	LRI Emergency Department	y23 6	Patient d	etails	1	Adverse signs present?
te from	Bradycardia management	Re-approved by ED guideline committee on 30May23 Review date: May 2026 . Trust Ref: C189/2016	Full name		ш	Yes - at least one of the below Shock Syncope
th advic Vicolsor	Version 67 Intended for adults	mittee st Ref: 0			l _	Myocardial ischaemia Acute decompensated heart failure
Created by Martin Wiese with advice from Ian Hudson and Will Nicolson	with a heart rate of less than 60 beats per minute	ne com			ш	No - none of the above
artin W Ison an	Use in conjunction with guidance concerning the	guideli , 2026	DoB		2	Asystole risk present?
d by M. Ian Hud	management of specific reversible causes, such as STEMI or hyperkalaemia	by ED			ш	Yes – at least one of the below Complete AV block with
Create	Disclaimer:	pproved view da	Uhit number			broad QRS complexes heart rate < 40bpm 2nd degree AV block Möbitz type II
	This is a clinical template; clinicians should always use judgment when managing individual patients	Re-ag Re	(use s	ticker if available)		Ventricular pauses > 3sec Recent asystole
То	prescribe in NC Meds, go to Emergenc	y Medicir	ne (ED) > Common s	cenarios (ED) > Bradycardia		NO – none of the above
Manag	ge as Adverse signs, o	r risk of		Possible causes include Medications; e.g.	3	Pacing preparations
approp				Beta blocker Calcium channel blocker Digoxin		Ensure the defibrillator in patient's bay has pacemaker function (circled below). Centre anterior defibrillator (pacing) pad
	<u> </u>			Amiodarone Cardiac (with or without AMI) AV block Sinus node disease		over 'V3' ECG chest lead position. Posterior pad should mirror this position.
	 ABCDE approach in resuscit Involve ED middle grade or Attach to pacing defibrillator 	consultant	NOW	Non-cardiac Hyper / hypokalaemia Hypo / hypercalcemia		
	 IV access; bloods including of the second sec			Acute blood loss Hypothermia Hypothyroidism		
	Glycopyrronium bromide *	A	tropine *	 Anorexia nervosa Vasovagal episode Physiological; e.g. Athletes 		Ensure the defibrillator's ECG electrodes
	micrograms in 1mL (or 2	2mL from 3	micrograms in 1mL mg in-10mL Minijet)	During sleep		are attached also (NB : place shoulder electrodes on the back if possible)
	NB: Use glycopyrronium if patient is at mechanism of action as atropine but doe			* DO NOT give either in heart transplant recipient		Special circumstances?
	eversal of Good response features	se? N	_			YES - at least one of the below Spinal cord injury with neurogenic shock Heart transplant recipient
	Ţ			If adverse features, repeat glycopyrronium (or atropine) up to 4x while planning next action *		Aminophylline 100mg IV (give 1mL (25mg) aliquots per minute; give a further 100mg if required)
	N Asystole risk (see	e box 2)?		NB: This might not work; particularly in complete AV block		Beta blocker toxicity PGlucagon 5–10mg IV then start
	Ţ			with if broad QRS complexes		infusion (see box 9 on reverse) → NB: If GlucaGen® 1mg powder kit
	Persistent address (see box 1			rsistent instability requires urgent sion with cardiology team; options		is not available, High-Dose Insulin Euglycaemic Therapy (HIET; see <u>protocol</u>)on ITU required instead
	circumstances (se	e box 4)?	(tra	ude rapid transfer to CCU for TVP nsvenous pacing) with or without anging to an adrenaline infusion,		Calcium channel blocker toxicity Calcium Chloride 10% 10mL IV
			(NB: c	(exceptionally) TVP at the LRI ardiologists will bring their own kit)		➤ High-Dose Insulin Euglycaemic Therapy (HIET) on ITU; see above Digoxin toxicity
	Pacing needed	NOW?		ith adequate sedation / analgesia	1	Consider giving Digoxin-specific antibody fragments (DigiFab) 2 vials (80mg; in ER fridge)
	i.e. patient peri-arrest or		until tr	ercussion pacing can help buy time anscutaneous pacing is established the side of a closed fist deliver		NB : Consult toxbase.org in every case of bradycardia induced by the drugs above
	unconscious pacing (TCP ; see	box 6) 🕇	latera	ated firm blows to the precordium al to the lower left sternal edge hand about 10cm for each blow		NO - none of the above
	Special circum (see box 4		N	1	Mes us	Appropriate disposition
				Is chemical N pacing preferred, or is TCP failing to capture?		CU (unless patient requires critical care): Need for urgent internal pacing; to arrange: Bleep CCU 'registrar' on *88-2584-[extn] Try CCU on 13774 or 13719 if no answer
	Treat as per boxe consider ITU refer			Y		If unable to locate, call (via switchboard) In hours: CCU consultant OOH: Non-interventional cardiologist
	Condition	1502 N		• Give isoprenaline (see box 7)		
	Good respor	SC! N		If not stabilising §, consider switching to an adrenaline infusion (see box 8)	R	Risk of asystole if cause is cardiac CB (unless patient requires critical care): equiring treatment for bradycardia due to
unde	r appropriate stop pacin	ig	Start / continue	Urgent internal pacing needed;		Medication side effects or overdoses Hypothermia Potassium or calcium derangement
dispo	sition, see box 5 (if started)		acing (see box 6) †	see box 5 for how to arrange	•	ritical care: Pt too sick for CCU/ACB (e.g. receiving HIET) Hyperkalaemic patients requiring CVVH
Asse	ssment carried out by				Pa ne	DU: atients with cardiac cause of bradycardia not eeding transcutaneous or chemical pacing, as eemed suitable by on-call CCU middle grade

