CRD summary
This well conducted review concluded that sentinel node mapping was an accurate method of pelvic lymph node staging in patients with prostate cancer and had a high detection rate and low false-negative rate. This conclusion is supported by the data presented and is likely to be reliable.

Authors' objectives
To assess the accuracy of sentinel node mapping in prostate cancer.

Searching
MEDLINE, Scopus, Google Scholar, Springer and Science Direct were searched without date or language limitation. Search terms were reported. The bibliographies of retrieved articles were screened for additional studies.

Study selection
Studies of sentinel node mapping in prostate cancer that included at least ten participants were eligible for inclusion. The outcomes of interest were detection rate and sensitivity.

The mean age of study participants ranged from 63 to 68 years and the mean pre-operative prostate-specific antigen value ranged from 8.26 to 42, where reported. Details of the imaging technique used in included studies were reported in the paper; most studies used $^{99m}$Tc-nanocolloid tracer. Most included studies reported using pelvic lymph node dissection as the reference standard in all patients or in patients with a positive sentinel node.

Two reviewers independently assessed studies for inclusion and disagreements were resolved by consultation with a third reviewer.

Assessment of study quality
The methodological quality of included studies was assessed with the Oxford Centre for Evidence Based Medicine checklist for diagnostic studies. Criteria included: consecutive recruitment of participants; representative spectrum (patients with prostate cancer but without evidence of metastases and, ideally, no restriction by prostate-specific antigen or Gleason score); adequate reporting of sentinel node mapping technique and reference standard; reference standard (ideally standard or extensive pelvic lymph node dissection) applied to all patients regardless of sentinel node result.

Two reviewers assessed methodological quality.

Data extraction
Data were extracted on detection rate and false-negative rate for each study and sensitivity estimates, with 95% confidence intervals (CIs) were calculated.

Two reviewers independently extracted data.

Methods of synthesis
Pooled estimates of sensitivity and detection rate (with 95% CIs) were calculated using a DerSimonian and Laird random-effects model. Between-study heterogeneity was assessed using the Cochrane Q test and quantified using $I^2$. Publication bias was assessed with funnel plots, the Egger test and Orwein's fail-safe N.

Results of the review
Twenty-one studies, with approximately 4,200 participants (range 16 to 2020), were included in the review. Most included studies had an appropriate spectrum of participants and gave an adequate description of tests. Only two studies reported consecutive recruitment. Five studies reported using only minimal pelvic lymph node dissection as the reference standard or did not apply pelvic lymph node dissection in all patients (one further study did not report details of the reference standard).
The pooled estimate of sensitivity was 94% (95% CI 91 to 96%), based on 16 studies with no evidence of statistical heterogeneity. Sensitivity analysis of studies with 10 patients or more with involved pelvic lymph nodes gave similar results.

The pooled detection rate was 93.8% (95% CI 89 to 96.6%), based on 21 studies with high between-study heterogeneity (I² 90%). Sensitivity analysis, excluding two studies with sub-optimal labelling or low dose tracer, and subgroup analyses (laparoscopic and open) gave similar results.

Egger's test showed no evidence of publication bias. However, funnel plots were asymmetric, which indicated the presence of publication bias and Orwin's fail-safe N indicated that publication bias would be likely to have an effect, if present.

**Authors' conclusions**
Sentinel node mapping was an accurate method of pelvic lymph node staging in patients with prostate cancer, as it had a high detection rate and low false-negative rate.

**CRD commentary**
The article provided a clear research objective and some broad inclusion criteria (index test and participants) were defined. The reference standard was defined by the quality assessment criteria. Several sources were searched without language restrictions for relevant articles which minimised the likelihood that relevant articles were missed. Measures to minimise error and/or bias were applied throughout the review process and the methodological quality of included studies was assessed and reported.

The meta-analytic methods used were broadly appropriate, but it should be noted that there was high between-study heterogeneity in the estimates of detection rate. The authors’ conclusions reflected the data presented and were likely to have been reliable.

**Implications of the review for practice and research**
**Practice:** The authors stated that sentinel node mapping could prevent unnecessary pelvic lymph node dissection in prostate cancer patients.

**Research:** The authors did not specify any recommendations for future research.

**Funding**
Not stated

**Bibliographic details**

**PubMedID**
21264441

**DOI**
10.3413/nukmed-0339-10-07

**Original Paper URL**
http://www.schattauer.de/en/magazine/subject-areas/journals-a-z/nuklearmedizin-nuclearmedicine/contents/archive/issue/1406/manuscript/15707.html

**Indexing Status**
Subject indexing assigned by NLM

**MeSH**
Adult; Aged; Aged, 80 and over; Carcinoma /epidemiology /pathology /secondary; Humans; Incidence; Lymph Nodes
Accession Number
12011005470

Date bibliographic record published
08/02/2012

Date abstract record published
12/06/2012

Record Status
This is a critical abstract of a systematic review that meets the criteria for inclusion on DARE. Each critical abstract contains a brief summary of the review methods, results and conclusions followed by a detailed critical assessment on the reliability of the review and the conclusions drawn.