

# RGH Pharmacy E-Bulletin

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A joint initiative of the Patient Services Section and the Drug and Therapeutics Information Service of the Pharmacy Department, Repatriation General Hospital, Daw Park, South Australia. The RGH Pharmacy E-Bulletin is distributed in electronic format on a weekly basis, and aims to present concise, factual information on issues of current interest in therapeutics, drug safety and cost-effective use of medications.

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## Use of beta blockers for COPD patients with heart failure

$\beta$ -blockers have been shown to have several beneficial effects in cardiovascular disease and therefore are used for a variety of indications such as post-myocardial infarction, congestive heart failure, hypertension, angina and arrhythmias. Despite these benefits,  $\beta$ -blockers are often under-prescribed in COPD patients due to belief that they can precipitate respiratory deterioration or cause bronchospasm. This E-bulletin aims to summarise some of the existing evidence on using  $\beta$ -blockers in COPD patients.

A Cochrane Review conducted in 2008 included 20 randomised control trials showed that cardio-selective  $\beta$ -blockers produced no change in FEV1 or respiratory symptoms compared to placebo, even in patients with severe COPD or for those with a reversible obstructive component. This review concluded that cardio-selective  $\beta$ -blockers should not be routinely withheld from patients with COPD. It should however be noted that the studies included in this review were generally small and of short duration (11 involved single doses), some were single blinded only and some did not include a placebo group.

More recently an observational cohort study suggested that  $\beta$ -blockers may reduce mortality and even risk of exacerbations in patients with COPD. A total of 2230 patients with a diagnosis of COPD were identified through database from a network of 35 GPs in Netherlands over a 10 year period. 30% of these patients used  $\beta$ -blockers (mostly cardio-selective) and expectedly these patients had more cardiovascular diseases and other cardiac medication use. The following table illustrates the primary outcomes generated from the study:

	Total (average)	$\beta$ -blocker users	Non $\beta$ -blocker users
<b>Mortality</b>	30.8% (686/2230)	27.2%	32.3%
<b>COPD exacerbation</b>	47.3% (1055/2230)	42.7%	49.3%

The researchers concluded that  $\beta$ -blockers were associated with a 5.1% absolute risk reduction of mortality ( $p=0.02$ ) and 6.6% absolute risk reduction ( $p=0.005$ ) of COPD exacerbation. Some of the suggested benefits of  $\beta$ -blockers in COPD include the ability of  $\beta$ -blockers to temper the sympathetic nervous system, therefore reducing the heart rate and negative systemic effects in COPD disease progression. By enhancing cardiac function,  $\beta$ -blockers might improve pulmonary haemodynamics and reduce symptoms in COPD. The results from this recent study seem promising but limitations to this study have to be taken into account. The diagnosis of COPD was made at the GP clinic (not always based on spirometry) and therefore there was potential for misclassification of COPD (as symptoms could be due to heart failure or ischaemic heart disease). The severity of COPD was not mentioned in the study, there could be a bias of sicker patients not being prescribed  $\beta$ -blockers by their GPs. Furthermore, the cause for COPD exacerbation is unknown in up to 50% of cases, therefore what was identified as COPD exacerbation in the study could well be representing a cardiovascular event.

Results generated from available studies suggest that  $\beta$ -blockers may be safe and beneficial to be used in patients with COPD who need them for concurrent cardiovascular diseases. However due to the potential limitations associated with the existing evidence, it is still appropriate to use cardio-selective  $\beta$ -blockers in patients with COPD at the lowest effective dose and to titrate slowly with attention to lung function and symptoms.

This E-Bulletin is based on work by Jody Chu, Senior Clinical Pharmacist, RGH

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