Management of Acute Type B Aortic Dissection Guideline

Early medical management: Aggressive BP control, analgesia and anti-emetics

Haemodynamic targets (initial)

- Systolic BP 100-120 mmHg
- MAP <80 mmHg
- Targets should be changed ONLY after consultation with Vascular team

If patient develops leg weakness, the Vascular surgeon and Vascular anaesthetist must be contacted immediately. ***Potential*** interventions for spinal cord ischaemia.

- Increasing target BP to avoid potential spinal cord infarction
- Emergency CSF drain
- Repeat CT or MRI imaging

Analgesia

- **Morphine** (1-10mg) IV titrated to effect
  then
- **Morphine PCA**, 1mg IV bolus, 5 minute lockout

If the patient has **renal impairment,** morphine can be replaced with **fentanyl** 10 microgram IV bolus, 5 minute lockout.

- Regular **Paracetamol** (unless contra-indications)

Anti-emetics

- **Ondansetron** 4mg IV every 8 hours
- Supplemental cyclizine 50mg IV every 8 hours and metoclopramide 10mg IV every 8 hours may be used

BP control

Intravenous therapy

1. **Labetalol** (first choice)
   a. Administer IV bolus injections for initial control of blood pressure (10mg slow IV bolus injections at 2 minute intervals to a maximum of 200mg per course of boluses).

   b. AND ALSO start an IV infusion to maintain blood pressure control.
      i. Concentration 5mg/ml for CVC use OR 1mg/ml for PVC use
      ii. Dose – Start at 15mg/hr and titrate to clinical effect (maximum rate-160mg/hour), but often 10-60mg/hour.

2. **Nicardipine** (second line in addition to labetalol, or first line if contra-indications to beta-blocker)
    a. IV infusion *(change IV infusion site every 12h if peripherally administered)*
        i. Concentration 25mg made up to 250ml (5% glucose) = 100micrograms/ml
        ii. Dose – titrated to clinical effect
        iii. Start at 50ml/hour (5mg/hour). The rate may be increased every 10 minutes by 25ml/hour to a maximum of 150ml/hour (15mg/hour).
        iv. Once target BP is achieved reduce dose gradually, usual maintenance dose 2-4mg/hour

3. **Hydralazine** (third line) **NB OFF LICENCE USE – Consultant directed use only. PATIENT MUST BE RATE CONTROLLED BEFORE COMMENCING HYDRALAZINE**

    a. IV bolus – 5mg slow IV injection bolus at 20 minute intervals to a usual maximum of 20mg
    b. IV infusion:
        i. Concentration 60mg made up to 60ml (0.9% sodium chloride) = 1mg/ml
        ii. Dose – titrated to clinical effect
        iii. Start at 3ml/hr (50micrograms/min). The rate may be increased every 10 minutes by 3ml/hour to a maximum of 18ml/hour (300micrograms/min).

Oral therapy – Start as soon as possible (Day 1 unless contra-indicated).
Titrate first line drug (see below) to maximum tolerated dose before introducing next line drugs.
Wean off iv antihypertensives as oral antihypertensives are titrated.

1. **Bisoprolol** (first choice)
    a. 2.5-20mg once daily
2. **Amlodipine** (second line in addition to bisoprolol, or first line if contra-indications to beta-blocker)
    a. 5-10mg once daily
3. **Doxazosin** (third line in addition to bisoprolol and amlodipine)
    a. 1-16mg once daily

NB: ACE Inhibitors and diuretics should be avoided initially while the kidneys are at risk.

References

1. Curran MP, Robinson DM, Keating GM. Intravenous nicardipine: its use in the short-term treatment of hypertension and various other indications. Drugs. 2006;66(13):1755–82.
2. Dade J et al. UKCPA Critical Care Group. Minimum infusion volumes for fluid restricted critically ill patients. 4th Ed. V4 2012. Accessed 4.2.15 via http://www.ukcpa.net/groups/critical-care/documents/?category=71
3. Labetalol 5 mg/ml solution for injection/ infusion - Summary of Product Characteristics (SmPC) - (emc) (medicines.org.uk). Accessed 30/01/23
4. Labetalol 5mg/ml solution for injection - Summary of Product Characteristics (SmPC) - (emc) (medicines.org.uk)Accessed 30/01/23
5. Labetalol Hydrochloride 5mg/ml Solution for Injection - Summary of Product Characteristics (SmPC) - (emc) (medicines.org.uk) Accessed 30/01/23
6. Nicardipine 10mg/10ml Solution for Injection - Summary of Product Characteristics (SmPC) - (emc) (medicines.org.uk)Accessed 30/01/23
7. Hydralazine 20mg Powder for Concentrate for Solution for Injection/Infusion - Summary of Product Characteristics (SmPC) - (emc) (medicines.org.uk)Accessed 23/01/23

