Pmax. This determines the maximum airway pressure allowed during apnea ventilation.

To switch apnea ventilation OFF
- Set Tapn to OFF (see setting apnea ventilation above)

To end apnea ventilation
- Press the Alarm Reset key.

The ventilation time ratio I:E = 1:1.5 and the plateau time Tplat % = 0 are preset during apnea ventilation.

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CONSIDER ALSO

Ensure **adequate mask seal**
(*use the Draeger mask size guide*)

Use **Clausen harness**

Draw **ABGs and re-assess regularly**

If tiring, consider '***do I need to intubate?***'

If combative, consider sedation &
DELAYED SEQUENCE INTUBATION

ADULT BIG

ADULT
Resus Trolley

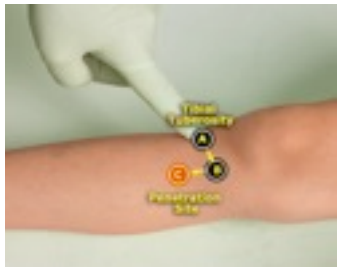
Locate TIBIAL
TUBEROSITY
2 cm medial,
1 cm superior
into TIBIAL PLATEAU

Hold flat at 90° to skin - remove safety latch
Fingers under wings - Apply pressure with palm
BIG will ACTIVATE
remove trocar and secure (can use the safety latch)

USE PRESSURE BAG TO INFUSE
Prime with 1-2 mls of 2% lignocaine

PAEDIATRIC
Resus Trolley

Locate TIBIAL
TUBEROSITY
1-2 cm medial,
1-2 inferior
into TIBIAL PLATEAU

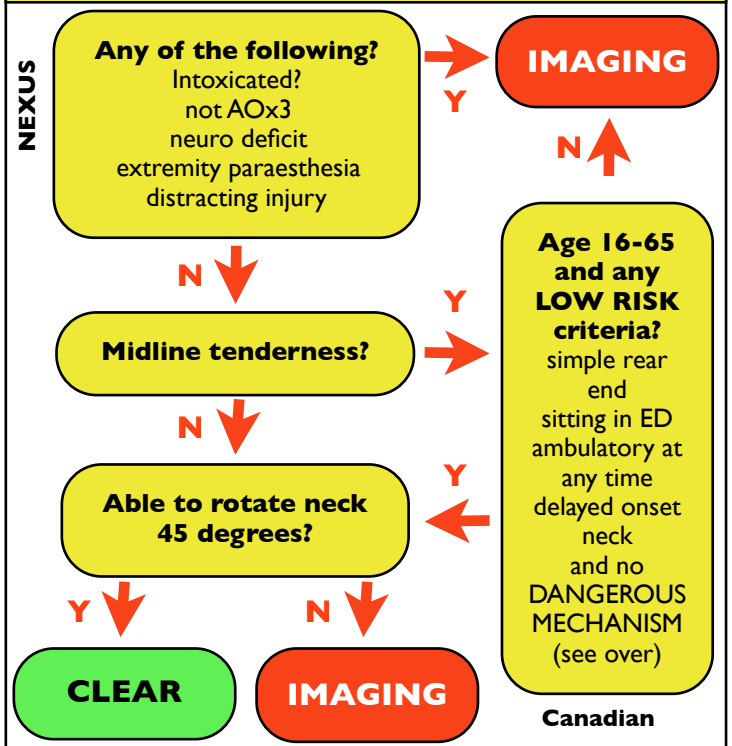


Adjust the penetration depth according to age :

0-3 years	0.5 - 1.0 cm
3-6 years	1.0 - 1.5 cm
6-12 years	1.5 cm

USE SYRINGE & 3-WAY TAP TO INFUSE
Prime with < 0.5mg/kg lignocaine (1% = 10mg/ml)

C SPINE RULES



C SPINE RULES

Dangerous Mechanism: fall from >3 ft or 5 stairs, an axial load to head, high speed (>60 mph) MVC, Rollover or Ejection MVC, Recreational Vehicle Collision, or Bicycle Collision.

Painful Distracting Injury: Including, but not limited to long bone fracture, visceral injury requiring surgical consultation, large laceration, degloving injury, crush injury, large burns, or any injury causing acute functional impairment.

