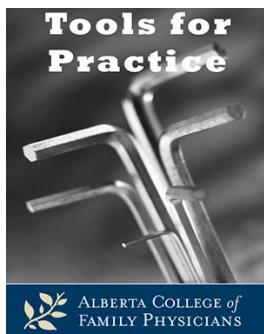


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Reviewed: August 22, 2016
Evidence Updated: New evidence
Bottom Line: Minor change
First Published: November 30, 2009



Atenolol & Beta-Blockers for Primary Hypertension: Do They Perform Under Pressure?

Clinical Question: Are beta-blockers, particularly atenolol, as effective as other antihypertensive medications in preventing important outcomes in hypertensive patients?

Bottom-line: Atenolol is an inferior choice for blood pressure treatment. Other antihypertensive classes (ACEI /ARB, calcium-channel blocker, diuretic) should all generally be considered first before using beta-blockers in patients with uncomplicated hypertension.

Evidence:

- Multiple large meta-analyses have examined this question:
 - 2005 meta-analysis¹ compared all beta-blockers against other antihypertensives (13 trials; 105,951 patients) over 2.7-10 years.
 - Beta-blockers versus all other antihypertensives:
 - Statistically significantly increased risk of stroke [Number Needed to Harm (NNH)=461].
 - No difference in myocardial infarction or death.
 - Atenolol versus non-beta-blocker antihypertensives:
 - Statistically significant increased stroke (NNH ~130) and death (NNH ~140).
 - Similar results in 2004 meta-analysis by same authors,² Cochrane review,³ and newer meta-analysis.⁴
 - Beta-blockers worse than ACEIs/ARBs, calcium-channel blockers, and diuretics.⁴
 - 2006 meta-analysis⁵ stratifying trials by age subgroup found different effects when comparing beta-blockers to other antihypertensives:
 - <60 years: Relative risk 0.97 (0.88-1.07).
 - ≥60 years: Relative risk 1.06 (1.01-1.10).
 - Limitations: Age cutoff arbitrary and based on trial-wide mean age rather than individual-patient data, thus between-age difference could merely be due to chance or methodological differences between trials.

- 2014 meta-analysis found largely consistent results between atenolol and other beta-blockers versus other antihypertensives.⁶
- Limitations: Atenolol was the beta-blocker taken by 75% of trial participants,³ multiple different comparator drugs from different classes pooled together.

Context:

- Guidelines recommend against beta-blockers as 1st-line therapy for uncomplicated hypertension in general (UK⁷) or specifically in patients ≥ 60 years (Canada⁸), unless there are comorbid conditions which benefit from beta-blockers.
- Beta-blockers are highly effective agents in patients with other indications (such as post-myocardial infarction⁹ or heart failure with reduced ejection fraction¹⁰).

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