

Image-guided prostate biopsy using magnetic resonance imaging-derived targets: a systematic review

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Abstract

Context: Technical improvements in prostate magnetic resonance imaging (MRI) have resulted in the use of MRI to target prostate biopsies.

Objective: To systematically review the literature to compare the accuracy of MRI-targeted biopsy with standard transrectal biopsy in the detection of clinically significant prostate cancer.

Evidence acquisition: The PubMed, Embase, and Cochrane databases were searched from inception until December 3, 2011, using the search criteria 'prostate OR prostate cancer' AND 'magnetic resonance imaging OR MRI' AND 'biopsy OR target'. Four reviewers independently assessed 4222 records; 222 records required full review. Fifty unique records (corresponding to 16 discrete patient populations) directly compared an MRI-targeted with a standard transrectal approach.

Evidence synthesis: Evidence synthesis was used to address specific questions. Where MRI was applied to all biopsy-naive men, 62% (374 of 599) had MRI abnormalities. When subjected to a targeted biopsy, 66% (248 of 374) had prostate cancer detected. Both targeted and standard biopsy detected clinically significant cancer in 43% (236 or 237 of 555, respectively). Missed clinically significant cancers occurred in 13 men using targeted biopsy and 12 using a standard approach. Targeted biopsy was more efficient. A third fewer men were biopsied overall. Those who had biopsy required a mean of 3.8 targeted cores compared with 12 standard cores. A targeted approach avoided the

diagnosis of clinically insignificant cancer in 53 of 555 (10%) of the presenting population.

Conclusions: MRI-guided biopsy detects clinically significant prostate cancer in an equivalent number of men versus standard biopsy. This is achieved using fewer biopsies in fewer men, with a reduction in the diagnosis of clinically insignificant cancer. Variability in study methodology limits the strength of recommendation that can be made. There is a need for a robust multicentre trial of targeted biopsies.

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Comment in

- [Magnetic resonance imaging-targeted prostate biopsy: back to the future.](#) Ehdaie B, Shariat SF. *Eur Urol.* 2013 Jan;63(1):141-2; discussion 143-4. doi: 10.1016/j.eururo.2012.06.049. Epub 2012 Jul 4. PMID: 22790287 No abstract available.
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