## Evaluating the Consistency and Quality of Search Strategies and Methodology in Cochrane Urology Group Systematic Reviews

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**Abstract:**

Introduction: Systematic reviews (SRs) are the foundation of evidence-based medicine. As essential tools for synthesizing and evaluating evidence, they guide informed decision-making for clinicians and other stakeholders. In particular, the SRs produced by The Cochrane Collaboration are considered to be standards of methodological rigor and comprehensiveness. Therefore, it is imperative that Cochrane Systematic Reviews (CSRs) adhere to the highest standards, particularly in terms of the fundamental collection of evidence represented by databases searching and transparency of reporting search methods.

Methods: To assess the quality of searches and reporting in 65 Cochrane Urology Group Systematic Reviews and Protocols covering the past 2 decades, the authors created an evaluation form based on the PRESS Checklist, the Cochrane Handbook, and the Methodological Expectations of Cochrane Intervention Reviews. The search methodology, strategies, and reporting for each was independently reviewed by two librarians; any conflicts were resolved by group discussion.

Results: Comprehensive search methodology reporting, quality and inclusion of the search strategies varied widely over time. Fifteen percent (10/65) did not report a single full search strategy, and 62% (40/65) did not include search strategies for all databases reported. Errors in search strategies included line number mistakes, misspellings, incorrect syntax, and incorrect subject headings.

Conclusion: While CSRs are highly esteemed for methodological exactitude in other areas, they remain in need of improved search quality and reporting. Transparent reporting of search methods and reproducible search strategies is vital to the future of SRs if they are to continue to be a cornerstone of evidence-based medicine.

**Keywords:**

review literature as topic; quality of reporting; search strategies; transparency; reproducibility of results; systematic reviews

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**1. Introduction**

Systematic reviews (SRs) are essential tools, providing evidence for health care interventions. Effective and reproducible SRs help improve health care, establish best practices, and inform policy guidelines [[1,2]](https://paperpile.com/c/A7nuZ1/XOMF9+uDvAx). The foundation for all SRs is a comprehensive search of the existing evidence base [[3]](https://paperpile.com/c/A7nuZ1/MZBCb). This task includes searching multiple bibliographic databases, clinical trial registries, grey literature, and seeking unpublished research. The literature search is "an essential contribution toward ensuring accuracy and completeness of the evidence base" [[4]](https://paperpile.com/c/A7nuZ1/uS9OB). Prior research has shown the presence of a Librarian or Information Specialist on an SR team is "correlated with significantly higher-quality reported search strategies" [[5]](https://paperpile.com/c/A7nuZ1/qIlFP). To build on the existing research, we analyzed the quality of search strategies and methodology for 65 Cochrane Urology Group systematic reviews (SRs) and approved systematic review protocols (SRPs).

**2. Background**

The Cochrane Collaboration, founded in 1993, is a global multidisciplinary initiative working to produce and promote quality evidence to improve health care decision-making [[6]](https://paperpile.com/c/A7nuZ1/OPoxn). Cochrane SRs are known for their rigor and comprehensiveness. Cochrane Review Groups (CRGs), of which there are over 50 clinically focused areas [[7]](https://paperpile.com/c/A7nuZ1/y8Xv), "support Cochrane’s primary organizational function: the preparation and maintenance of systematic reviews" [[8]](https://paperpile.com/c/A7nuZ1/kX3Pj) and consist of personnel from institutions and organizations located throughout the world.

What is known today as the Cochrane Urology Group was originally registered as the Cochrane Collaborative Review Group in Prostatic Diseases in 1996 by Dr. Thomas Wilt at the University of Minnesota and the Minneapolis VA. It subsequently incorporated urologic cancers in 1997 along with a name change to the Cochrane Prostatic Diseases and Urologic Cancers Group (PDUC). In 2013, it came under the coordinating management of Dr. Philip Dahm at the University of Florida, Gainesville. Dr. Dahm later returned the group management to Minnesota, where it incorporated urology-related renal topics and was renamed as Cochrane Urology in 2015. With the expansion from PDUC to Urology, there was an accompanying growth in the team of supporting Information Specialists. Cochrane Urology currently utilizes a volunteer group comprised of one lead Cochrane Information Specialist and ten assistant Cochrane Information Specialists (CIS) from several institutions and two countries.

