How To Use A Beta Blocker in Heart Failure (HF)

The addition of beta-blocker therapy to standard triple therapy for HF (digoxin, diuretic and ACE inhibitor) such as in the U.S. Carvedilol Trials[1] (LVEF ≤ 35%; carvedilol 12.5-100mg/day) have shown a further 65% RRR in CV mortality (7.8% to 3.2 % ARR) in patients with NYHA class II-IV symptomatic HF. Carvedilol has also been shown to produce a dose related increase in LVEF which averaged 8% and to lead to a 27% relative risk reduction in cardiovascular hospitalizations. Similar benefits were obtained in other trials of beta-blockers in Heart Failure (MERIT[2]-metoprolol and CIBIS II[3] - bisoprolol). The Copernicus trial has extended the benefit of ß-blockade to Class IV HF patients[4].

Despite this many physicians are reluctant to utilize beta-blockers in heart failure for fear of provoking clinical deterioration. Physicians should bear in mind that they already have many patients in their practice with silent or asymptomatic LV dysfunction who are tolerating beta-blockers very well (post MI patients). Judicious initiation of beta blockade will not provoke sudden severe heart failure. Most patients tolerate the addition of a beta-blocker very well. The key is to **START LOW AND GO SLOW** utilizing the beta-blocker medications and doses used in the clinical trials. In addition the close monitoring required is a clinical deterrent to beta-blocker usage. In many instances patients can be initiated on beta-blockers and up-titrated with less frequent clinical visits. In this case a **START LOWER AND GO SLOWER** strategy is advised and is particularly useful in a busy primary care setting. Patients can up-titrate themselves and backtrack if symptoms develop. It is recommended to start with the **START LOWER AND GO SLOWER** beta-blocker protocol until you are familiar and comfortable with beta-blocker therapy.

The accompanying beta-blocker titration protocols are recommended as advice and do not replace clinical judgment or appropriate consultation. Beta-blockers should be initiated in the stable HF patient, free of clinical congestion. ACE inhibition should be optimized prior or simultaneous with beta-blocker titration. Dietary, lifestyle and exercise interventions should be carried out concurrently. All cardiac risk factors should be modified aggressively. Treatable causes of HF should be identified. Reversible triggers of HF should be dealt with.

✓	Approach	Reccomendations
	Beta Blockers	**General Guidelines** - Add Beta-blocker* to ACE-inhibitor/diuretic/+/- digoxin in stable Class **II-IV** CHF/LVEF < 40% (*No outcome data for other beta-blockers) • Bisoprolol* 1.25→10 mg OD (CIBIS II Trial) • Carvedilol* 3.125 mg BID→25 mg BID (50 mg BID if weight > 85 kg) • Metoprolol* 12.5 mg BID→75 mg BID (MERIT Trial)

See Beta-blocker titration protocols for both the standard **START LOW AND GO SLOW** and the **START LOWER AND GO SLOWER** protocols.

See the **Guide for Heart Failure (HF) Management** for further guidance in this regard.

1 NEJM 1996; 334:1349-1355.

2 Lancet 1999; 353: 2001-2007.

3 Lancet 1999; 353: 9-13

4 Presented ESC meeting-Amsterdam; Aug 2000

Beta Blocker Titration Protocols

❍ Standard Protocol: Start Low and Go Slow

Follow-up Q 2 weeks

__ **Bisoprolol:**

1) Bisoprolol 1.25 mg OD X 2 weeks then
2) Bisoprolol 2.5 mg OD X 2 weeks then
3) Bisoprolol 5.0 mg OD X 2 weeks then
4) Titrate to 10 mg OD if HR, BP and HF allow.

__ **Carvedilol:**

1) Carvedilol 3.125 mg BID X 2 weeks then
2) Carvedilol 6.25 mg BID X 2 weeks then
3) Carvedilol 12.5 mg BID X 2 weeks then
4) Carvedilol 25 mg BID X 2 weeks then
5) Titrate to 50 mg BID if weight > 85 kg if HR, BP and HF allow.

__ **Metoprolol:**

1) Metoprolol 12.5 mg BID X 2 weeks then
2) Metoprolol 25 mg BID X 2 weeks then
3) Metoprolol 50 mg BID X 2 weeks then
4) Continue up-titration to 75 mg BID if HR, BP and HF allow.

Adjusting concomitant medications:

1) Dizziness
   a) ↓ diuretic
   b) ↓ ß-blocker
2) Worsening HF
   a) ↑ diuretic
   b) ↓ ß-blocker
   c) d/c ß-blocker
3) Bradycardia < 50bpm
   a) ↓ ß-blocker
   b) d/c ß-blocker

❍ Modified Protocol: Start Lower and Go Slower

Follow-up Q 4 weeks

__ **Bisoprolol:**

1) Bisoprolol 1.25 mg EOD X 2 weeks then
2) Bisoprolol 1.25 mg OD X 2 weeks then
3) Bisoprolol 2.5 mg OD X 2 weeks then
4) Bisoprolol 5.0 mg OD X 2 weeks then
5) Titrate to 10 mg OD if HR, BP and HF allow.

__ **Carvedilol:**

1) Carvedilol 3.125 mg OD X 1 week then
2) Carvedilol 3.125 mg BID X 1 week then
3) Carvedilol 3.125 mg TID X 1 week then
4) Carvedilol 6.25 mg BID X 2 weeks then
5) Carvedilol 6.25 mg TID X 2 weeks then
6) Carvedilol 12.5 mg BID X 2 weeks then
7) Carvedilol 12.5 mg TID X 2 weeks then
8) Carvedilol 25 mg BID then
9) Titrate to 50 mg BID if weight > 85 kg if HR, BP and HF allow.

__ **Metoprolol:**

1) Metoprolol 12.5 mg OD X 2 weeks then
2) Metoprolol 12.5 mg BID X 2 weeks then
3) Metoprolol 12.5 mg TID X 2 weeks then
4) Metoprolol 25 mg BID X 4 weeks then
5) Metoprolol 25 mg TID X 4 weeks then
6) Metoprolol 50 mg BID X 4 weeks then
7) Continue up-titration to 75 mg BID if HR, BP and HF allow.

Adjusting concomitant medications:

1) Dizziness
   a) ↓ diuretic
   b) ↓ ß-blocker
2) Worsening HF
   a) ↑ diuretic
   b) ↓ ß-blocker
   c) d/c ß-blocker
3) Bradycardia < 50bpm
   a) ↓ ß-blocker
   b) d/c ß-blocker

EOD-every other day/OD-daily/BID-twice daily/TID-three times daily