Print name

Signature

Role

Date

In all other patients, use clinical judgment



Press 'PACER'
button (this will
activate pacing
function but not
yet start pacing)



Press '**RATE** ▲' button (set to 60bpm by default but 70 or 80 bpm may be more effective)

Start pacing by pressing 'CURRENT

'button. Repeat until monitor shows QRS complex after every pacing spike (consider increasing current by a further 10mA to be sure).



Feel pulse to confirm mechanical capture



Ensure good analgesia +/- sedation as needed

⑦ Isoprenaline Hydrochloride

- Add 2mg of isoprenaline hydrochloride (i.e. 2 ampoules of the 1mg in 5mL preparation) to 500mL glucose 5% (concentration = 4 microgram/mL)
- Take 15mL from bag using a 20mL syringe for initial bolus
- Give 5mL (20 microgram) IV over 60 seconds
- Repeat up to twice if required
- Starting dose for infusion is 5 microgram/min (set pump to 75mL/h); titrate as needed as per table below

8 Adrenaline

- Add four 1mL ampoules of adrenaline 1:1000 (= 1mg) to 246mL of NaCl 0.9% (concentration = 16 microgram/mL)
- Starting dose for infusion is 3.5 microgram/min (set pump to 13mL/h)
- Dose range is 2-10 microgram/min; titrate as needed as per table below

Glucagon

- NB: If GlucaGen® 1mg powder kit not available, DO NOT attempt to give glucagon; ITU team to use HIET
- Give 5mg IV neat over 1min
- Repeat once if necessary
- Add further 10mg to 40mL 0.9% NaCl in a 50mL syringe (concentration = 0.2mg/mL)
- If initial bolus effective, start IV infusion at 0.1mg/kg/h
- See below for the suggested starting rate (dose calculated for a 70kg patient)
- Dose range is 0.05-0.15mg/kg/h up to a maximum rate 10mg/h; titrate as needed
- Call pharmacist to arrange emergency replenishment as soon as infusion started

Dose in microgram/min	Infusion rate in mL/h
1	15
2	30
3	45
4	60
5	75
6	90
7	105
8	120
9	135
10	150
M Positive chro	notrone infu

Infusion fluid

Date

Dose in microgram/min	Infusion rate in mL/h
2	7
3	11
3.5	13
4	15
5	19
6	22
7	26
8	30
9	33
10	37
sion – prescrip	tion on UH

Patient weight in kg	Dose in mg/h	Infusion rate in mL/h
	2	10
	3	15
	4	20
50	5	25
60	6	30
70	7	35
80	8	40
90	9	45
100	10	50
_		

Positive chronotrope infusion – prescription on UHL paper chart during NC downtime

Date	Infusion f	fluid	Additions to	infusion	IV or	Line	Start Time	Time to run or ml/hr	Fluid	
	Type/strength Volume		Drug Dose		SC				Batch No.	Prescriber
DD/MM/YY	NaCl 0.9%	246mL	Adrenaline 4mg = 4ml of 1: 1000		ΙV		нн:мм	7 - 37mL/h (start at 13mL/h)		Dr.'s Name
Date	Date Infusion fluid		Additions to	infusion	IV or	Line	Start Time	Time to run or ml/hr	Fluid	
	Type/strength	Volume	Drug	Dose	SC				Batch No.	Prescriber

	DD/MM/YY	Glucose 5%	500mL	Isoprenalíne hydrochloríde	2mg = 10mL	IV		нн:мм	15 - 150mL/h (start at 75mL/h)		Dr.'s Name
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IV or

Line

Start Time

Time to run or ml/hr

Fluid Batch No.

Additions to infusion

	Type/strength	Volume	Drug	Dose				Prescriber
DD/MM/YY	Water	40mL	Glucagon	10mg = 10 1mL víals	ΙV	нн:мм	10 - 50mL/h (start at 35mL/h)	Dr.'s Name