A CIS's responsibility is to provide comprehensive literature searching support for author teams by ensuring that the search methodologies meet the Methodological Expectations of Cochrane Intervention Reviews (MECIR) [[9]](https://paperpile.com/c/A7nuZ1/0QUxp). Tools for methodological quality assessment began to be developed in the late 1980s. Mulrowand Sacks' criteria for assessing the quality of systematic reviews, and Oxman and Guyatt's Overview Quality Assessment Questionnaire (OQAQ) both set forth standards for quality reporting [[10–12]](https://paperpile.com/c/A7nuZ1/qpeyb+noqAi+6KLVv). In 2000, Stroup et al. published a checklist which calls for reporting the qualifications of the searchers, publishing the search strategies, noting databases searched, search terms used, known as Meta-analyses of Observational Studies in Epidemiology (MOOSE) [[13]](https://paperpile.com/c/A7nuZ1/vO0nU). In 2007, A Measurement Tool to Assess Systematic Reviews (AMSTAR) [[14]](https://paperpile.com/c/A7nuZ1/Y0XjD) was established to address potential bias sources which was not covered in OQAQ [[15]](https://paperpile.com/c/A7nuZ1/A6Jsr). The AMSTAR was further revised to R-AMSTAR in 2010 to include a quantitative scoring method to evaluate quality [[15]](https://paperpile.com/c/A7nuZ1/A6Jsr) and in 2017, became the AMSTAR2 to cover both randomized and non-randomized studies [[16]](https://paperpile.com/c/A7nuZ1/aq5Y7). Additionally, the Quality of Reporting of Meta-analyses (QUOROM) statement was developed in 1999 to "evaluate the completeness of reporting of meta-analysis of randomized trials" [[15]](https://paperpile.com/c/A7nuZ1/A6Jsr). The QUOROM statement was updated in 2009 and is now known as the Preferred Reporting Items of Systematic review and Meta-Analyses (PRISMA) Statement, which is used "to address several conceptual and methodological advances in the conduct and reporting of systematic reviews" [[15]](https://paperpile.com/c/A7nuZ1/A6Jsr).

As for methodological quality assessment for searchers, there exists the Peer Review of Electronic Search Strategies Checklist (PRESS Checklist) [[4,17]](https://paperpile.com/c/A7nuZ1/mUX2U+uS9OB). This checklist assists searchers in checking for errors, avoiding bias, and maximizing the search for sensitivity and precision [[4]](https://paperpile.com/c/A7nuZ1/uS9OB). Errors in the search strategies can reduce the overall effectiveness of the review [[4]](https://paperpile.com/c/A7nuZ1/uS9OB).

There have only been a few similar attempts to assess the quality of Cochrane SR/SRP search quality. Two studies examined Cochrane SRs on specific topics and reported significant problems with the quality of information sources and search strategies [[18,19]](https://paperpile.com/c/A7nuZ1/htwcO+GUSyC). Cognetti et al. 2015 analyzed three Cochrane SRs in breast cancer surgery, identifying challenges in this area, and recommending standardization of Cochrane search method protocols, updating low-quality methods in older SRs, and educating journal editors and publishers regarding precise literature search reporting [[18]](https://paperpile.com/c/A7nuZ1/htwcO). In 2016, Faggion et al. assessed search strategy reporting in 85 Cochrane SRs in stereotactic radiosurgery [[19]](https://paperpile.com/c/A7nuZ1/GUSyC), finding that nearly half searched only one database and failed to report a search strategy.

Most recently, Franco et al. published a cross-sectional study of search methodology reporting [[20]](https://paperpile.com/c/A7nuZ1/nZ8pP) across a sample of 70 SRs published in 2015 from multiple CRGs. Shortcomings noted in their analysis included failing to search trial registries, imposing a language restriction, and inconsistent reporting. Seventy-three percent of the SRs had a design problem in the search strategy, over half of which could "limit both the sensitivity and precision of the search" [[20]](https://paperpile.com/c/A7nuZ1/nZ8pP).

