

TICU Beta-Blockade Guidelines

Perioperative (or peri-stress) beta-blockade

- Dependent on Revised Cardiac Risk Index (*see next page*)
- Highest level of evidence: **patients who have previously been receiving beta-blockers** for treatment of conditions indicated by AHA class I guidelines such as angina, symptomatic arrhythmias, hypertension, and acute coronary syndrome history (Class I, Level C).
- Weaker recommendation: may initiate beta blockers in **naïve high-risk patients** (due to CAD or ischemic cardiac findings) undergoing vascular or other high risk surgery (Class IIa, Level B/C).
- The data is less clear for initiation of beta-blockers in patients with ≤ 1 risk factor and undergoing intermediate risk or high risk surgery (Class IIb, Level B/C).

Beta-blockade in other conditions

- Blunt aortic injury not treated by surgical or endovascular repair requires anti-impulse therapy (decrease dp/dt) with beta-blockade to lower SBP $< 100-120$ mmHg and HR $< 60-70$ BPM. Evidence indicates that tight BP and HR control in this population improves outcomes. Continue beta-blockade until vascular follow-up appointment (duration addressed at appt).
- Some retrospective studies have shown that beta-blocker exposure was associated with reductions in mortality in patients with severe TBI. Although controversial, some evidence indicates that elderly patients may have the highest benefit from beta-blockade following TBI (Class IIb, Level C).
- The beneficial effect of beta-blockade in other hyper-adrenergic, hypermetabolic, inflammatory states has also been suggested, including the trauma and sepsis population (following adequate resuscitation). However, controversy exists in these populations, as well. May consider for those euvoletic, and with HR > 120 BPM for $> 10\%$ of the past 24 hrs based on SIMON (Class IIb, Level C).

WHICH BB, WHEN TO START, HOW LONG TO CONTINUE AND DO YOU TITRATE?

- 1) If on home beta-blocker, consider restarting home BB (may consider reduced dose), as soon as physiologically tolerable.
- 2) For high risk individuals, titration to a mean HR (ie 60 BPM) while avoiding hypotension and/or symptomatic bradycardia, is preferred to fixed dosing.
- 3) Metoprolol, Atenolol, Esmolol, Bisoprolol, Labetalolol, and Propranolol have all been used in clinical studies; it is unclear which is preferred.
- 4) Routes are dependent on the enteral and IV access, concerns for 1st pass metabolism (liver injury), and reason for use.
- 5) Length of therapy is unclear, but consider for long term if using for ischemic heart disease.

REVISED CARDIAC RISK INDEX
(Circulation 1999; 100:1043-1049)

Each risk factor is assigned one point.

1. High-risk surgical procedures

- Intraoperative
- Intrathoracic
- Suprainguinal vascular

2. History of ischemic heart disease

- History of myocardial infarction
- History of positive exercise test
- Current complaint of chest pain considered secondary to myocardial ischemia
- Use of nitrate therapy
- ECG with pathological Q waves

3. History of congestive heart failure

- History of congestive heart failure
- Pulmonary edema
- Paroxysmal nocturnal dyspnea
- Bilateral rales or S3 gallop
- Chest radiograph showing pulmonary vascular redistribution

4. History of cerebrovascular disease

- History of transient ischemic attack or stroke

5. Preoperative treatment with insulin

6. Preoperative serum creatinine > 2.0 mg/dL

RISK OF MAJOR CARDIAC EVENT

<u>Points</u>	<u>Class</u>	<u>Risk</u>
0	I	0.4%
1	II	0.9%
2	III	6.6%
3 or more	IV	11%

"Major cardiac event" includes myocardial infarction, pulmonary edema, ventricular fibrillation, primary cardiac arrest, and complete heart block

References:

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