

**LRI Emergency Department  
Acute aortic syndrome**

Use in adults in whom AAS is the main concern or who have high-risk pain features or exam findings or risk factors for AAS listed in box 3 if presenting with:

- Chest, abdo or back pain
- Neurological deficit
- Mesenteric ischaemia
- Limb ischaemia
- Syncope
- BP differential >20
- Systolic blood pressure >180

Use individualized approach if pregnant, trauma patient or recent cocaine use

Disclaimer: This is a clinical template; clinicians should always use judgment when managing individual patients

Re-approved by ED guidelines committee on 26Apr23  
Review due Apr26 · Trust Ref: C54//2021

**Patient details**

Full name \_\_\_\_\_  
DoB \_\_\_\_\_  
Unit number \_\_\_\_\_

(use sticker if available)

① **Direct ECHO signs of AAS?**

**NB:** Omit if timely ECHO expertise unavailable

**Yes**, at least one of the below

Intimal flap   
Intramural aortic haematoma   
Penetrating aortic ulcer

**NO**, none of the above

② **Indirect ECHO signs of AAS?**

**NB:** Omit if timely ECHO expertise unavailable

**Yes**, at least one of the below

Thoracic aorta dilatation (diameter ≥ 4 cm at any level)   
Pericardial effusion/tamponade   
Aortic valve regurgitation at least

**NO**, none of the above

③ **AAS pre-test probability (PTP)**

Tick applicable criteria & record total score

Known aortic aneurysm → → → → → 2

**(NB: If this box has been ticked, move on directly to the high-risk pain features without asking about other risk factors)**

**Other risk factors**

Marfan syndrome  Loays-Dietz syndrome  Turner syndrome  Bicuspid aortic valve  Ehlers-Danlos Syndromes  Aortic valve disease  Aortic procedure within last 6 weeks (e.g. cardiac surgery, PCI, diagnostic coronary angiography, TAVI or TEVAR)  Family history of aortic dissection  Family history of intramural haematoma  Family history of ulcer with leak

Score if any of the above → → → → → 1

**(NB: DO NOT score here if patient already scoring for known aortic aneurysm above)**

**High-risk chest/abdo/back pain features**

Severe or worst ever  Thunderclap or abrupt  Tearing or ripping  Migrating or radiating

**EITHER** score if 1 or 2 of the above → → 1   
**OR** score if 3 or 4 of the above → → 2

**High-risk exam findings**

Pulse deficit including limb ischaemia (check for decrease or absence of radial, carotid, subclavian and femoral pulses)

New neurological deficit:  
 Stroke or TIA (RIGHT most common)  Paraplegia  Limb pain/paraesthesia/motor deficit  Hypoxic encephalopathy (confusion)  Horner syndrome

Aortic insufficiency / regurgitation  Hypotension  Pericardial effusion (see box 2) (omit if no ECHO expertise available)

Score if any of the above → → → → → 2

**Senior clinical judgement (ST3 or above)**

Alternative diagnosis more likely → → → -1   
 Unsure → → → → → 0   
 AAS is most likely diagnosis → → → → → 1

