Cardiac Services BC
Provincial Health Services Authority

BC AFC Beta-Blocker Initiation and Titration Pathway (For Prescribers)

Document Purpose: Standardized recommendations for initiation of **a Beta-Blocker** and ongoing monitoring/patient management

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Clinical Indication:

- Rate control in the absence of decompensated heart failure

Absolute Contraindications:

- High degree atrioventricular conduction disorders (unless functioning pacemaker is present)

Relative Contraindications (caution for use):

- Sinus bradycardia (<50 bpm) or sinus node dysfunction (e.g. sick sinus syndrome)
- Reactive airway disease (asthma) or Fixed airway obstruction (COPD)
- Acute, decompensated heart failure
- Peripheral vascular disease or Raynaud's disease
- Hypoglycaemia prone diabetes mellitus (removes warning symptoms)

Baseline Investigations:

- Blood pressure
- ECG (within 1 week)
- Laboratory investigations (within 1 month) - Serum Creatinine/eGFR (renal dosing applicable for some beta-blockers)

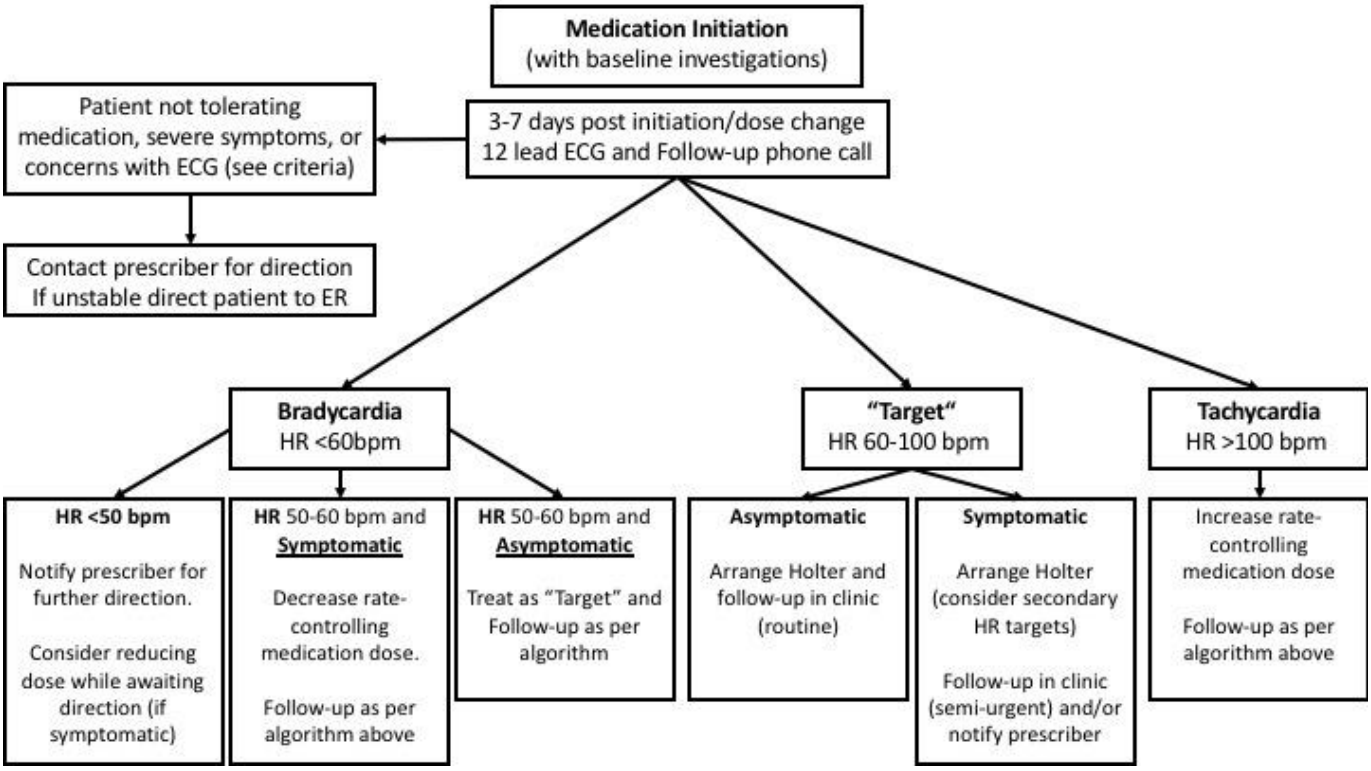
Dosing:

Agent	Start	Titrate	Usual Max. Dose	Other
Atenolol	25 mg daily (usual) 12.5 mg daily (optional)	Increase by 50-100% q2-4 weeks to achieve target heart rate	100 mg daily	β_1 selective
Bisoprolol	2.5 mg daily (usual) 1.25 mg daily (optional)		10 mg daily	β_1 selective
Metoprolol	25 mg bid (usual) 12.5 mg bid (optional)		100 mg bid	β_1 selective
Propranolol	20 mg bid (usual) 10 mg bid (optional)		80 mg bid	Non-selective (β_1 and β_2)
Nadolol	40 mg daily (usual) 20 mg daily (optional)		160mg daily	Non-selective (β_1 and β_2)
Acebutalol	50 mg bid (usual) 25 mg bid (optional)		200 mg bid	Intrinsic sympathomimetic activity
Carvedilol	6.25 mg bid (usual) 3.125 mg bid (optional)		25 mg bid (<75 kg) 50 mg bid (>75 kg)	Combined α and β
Labetalol	50 mg bid (usual) 25 mg bid (optional)		200 mg bid	Combined α and β

The following doses are equivalent to atenolol 50mg daily

acebutolol 100 mg BID	metoprolol 50 mg BID	propranolol 40 mg BID
bisoprolol 5 mg daily	metoprolol SR 100 mg daily	propranolol LA 80 mg daily
carvedilol 12.5 mg BID	nadolol 80 mg daily	sotalol 40 - 80 mg BID
labetolol 100 mg BID	pindolol 7.5 mg daily	timolol 5 mg BID

Dose Titration Algorithm:



*Secondary targets:

- If patients remain symptomatic at target resting heart rate, consider these secondary targets:
    - Average HR < 90bpm on 24 hour Holter monitor
    - HR with moderate exercise <110bpm (i.e. 6 minute walk)
    - HR on exertion <110% age predicted maximum (220-age x 1.1 on EST or maximum Holter HR)

Criteria for Notification of MD/NP

- **Clinical**
    - Syncope
    - Dizziness/lightheadedness - Notify MD/NP if acute onset, severe, or persistently problematic
    - New or worsening SOB, or New or worsening fluid retention
    - Symptoms of medication toxicity
- **ECG/Holter**
    - Symptomatic bradycardia (<50 bpm)
    - Symptomatic hypotension (<80mmHg systolic)
    - Uncontrolled tachycardia (resting or average HR >120 bpm)
    - Asymptomatic pauses >3 seconds on Holter monitor or ECG
    - All symptomatic pauses of any duration on Holter monitor or ECG
    - QTc >500msec or an increase in QTc >25% as per ECG

- New heart block
  - lengthening of PR interval > 250ms
  - Any new 2nd or 3rd degree heart block
  - new widening QRS >120msec
- Ventricular tachycardia >5 beats, >5% PVCs

Monitoring:

Parameter	Frequency	Considerations
Patient response (symptoms/ECG)	Within 1 week of initiation or dose change	Follow titration algorithm to achieve optimal heart rate
Blood Pressure	With each dose change and at each patient follow-up appointment	Supportive measures to mitigate orthostatic hypotension
Medication Tolerance	With each dose change, and at each patient follow-up appointment	Syncope o Report to ER, notify prescriber Dizziness/lightheadedness o Notify prescriber if acute onset, severe, or persistently problematic New or worsening SOB • Mild SOB is common, supportive counsel • Inform prescriber if SOB is significant Fatigue, exercise intolerance (NNH 57) • Common especially in the first few weeks, supportive counsel • Inform prescriber if symptoms are significant Erectile dysfunction (NNH 200) • If persistent, notify prescriber and consider switching to a calcium channel blocker or adding a PDE-I Vivid dreams • If persistent and problematic, notify prescriber and consider a less lipophilic beta-blocker Mood changes • If new onset symptoms of depression, notify prescriber and consider switching to a calcium channel blocker
24 hour Holter Monitor	At the conclusion of titration phase to confirm that optimal heart rate target has been achieved	Follow titration algorithm to achieve optimal primary or secondary heart rate targets
Labs (serum electrolytes and renal function)	Annually for stable patients Every 3-6 months (CrCl 30-60 ml/min)	Some beta-blockers require renal dosing

Patient counseling to include:

- Contact clinic or your physician if you have significant dizziness/lightheadedness, new or worsening SOB, developed a new rash, or are feeling extremely unwell since starting the medication. If you have fainted, go directly to the emergency and notify the clinic afterwards.

Tapering / Discontinuation Schedule

- Abrupt discontinuation may cause rebound tachycardia due to upregulation of beta receptors
- For beta blockers with twice daily administration
    - Usual dose once daily for one week, then every other day for one week, then stop
- For beta blockers with once daily administration: half usual dose once daily for one week, then half usual dose every other day for one week, then stop