None of the above studies assessed the longitudinal output of a single CRG, including both SRPs and completed SRs. The purpose of our study was to investigate and evaluate search strategy methodology and reporting within Cochrane Urology publications over nearly the first 20 years of its existence (1998-September 2016) to identify trends and make recommendations for quality improvement.

**3. Methods**

Two of Cochrane Urology's Assistant Information Specialists (JL and CP) collaborated with two other librarians (CT and JS) to comprehensively assess the search methodology and reporting in Cochrane Urology SRs and SRPs, illuminate how those have evolved over time, and utilize the data to make quality improvement recommendations to the developing group of Urology Information Specialists. The authors identified 65 SRs and SRPs published from 1998 through September 15, 2016 (see Table 1). Of those 65 records, 41 were Cochrane Systematic Reviews (SRs) while the remaining 24 were Cochrane Systematic Review Protocols (SRPs).

An evaluative assessment form was created by the authors using Qualtrics for data collection [[21]](https://paperpile.com/c/A7nuZ1/pa3Lz) and was based on the MECIR, the Cochrane Handbook, and the PRESS Checklist. These tools are commonly used to critique and assess Cochrane SR and SRP search strategies by Information Specialists [[9,17,22]](https://paperpile.com/c/A7nuZ1/wxIQM+0QUxp+mUX2U). The form was pre-tested by all 4 authors on multiple SRs and SRPs prior to the start of the formal data collection and revised as needed. The form is available upon request. To reduce bias and error in the evaluations and ensure interrater reliability, each SR/SRP was reviewed by two authors, followed by paired conflict resolution.

The key areas of evaluation were the search methods and the search strategies. In addition to PRESS Checklist elements such as translation, consistency, operators, subject headings, natural language, spelling, and syntax, reviewers also recorded which databases were reported, platforms used, inclusion of grey literature, use of filters, and language and date limitations.

**4. Results**

The 65 SR/SRPs covered the years 1998-2016 with wide variation in the number produced per year (See Figure 1). The authors observed high variability in all aspects of SR/SRP search methods throughout the lifetime of Cochrane Urology and its precedents. Overall, the number of SR/SRPs that contained at least one analyzable search strategy was 55 of the 65 (85%), but only 15 (23%) provided full search strategies for all databases listed in the methods. Further, the choice of databases was extremely inconsistent with only MEDLINE and a Cochrane database reported in all 65 reviews.

The selection of MEDLINE search platforms was not well reported. Given variations in the availability of search fields and proximity operators between different MEDLINE interfaces, this may have affected search results. Similarly, although all 65 SR/SRPs searched a Cochrane database, its identity wasn’t always clear, including 8 unspecified listings, the Cochrane Wiley Library, the Cochrane Central Registry of Controlled Trials (CENTRAL), and a CRG internal database.

The selection of databases beyond MEDLINE and Cochrane among the SR/SRPs was extremely inconsistent, and there was a significant failure to report either search platforms or strategies for those databases. Out of 65 SR/SRPs, the number listing searches of the following databases were: Embase n=58 (89%), LILACS n=27 (9%), Web of Science n=16 (5%), CINAHL n=9 (3%), Scopus n=10 (3%), PsycINFO n=7 (2.3%), and miscellaneous others n=43 (14%). Where more than one database interface was available, there was variation in choice and reporting. A few platform selections were unidentifiable despite a provided search strategy, because of mixed or unrecognizable syntax (See Figure 2).

Within those SR/SRPs containing at least one documented search strategy (n=55), a substantial number of common errors were observed, including line numbers (n=10; 18%), inaccurate subject headings (n=25; 45%), incorrect syntax for subject headings (n=26; 47%), missing text words (n=19; 35%); misspellings (n=10; 18%), and incorrect syntax of various types (n=25; 45%) (See Figure 3). Where adjacency operators were used, they were syntactically inaccurate in 4/31 (13%); the specified word distances used were inappropriate in length in 12/31 (39%). Where phrase searching was used as an alternative to adjacency searching, it was inaccurately done in 6/19 (32%). Also, 6/46 (13%) used truncation incorrectly.

One distinct concern was the high inconsistency in utilizing alternative drug names in search strategies, with 14/27 (52%) of the drug-related reviews missing potentially relevant terms, particularly given the absence of the pharmacological action field in Ovid versus PubMed MEDLINE.

