Patient decision aid: Heart failure — beta blocker treatment

What this patient decision aid is for

This patient decision aid is intended to assist healthcare professionals in consultations with patients who have chronic heart failure (CHF) due to left ventricular systolic dysfunction (LVSD). It relates to patients considering whether or not to take a beta blocker. An information leaflet for patients explaining CHF including management and treatments can be found on the Clinical Knowledge Summaries (CKS) website [www.cks.library.nhs.uk/heartfailure](http://www.cks.library.nhs.uk/heartfailure).

How much does taking a beta blocker improve outcomes in patients with CHF caused by LVSD?

Beta blockers are now routinely recommended in all patients with CHF due to LVSD, in addition to standard therapies of angiotensin-converting enzyme inhibitors (ACEIs) and diuretics, regardless of whether symptoms persist or not, unless contraindicated. This recommendation is based on evidence from systematic reviews of randomised controlled trials (RCTs) which demonstrate that (some) beta blockers reduce the risk of hospitalisation for heart failure and increase life expectancy compared with placebo in patients with all grades of heart failure due to LVSD.¹²

One meta-analysis that included 22 RCTs (n=10 135) conducted in patients with any grade of heart failure, found that compared with placebo, beta blockers significantly reduced the risk of death (8.4% vs 12.8%; odds ratio [OR] 0.65; 95% confidence interval [CI] 0.53–0.80; number needed to treat [NNT] 23), and hospital admissions for heart failure (10.3% vs 15.6%; OR 0.64; 95% CrI 0.53–0.79; NNT 19). The trials in this meta-analysis were from 3–23 months, but most of the data comes from two trials of 12 and 15 months. Benefits were observed for both selective and non-selective beta blockers.²³
The diagrams on the next page, (Cates plots), give a pictorial representation of these figures and show what happens with and without beta blocker treatment in a group of 100 people with heart failure due to LVSD. As most of the data in the meta-analysis comes from two trials of 12 and 15 months the assumption is made that these data reflect outcomes for approximately 1 year of treatment.

**Side effects of beta blockers**

Treatment with beta blockers is given to improve symptoms, prevent worsening of CHF leading to hospitalisation and to increase survival. However, temporary symptomatic deterioration can occur during initiation and up-titration. Beta blocker treatment should be initiated at a low dose and titrated slowly to a target dose, or maximum tolerated dose. Patients should be advised that symptoms such as tiredness, fatigue and breathlessness can usually be easily managed by adjustment of other medication, so should report any altered symptoms to their clinician. Symptomatic improvement may take 3–6 months or longer.¹

The following data are from an overview of nine RCTs (n=14 594) of beta blocker therapy in heart failure that quantified the risks of adverse events. Although beta blocker therapy was associated with hypotension, dizziness and bradycardia the absolute increases in risk were small and overall fewer patients were withdrawn from beta blocker therapy than from placebo.⁴

Beta blocker therapy was associated with significant absolute annual increases in risks of hypotension (11 per 1000; 95% CI 0–22), dizziness (57 per 1000; 95% CI 11–104), and bradycardia (38 per 1000; 95% CI 21–54). There was no significant absolute risk of fatigue associated with therapy (3 per 1000; 95% CI –2 to 9). Beta blocker therapy was associated with a reduction in all-cause withdrawal of medication (14 per 1000; 95% CI –2 to 29) as well as significant reductions in all-cause mortality (34 per 1000; 95% CI 20–49), CHF hospitalisations (40 per 1000; 95% CI 22–58), and worsening CHF (52 per 1000; 95% CI 10–94).

Any suspected adverse drug reactions with beta blocker treatment should be reported through the **yellow card scheme.**
References


Source of images

The images (Cates plots) have been produced using Dr Chris Cates’s software VisualRx 2.0. More information can be obtained from the website www.nntonline.net.
**Effect of beta blocker treatment on risk of death over 1 year for people with CHF due to LVSD**

Imagine 100 people with CHF due to LVSD. In the next year about 13 of them will die, 87 of them will not die (100 – 13 = 87; Figure A). However, if those same 100 people each take a beta blocker for 1 year (Figure B):

- About 4 people will be ‘saved’ from dying by taking a beta blocker (the yellow faces).
- About 87 people will not die — but would not have done so even if they had not taken a beta blocker (the green faces).
- About 9 people will still die even though they take a beta blocker (the red faces).

But remember

- It is impossible to know for sure what will happen to each individual person.
- All 100 people will have to take the beta blocker for 12 months.
Effect of beta blocker treatment on risk of hospital admission for heart failure over 12 months for people with CHF due to LVSD

Imagine 100 people with CHF due to LVSD. In the next 12 months, about 16 of them will be admitted to hospital for heart failure. So 84 of them will not be admitted to hospital for heart failure (100 – 16 = 84 – Figure C).

However, if those same 100 people each take a beta blocker for 1 year (Figure D):

- About 5 people will be ‘saved’ from being admitted to hospital by taking a beta blocker (the yellow faces).
- About 84 people will not have a CV event — but would not have done so even if they had not taken a beta blocker (the green faces).
- About 11 people will still be admitted to hospital even though they take a beta blocker (the red faces).

But remember

- It is impossible to know for sure what will happen to each individual person.
- All 100 people will have to take the beta blocker for 12 months.