Midline Tenderness: in a 2cm band anywhere from occiput to T1

Simple rear-end collision does not include: being pushed into oncoming traffic, being hit by a bus or large truck, rollover, being hit by a high-speed vehicle

Neck rotation: able to rotate neck 45° regardless of pain

CCR vs. Nexus: NEJM 349:26, Dec 25, 2003. Nexus : Annals EM 1992;21:1454-60. CCR : JAMA 2001;286:1841

This doesn't constitute a recommendation or a usable guideline. Make your own decisions based on your evidential interpretation. If you pith your patient, do not blame me. **LOW THRESHOLD FOR TRANSFER & CT / MRI**

ASTHMA in ED

STEP ONE
Continuous nebulised salbutamol
Nebulised ipratropium bromide
Methylprednisolone 125mg (1.5 mg/kg) IV
MgSO4 2g (50mg/kg max 2g) IV

if no improvement

STEP TWO
Adrenaline 0.5mg IM (0.01mg/kg) = 0.5ml 1:1000
Fluid bolus 20 ml/kg
CXR, ECG, VBG, Electrolytes, FBC

if no improvement consider NIV

AGITATED PATIENT
ketamine 1.5 mg/kg IV
over 30 secs
then 1 mg/kg/hr titrate to effect
if no IV, 5mg/kg IM

IF WORSENING
NIPPV
iPAP PS 8cm H2O
ePAP PEEP 3 cm H2O
continue nebuliser through NIPPV

COOPERATIVE PATIENT
NIPPV
iPAP PS 8cm H2O
ePAP PEEP 3 cm H2O
continue nebuliser through NIPPV

IF WORSENING
ketamine 1.5 mg/kg IV
over 30 secs
then 1 mg/kg/hr titrate to effect
if no IV, 5mg/kg IM

Consider the differentials
heart failure, ACS, arrhythmia, pulmonary embolism TENSION PTX, pericaridal tamponade, obstruction, foreign body, anaphlyaxis

AVOID INTUBATION IF POSSIBLE

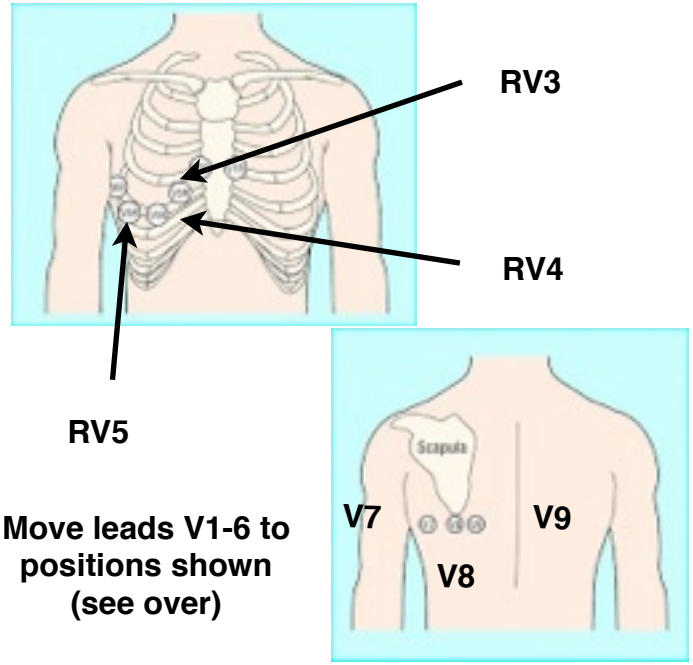
SEE OVER FOR EMERGENCY INTUBATION AND VENTILATOR SETTINGS

RV - Posterior ECG

RV3	halfway between V1 & V4R (use V1 lead and re-label)
RV4	right side 5th intercostal space, mid-clavicular line (use V2 lead and re-label)
RV5	same level as V4R on right anterior axillary line (use V3 lead and re-label)
V7	same horizontal line as V4 on posterior axillary line (use V4 lead and re-label)
V8	same horizontal line as V4 below midpoint of scapula (use V5 lead and re-label)
V9	same horizontal axis as V4-V8 paraspinal region (use V6 lead and re-label)

don't forget to re-label the ECG!

RV - Posterior ECG



don't forget to re-label the ECG!