Other issues in search method reporting included irregularity in the inclusion of clinical trial registries, conference proceedings, and journal table of contents. While 59 (91%) reported citation tracking, only 36 (55%) incorporated trial registry searching, and those were variable in their registry selection. Only 11 (17%) reported hand-searching of journals. Thirty-five (54%) reported searching for conference abstracts, albeit through differing means. Of those, 13 (37%) hand-searched association table of contents (TOCs), 2 (6%) keyword searched association TOCs, 3 (9%) searched indexing databases such as Web of Science, and 16 (47%) utilized miscellaneous other methods, not always clearly defined.

Search strategies for different databases within the same SR/SRP were often inconsistent when reported; analysis was limited by the absence of many search strategies (See Table 3). The use of the same text words was consistent in 14/20 (70%), of matching subject headings (accounting controlled vocabulary differences) 14/19 (74%), of publication-type filters 12/17 (71%), and correlation of field tags (accounting for variant database syntax) 12/19 (63%). Given that controlled vocabularies, field tag syntax and availability, and existence of verified publication-type filters all diverge between database interfaces, there is need for further development of best practices for translating search strategies.

Retrospectively, certain patterns in the SRs emerged, albeit with high levels of variation and inconsistency. We categorized the SR/SRPs based on two factors: 1) the provision of search strategies in the methods or appendices; and 2) the presence of a list of MeSH terms. The results are shown in Table 4. Despite a significant lack of reporting overall, there does appear to be an evolution over time towards more robust reporting. The earliest and second-largest group of SRs (n=11; 17%), dated 1998-2012, did not report any database search strategies in the methods, not even MEDLINE, although they did provide a list of MeSH Terms. The most common Cochrane SR format (n=19; 29%) consisted of a single MEDLINE search in the methods and the bottom list of MeSH Terms. For an example of this frequent pattern, see the visual representation of the relevant sections in Figure 4 of an SR entitled "Lycopene for the prevention of prostate cancer," published in 2011 by Ilic, et al., CD008007.[[23]](https://paperpile.com/c/A7nuZ1/D3nC2) The third largest group of SRs (n=7; 11%), dated 2010-2014, provided a complete set of search strategies with only MeSH check tags, not complete MeSH terms, and one additional SR from 2016 also reported a complete set of search strategies, but had no MeSH terms. Overall, these results indicate a slow trend towards completeness in reporting full search strategies in SRs.

The SRPs were more variable overall, but the second-largest group of protocols (n=7; 11%), dated 2012-2016, appear to follow the common SR pattern of reporting the single MEDLINE strategy, albeit without the MeSH term list which may be an addition during the transition from SRP to SR. The trend towards increased completeness and consistency over time remains evident in the SRPs, as the largest group of protocols (n=12; 18%), dated 2014-2016, provided a complete set of search strategies. Therefore, this data supports a trend towards increased completeness of reporting in SRPs as well as SRs since 2014.

**5. Discussion**

The changing quality in search strategies and reporting in Cochrane Urology SR/SRPs over time demonstrated that the standards and recommendations set forth by MECIR and the Cochrane Handbook were not consistently enforced [[9,22]](https://paperpile.com/c/A7nuZ1/0QUxp+wxIQM). There has been some movement towards more complete presentation of search strategies in appendices, as part of the Cochrane Collaboration's efforts to increase the quality and transparency of reporting. In particular, the advent of the MECIR standards in 2011 helped facilitate the improved disclosure of full, replicable search strategies for at least some of the databases searched. Nonetheless, these results correlate well with those of the studies discussed above, indicating that the Cochrane SRs, while highly regarded, and rightly so, for their methodological rigor in evaluating and synthesizing the literature, have continued to be plagued with endemic problems in search quality and reporting.