Critical Care Guidelines:	
Authors: C Hannah, E McGregor, S Gillon, O Falah, M Dunn	
Document Version: 6	**Authoriser:** Lothian Critical Care Directorate QIT Editorial Board
Authorisation Date: March 2025	**Review Date:** March 2023

Think **DISSECTION**

The Management of Acute Type B Aortic Dissections

Maaz Syed, ST Vascular Surgery
Orwa Falah, Consultant Vascular Surgery
Mark Dunn, Consultant Critical Care
Euan McGregor, Consultant Anaesthetics
Alistair Nimmo, Consultant Anaesthetics

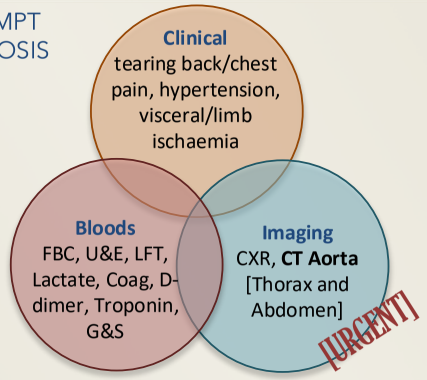
NHS Lothian

1 RESUSCITATION

A B C D E

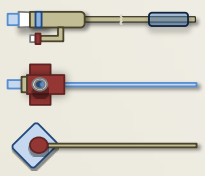
Early anticipation of critical care involvement

2 PROMPT DIAGNOSIS



Hypotension may be due to myocardial ischaemia, tamponade, aortic root incompetence, or an aortic bleed. These warrant urgent investigations.

3 SYSTEMIC MONITORING



Urinary Catheter
Invasive BP
ECG Rhythm

Urgent Critical Care opinion regarding Level 2 bed (HDU)

4 ANALGESIA AND ANTI-EMETICS

Morphine 1 – 10mg IV titrated to effect;
Morphine PCA 1mg bolus; 5min lock out;
Fentanyl 10µg IV bolus 5min lock out [renal failure]
Paracetamol 1g QDS (unless contraindicated)

Ondansetron 4mg IV every 8 hours OR
Cyclizine 50mg IV PRN 8 hourly OR
Metoclopramide 10mg IV PRN 8 hourly

TYPE A → **Urgent Cardiothoracic Opinion** [bleep: 1682]

TYPE B → **Urgent Vascular Surgery** [via switchboard] **and Critical Care** [bleep: 2306] **Opinion**

5 BLOOD PRESSURE CONTROL

Systolic BP target:	**100 -120mmHg**
MAP target:	**<80mmHg**
Heart rate target:	**50 – 60 bpm**
Urine output target:	**0.5 ml/kg/hr**

1 **Labetalol** 10mg IV bolus every 2 min [max 200mg]
THEN IV infusion 15mg/hr titrated to clinical effect.
Concentration: 1mg/ml [PVC] or 5mg/ml [CVC].

2 **Nicardipine** 25mg in 250ml [100µg/ml]
Add to Labetalol, or 1st line if intolerant to β-blockers
Start at 50ml/hour (5mg/hour).
Increase every 10 min by 25ml/hour;
Max 150ml/hour (15mg/hour).
Once target BP is achieved reduce dose gradually, usual maintenance dose 2-4mg/hour

3 **Hydralazine** 5mg slow IV bolus every 20min [max 20mg] (in addition to previous agent)
THEN IV infusion 1mg/ml titrated to clinical effect;
Start at 3ml/hr (50µg/min).
Increased every 10 mins by 3ml/hour.
Max 18ml/hour (300 µg/min).

6 LONG-TERM MANAGEMENT

CONVERT TO ORAL BLOOD PRESSURE CONTROL AS EARLY AS TOLERATED

Target **BP** 120/80 mmHg
Repeat CT before discharge (usually at 48 hours)
Follow-up CT at 1, 6 and 12 months.
Outpatient follow-up at 8 weeks post discharge, unless indicated sooner.

1	**Bisoprolol**	2.5 – 20mg once daily
2	± **Amlodipine**	5 – 10mg once daily
3	± **Doxazosin**	1 – 16mg once daily

HIGH RISK FEATURES OF TYPE B DISSECTIONS !

Visceral / **limb** ischaemia
Entry tear **≥10mm**
Inner curve entry tear
Aortic diameter **≥4cm**
On-going **Pain** or **HTN**
Retrograde dissection
False lumen (FL) **≥22mm**
Partial FL **thrombosis**
Fusiform index ≥0.64
Grow **≥1cm/yr** or **≥5.5cm**