

UCLA Perioperative Beta Blocker Clinical Practice Guideline

(Revised January 2005)

Identify Eligible Adult Patients scheduled for intermediate- or high-risk surgery:

Any 2 or more of the following criteria (modified from minor criteria of Mangano)

1. Age 65 years or older.
2. Hypertension.
3. Current or recent smoker.
4. Serum total cholesterol > 240 mg/dL or LDL cholesterol > 160 mg/dL or HDL cholesterol < 40 mg/dL.
5. Obesity

OR

Any 1 of the following criteria (Revised Cardiac Index Criteria of Lee)

1. High Surgical Risk Procedure (Intraperitoneal, intrathoracic, or vascular procedure).
2. Known atherosclerotic vascular disease (coronary artery disease, cerebrovascular disease, abdominal aortic aneurysm, peripheral vascular disease).
3. Diabetes mellitus (CHD risk equivalent)
4. Chronic renal insufficiency (Cr \geq 2.0 mg/dL).

Exclusion Criteria:

1. Prior hypersensitivity/Intolerance to beta-blockers.
2. Heart rate < 50 b.p.m or history of severe bradycardia.
3. 2nd and 3rd degree heart block in the absence of a pacemaker.
4. Decompensated HF.
5. Hypotension (Systolic BP < 90 mmHg).
6. Patients scheduled for laparoscopic RYGB without documented CAD.

Use with Caution:

1. Systolic Blood Pressure 90-100 mmHg.
2. Heart Rate 50-60 b.p.m., especially where fentanyl (or analogues) will be used during induction of anesthesia.
3. High suspicion for pre-existing hypovolemia or blood loss.
4. LVEF < 35% *and* not on oral beta blockers preoperatively
5. Patient on Verapamil/Diltiazem, antiarrhythmics, or digoxin.
6. Atenolol in patients with renal insufficiency.
7. Bronchospastic lung disease.

BETA BLOCKER DOSING REGIMENS

- Ideal agents are intermediate to long acting and beta-1 selective e.g. Metoprolol and Atenolol.
- Start the agent as early as possible when surgery and indication are identified e.g.. Internist visit or Anesthesia preop clinic.
- Target HR is 50-70 b.p.m. titrate dose rapidly. No benefit exists if HR is above 80 b.p.m.
- Always be aware of reversible causes of tachycardia in the operative setting e.g. Pain, fever, volume losses, anxiety etc.
- Continue Beta blockade through 30 days post hospitalization. If long-term indication remains e.g. CAD, continue indefinitely.
- All patients initiated on beta-blockers need post discharge follow up with their PMD or cardiologist.

Beta Blocker Dosing Guidelines

A. Oral Regimens (Up to the day of surgery)

METOPROLOL 25-50 mg PO BID

ATENOLOL 25-50 mg PO QD, may increase to 100 mg PO QD if HR>70

- Titrate to resting HR 50-70 bpm
- Hold dose for HR < 50, Systolic BP < 100 mmHg or Wheezing.
- Reassess the vital signs every 4-6 hours if inpatient.
- **Resume PO dosing postoperatively**
- If patient not on beta-blocker preoperatively, dose as follows post operatively:
 - METOPROLOL 25 mg PO BID for HR 55-70
 - METOPROLOL 50 mg PO BID for HR >70

**B. Intravenous regimens for patients unable to take medications orally
(Day of Surgery)**

1. Preoperatively:

METOPROLOL 2.5-5 mg/bolus (injected over a 2 min period) IV q 3 hourly*

- For effective beta blockade (HR <70), may repeat after 5 minutes to target HR assuming systolic BP remains over 100 mmHg.
- For patients who are beta-blocker naïve or in whom you suspect potential adverse event (see above) start with 1 mg IV bolus test dose. Limit infusion rate to 1 mg/minute.
- Acceptable alternative in beta blocker naïve patients: start IV metoprolol post-induction with the goal of effective beta blockade during emergence and in the PACU.

2. Postoperatively:

METOPROLOL 5 mg/bolus (injected over a 2 min period) IV q 6 hourly*

- For effective beta blockade (HR <70), may repeat after 5 minutes to target HR assuming systolic BP remains over 100 mmHg.
- Continue until patient able to resume PO
- Titrate q10 minutes to target HR < 70 assuming systolic BP remains above 100 mmHg.

*Alternative dosing would be to infuse required dose (2.5-10 mg) of metoprolol into 50 cc of normal saline and infuse over 30 minutes IV.

Compiled by: Michael Lazarus MD, Harvey Rosenbaum MD, and Gregg Fonarow, MD.
(Departments of Internal Medicine, Anesthesiology and Cardiology.)