One notable problem within the search strategies was the fluctuating use and structure of publication-type filters, including individual alterations to the standard Cochrane Highly Sensitive Search Strategies for Identification of Randomized Trials in MEDLINE [[22]](https://paperpile.com/c/A7nuZ1/wxIQM). As the Cochrane Handbook only provides standard filters for MEDLINE (Ovid and PubMed), the variability of publication-type filters is even more extensive for other databases [[22]](https://paperpile.com/c/A7nuZ1/wxIQM). While a few authors have published some potentially adaptable filters, CISs and other librarians involved in applying quality methodology to non-Cochrane SRs are left with minimal guidance on creating valid publication-type filters, particularly for reviews that include non-RCT study types and specialized or under-utilized databases.

Another detail often excluded was any narrative or justification for database selection and search methods. SR/SRP methods commonly failed to report whether appropriate databases, journal table of contents, or relevant conference proceedings were searched, and it was not always clear if authors were contacted to obtain unpublished data. Special attention should be given to the task of documenting all details of the search, as this can affect its reproducibility.

There were concerns among SRs and SRPs with a drug-related focus. Ovid MEDLINE lacks both supplementary concept and pharmacological action fields. Searches related to drugs are more effectively conducted in PubMed than Ovid MEDLINE for these reasons, which may have affected the results. Further, additional drug terms supplied by Embase's Emtree synonyms were often omitted. It is important from a systematic standpoint to include a drug's chemical names, generic and formulary names, former names, and other synonyms as additional text words.

The observed trends towards improvement over time did not occur smoothly, yet a comparison of the differences between the SRPs and the SRs indicates a progression towards greater completeness in reporting. In general, an SRP is less thorough than a finalized SR, as was observed in earlier years. However, the most recent set of protocols (2014-2016) were far more complete, reporting all search strategies. This improvement was also seen in the SRs, but lagged behind the SRPs, likely due to the significant amount of time between publishing a SRP and the final SR. As the later SRPs become SRs, the completeness of search strategy reporting in SRs should catch up.

Other research conducted to assess search quality in non-Cochrane SRs reinforces the need to standardize methodologies, report transparently, and utilize peer review in the creation of complex search strategies and methods. Requiring peer-review, using the PRESS Checklist or similar standard, for any systematic or comprehensive search [[17]](https://paperpile.com/c/A7nuZ1/mUX2U). would be of great value to Cochrane and others. The frequent errors in the Boolean operators, subject headings, spelling, natural language omissions, and syntax/translation of the provided search strategies found in this analysis would certainly diminish if peer review was mandatory.

For such reasons, Cochrane announced its first official peer review policy in April 2018 [[24]](https://paperpile.com/c/A7nuZ1/AI4LA), aiming to have all CRGs fully compliant by 2019. The CIS working group established to implement this policy will also be responsible for improving standards for search strategy reporting in SR/SRPs. As of January 2018, updated and expanded MECIR standards were published that emphasize reporting transparency and allow for updates and edits when necessary. Additionally, a new version of the Cochrane Handbook is underway and will include updates regarding methods reporting and use of the PRISMA Flow Diagram [[3,22]](https://paperpile.com/c/A7nuZ1/wxIQM+MZBCb).

**6. Limitations**

Assessment was difficult in many cases, given the frequent absence of reported search strategies. Pre-testing of the form on more recent SR/SRPs led to difficulties with the underestimated lack of data in the older ones. Alternatively, there was other data that would have been useful to capture.Furthermore, some SRPs have been replaced by completed SRs and some SRs have been revised since this analysis was done. For consistency, the original versions at the completion of data collection in early 2017 are the ones reported and analyzed here.

Another issue involves the differences in how CRGs utilize and reimburse CISs, limiting the generalizability of these results. Since 2013, the Cochrane Urology Group has used an expanding pool of volunteer (unpaid) CISs to provide personalized assistance to author teams. However, other CRGs use alternative strategies including hiring a full- or part-time paid CIS, the sole use of a CIS-maintained internal registry of the literature searched on behalf of author teams, and the use of CIS pre-created search strategies.

**7. Conclusion**

Our results clearly demonstrate a need for continued improvement in standardization including complete documentation of all strategies, more uniform database selection, less variation in strategy construction, formalized use of peer-review, consistent inclusion of the PRISMA Flow Diagram, and closer adherence to the Cochrane Handbook and MECIR standards.