**> 1 - High** PTP is >5%

**1 - Moderate** PTP is 0.5-5%

**0 - Low** PTP is <0.5%

④ **Complicated Type B AAS?**

**Yes**, as at least one of the below

**CT findings**

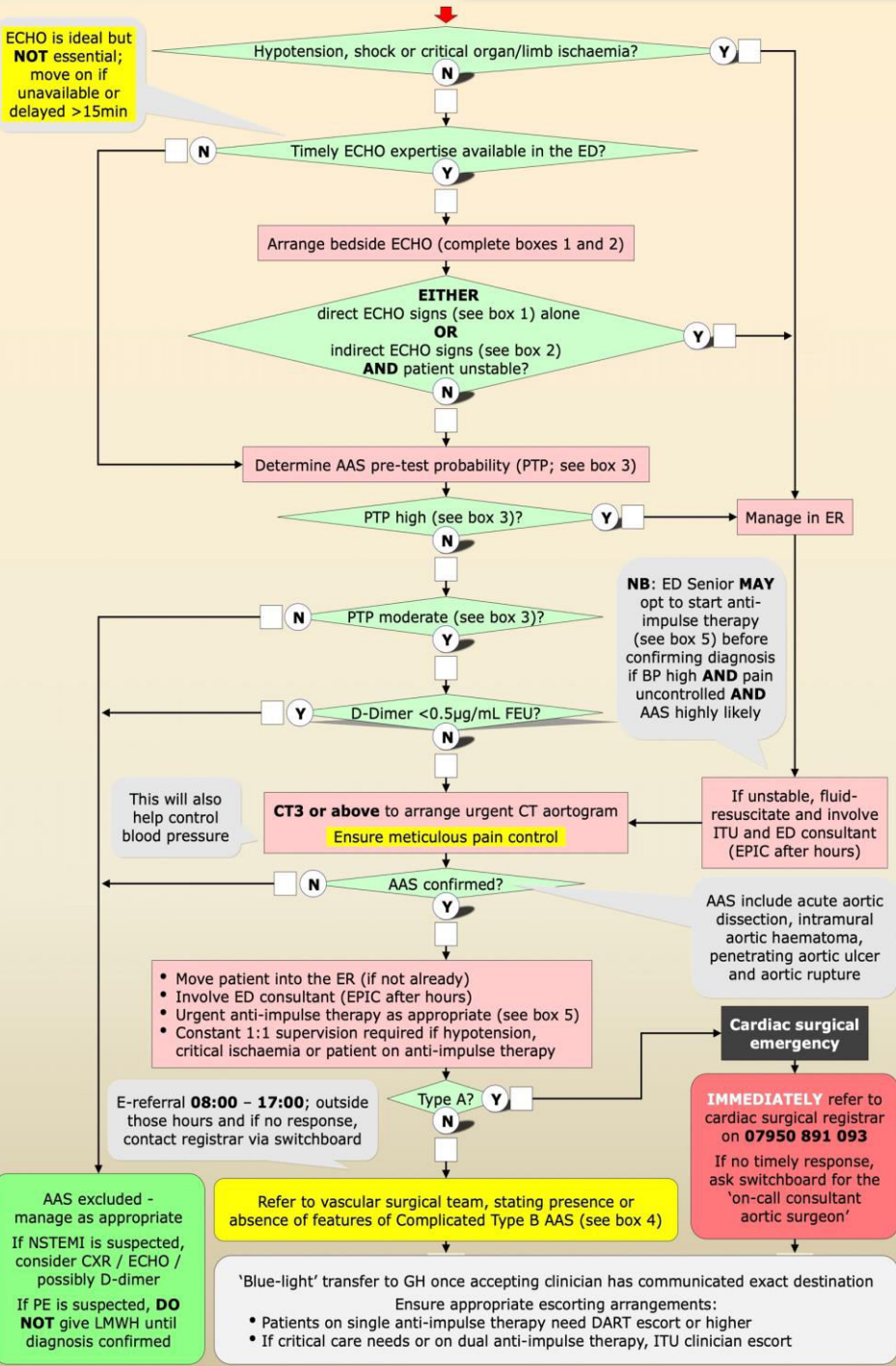
Severe aortic dilatation   
Aortic rupture signs   
Haemothorax   
Periaortic/mediastinal haematoma

**Organ malperfusion features**

AKI   
Metabolic acidosis   
Rising lactate   
Lower limb ischaemia   
Paraplegia   
Leg pain/paraesthesia/motor deficit

