**Robotic Assisted Cystectomy for patients with bladder cancer**

**Evidence Synthesis and recommendations for the NHS England Clinical Panel**

**Recommendation**

There has been no significant change in the level of evidence, or outcomes data in the 15 months following the SPH clinical evidence review. The conclusions from the SPH review remain a robust reflection of the evidence base in relation to robotic assisted cystectomy for patients with bladder cancer

## 1. Background

Solutions for Public Health were commissioned in 2014 to undertake the evidence review to assess the effectiveness of for Robot Assisted Cystectomy for patients with bladder cancer. This review was completed in August 2014.

The Clinical Reference Group for Specialised Urology has developed a Commissioning to Evaluation proposal for Robotic Assisted Cystectomy. The CRG commissioned PHE to undertake a brief assurance exercise to assess whether the level of evidence relating to RAS for cystectomy has significantly changed in the 15 months since the SPH review was undertaken.

## 2. Methods

Using the same PICO developed by the CRG for the SPH review, PHE searched NICE, MEDLINE, EMBASE, NICE Evidence, NHIR Horizon Scanning centre, NHIR journals library, and Google. A full list of results and search strategy can be found in Appendix 1. Search results and papers were screened by the Public Health Lead for the urology CRG to remove duplicates and assess / review key studies.

## 3. Results

A total of 40 papers were identified (Appendix 1). Excluding case series, duplicate papers, and clinical guidelines. Table 1 identifies 9 papers which incorporate potentially higher quality study designs. From systematic reviews and meta-analysis, randomised controlled studies, and cohort studies.

One of these studies the Tang et al (2014) study was included in the SPH review, and was therefore subject to review.

**Table 1. Study type and key references (excluding case series results and clinical guidelines)**

| Study type | Key references |
|---|---|
| Literature review | Collins et al, 2015. Totally intracorporeal robot-assisted radical cystectomy: optimizing total outcomes. |
| Systematic reviews / meta analysis | Fonseka et al, 2015. Comparing robotic, laparoscopic and open cystectomy: a systematic review and meta-analysis.<br><br>Yuh B et al, 2015. Systematic review and cumulative analysis of oncolo and functional outcomes after robot-assisted radical cystectomy<br><br>Novara G, 2015. Systematic review and cumulative analysis of perioperative outcomes and complications after robot-assisted radical |

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| | cystectomy<br>Ishii et al, 2014. Robotic or open radical cystectomy, which is safer? A systematic review and meta-analysis of comparative studies<br>Tang K, 2014. Robotic vs. open radical cystectomy in bladder cancer: A systematic review and meta-analysis. |
| Randomised Controlled Studies | Bochner B.H et al, 2015.<br>Comparing open radical cystectomy and robot-assisted laparoscopic radical cystectomy: A randomized clinical trial<br><br>Messer et al, 2014.<br>Health-related quality of life from a prospective randomised clinical trial robot-assisted laparoscopic vs open radical cystectomy. |
| Cohort | Buse S et al, 2015. Robot-assisted en-bloc radical cystectomy with nephroureterectomy and intracorporal urinary diversion in ten patients v muscle-invasive bladder cancer and simultaneous upper urinary tract urothelial cell carcinoma or functionless kidney<br><br>Smith et al, 2015. The RAZOR (randomized open vs robotic cystectomy trial: study design and trial update. |

**4. Analysis of additional literature**

The Collins et al study (2015) reaches a similar conclusion to the SPH review, although is predominantly focussed on the comparison with open procedures. The authors conclude that there is an emerging evidence base for robotic cystectomy and that further prospective data are required to validate results.

The Fonseka et al study (2015) compared open, laparoscopic and robotic methods for cystectomy incorporating 24 studies and 2,104 cases. A meta-analysis was performed. Compared to laparoscopic approaches no significant differences were found in relation to length of stay, blood loss, lymph node yield or surgical margins. The authors therefore concluded that robotic assisted cystectomy is comparable to laparoscopic approaches. Significant differences compared with open approaches were reported.

The Ishii et study (2014) used a meta-analysis to compare robotic approaches to open approaches. Statistically significant differences were reported in favour of robotic approaches in relation to transfusion rates and high grade complication rates. No differences were reported in terms of surgical margins. Operating times were reported as longer using the robotic approach. The authors also conclude the need for further research addressing methodological flaws of some of the studies included, but conclude robotic approaches to be a safe and feasible alternative to approaches.

Both the Yu et al (2015) and Novara et al (2015) studies were classed as ‘Journal Conference Papers’ in the result, suggesting they have not yet been reported/published as full peer reviewed articles. Both abstracts highlight the need for more prospective data on robotic cystectomy in terms of long term outcomes, as well as highlighting the potential clinical equivalence with laparoscopic approaches.

In terms of RCTs, Bochner et al (2015) randomised 118 patients. The study reported no significant results when comparing robotic and open approaches over a range of clinical measures including 90-d complication rates, hospital stay, pathologic outcomes, and 3- and 6-mo

QOL outcomes concluding that trial failed to identify a large advantage for robot-assisted techniques over standard open surgery.

In relation to Health Related Quality of Life measures when comparing robotic to laparoscopic and open approaches, Messer et al (2014) concluded that there were no statistically significant differences across a range of HRQOL measures at 3 months post-surgery.

In terms of cohort studies, the Buse study focuses on 10 patients only and is focussed on technical and safety clinical outcome measures from the robotically performed procedure. The Smith et al (2014) paper reports the study design and progress in terms of recruitment for the RAZOR study.

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