**NO**, as none of the above

ECHO is ideal but NOT essential; move on if unavailable or delayed >15min



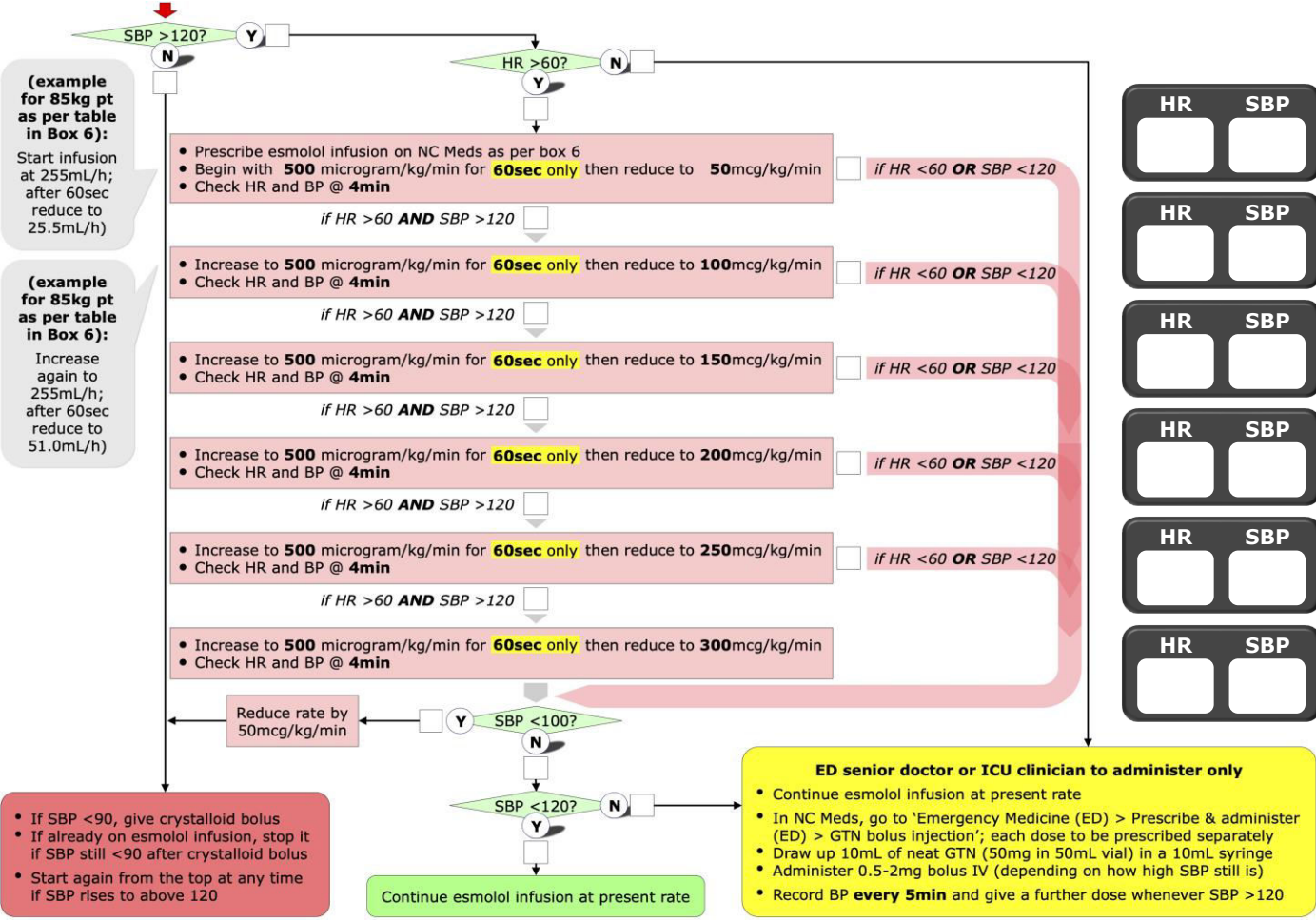
This patient was managed by

Print name \_\_\_\_\_ Signature \_\_\_\_\_ Role \_\_\_\_\_

## 5 Anti-impulse therapy

- IV-trained nurse competent to manage fluid infusion pump required
- Initial titration phase is complicated – clinician and nurse must stay with patient throughout
- Take this proforma to the bedside to guide you through the infusion rate changes & other actions
- **NB:** Sudden or accidental infusion stops cause hazardous BP spikes – **protect IV access**
- Consider inserting arterial line to allow accurate, real-time BP monitoring
- **NB:** DO NOT insert arterial line into a limb with ischemia / pulse deficit

HR	SBP



## 6 Esmolol infusion

- Our pre-mixed esmolol infusion bags contain 2.5G in 250mL of 0.9% NaCl (10mg/mL)
- Tick nearest weight in table below; the corresponding column contains the infusion rates you will need
- In NC Meds, go to Emergency Medicine (ED) > Vasoactive meds (ED) > Esmolol. Select nearest weight and prescribe '60-sec bolus & maintenance infusion' + 'extra 60-sec boluses' (both are already ticked).
- If NC is offline, prescribe infusion on a paper drug chart as per box 7 below
- **NB:** Infusion start and rate changes are best captured initially as verbal orders on the 'ER critical interventions log' rather than trying to record them in NC Meds in real time

		Patient weight (in kg; select nearest value)														
		50	55	60	65	70	75	80	85	90	95	100	105	>109		
Infusion rate	60-sec bolus (mL/h)	150	165	180	195	210	225	240	255	270	285	300	315	330	500	Dose delivered in microgram/kg/min
	Maintenance (mL/h)	15	16.5	18	19.5	21	22.5	24	25.5	27	28.5	30	31.5	33	50	
		30	33.0	36	39.0	42	45.0	48	51.0	54	57.0	60	63.0	66	100	
		45	49.5	54	58.5	63	67.5	72	76.5	81	85.5	90	94.5	99	150	
		60	66.0	72	78.0	84	90.0	96	102.0	108	114.0	120	126.0	132	200	
		75	82.5	90	97.5	105	112.5	120	127.5	135	142.5	150	157.5	165	250	
90	99.0	108	117.0	126	135.0	144	153.0	162	171.0	180	189.0	198	300			

## 7 Esmolol example prescription during Nervecentre downtime

For 85kg patient as per table in box 6

Date	Infusion fluid		Additions to infusion		IV or SC	Line	Start Time	Time to run or ml/hr	Fluid Batch No.	Prescriber
	Type/strength	Volume	Drug	Dose						
DD/MM/YY	10mg/mL	250mL	Esmolol (premixed)	2.5g	IV		HH:MM	255 mL/h 60-second bolus only		Dr.'s Name
DD/MM/YY	10mg/mL	250mL	Esmolol (premixed)	2.5g	IV		HH:MM	25.5 - 153mL/h		Dr.'s Name