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[22] [Higgins JPT, Green S, editors. Cochrane Handbook for Systematic Reviews of Interventions. Chichester, UK: John Wiley & Sons, Ltd; 2008. doi:](http://paperpile.com/b/A7nuZ1/wxIQM)[10.1002/9780470712184](http://dx.doi.org/10.1002/9780470712184)[.](http://paperpile.com/b/A7nuZ1/wxIQM)

[23] [Ilic D, Forbes KM, Hassed C. Lycopene for the prevention of prostate cancer. Cochrane Database Syst Rev 2011:CD008007. doi:](http://paperpile.com/b/A7nuZ1/D3nC2)[10.1002/14651858.CD008007.pub2](http://dx.doi.org/10.1002/14651858.CD008007.pub2)[.](http://paperpile.com/b/A7nuZ1/D3nC2)

[24] [Cochrane Peer Review Policy. Cochrane Community: Peer Review Policy n.d.](http://paperpile.com/b/A7nuZ1/AI4LA) <http://community.cochrane.org/editorial-and-publishing-policy-resource/cochrane-review-management/cochrane-peer-review-policy> [(accessed June 29, 2018).](http://paperpile.com/b/A7nuZ1/AI4LA)

## Tables 1-4

**Table 1: List of Included SR/SRPs (in ascending order by year)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Cochrane ID# | Year | Authors | Title (Review or Protocol) | Link |
| CD001044 | 1998 | Wilt TJ, Ishani A | Pygeum africanum for benign prostatic hyperplasia (Review) | <http://cochranelibrary-wiley.com/doi/10.1002/14651858.CD001044/abstract> |
| CD002080 | 1999 | McNaughton CM, MacDonald R, Wilt TJ | Interventions for chronic abacterial prostatitis (Review) | <http://cochranelibrary-wiley.com/doi/10.1002/14651858.CD002080/abstract> |
| CD001526 | 1999 | Schmitt B, Bennett C, Seidenfeld J, Samson D, Wilt TJ | Maximal androgen blockade for advanced prostate cancer (Review) | <http://cochranelibrary-wiley.com/doi/10.1002/14651858.CD001526/abstract> |
| CD001043 | 1999 | Wilt TJ, Ishani A, MacDonald R, Stark G, Mulrow CD, Lau J | Beta-sitosterols for benign prostatic hyperplasia (Review) | <http://cochranelibrary-wiley.com/doi/10.1002/14651858.CD001043/abstract> |
| CD001987 | 2000 | Hoffman RM, MacDonald R, Wilt T | Laser prostatectomy for benign prostatic obstruction (Review) | <http://cochranelibrary-wiley.com/doi/10.1002/14651858.CD001987.pub2/abstract> |
| CD001986 | 2000 | Shelley M, Court JB, Kynaston H, Wilt TJ, Fish R, Mason M | Intravesical Bacillus Calmette-Guerin in Ta and T1 bladder cancer (Review) | <http://cochranelibrary-wiley.com/doi/10.1002/14651858.CD001986/abstract> |
| CD002079 | 2001 | Shelley M, Barber J, Wilt TJ, Mason M | Surgery versus radiotherapy for muscle invasive bladder cancer (Review) | <http://cochranelibrary-wiley.com/doi/10.1002/14651858.CD002079/abstract> |
| CD003506 | 2001 | Wilt TJ, Nair B, MacDonald R, Rutks I | Early versus deferred androgen suppression in the treatment of advanced prostatic cancer (Review) | <http://cochranelibrary-wiley.com/doi/10.1002/14651858.CD003506/abstract> |
| CD001041 | 2002 | McNaughton CM, Wilt TJ | Allopurinol for chronic prostatitis (Review) | <http://cochranelibrary-wiley.com/doi/10.1002/14651858.CD001041/abstract> |
| CD004721 | 2002 | Sze WM, Shelley M, Held I, Mason M | Palliation of metastatic bone pain: single fraction versus multifraction radiotherapy (Review) | <http://cochranelibrary-wiley.com/doi/10.1002/14651858.CD004721/abstract> |
| CD005246 | 2004 | Vale, CL | Neo-adjuvant chemotherapy for invasive bladder cancer (Review) | <http://cochranelibrary-wiley.com/doi/10.1002/14651858.CD005246/abstract> |
| CD005010\* | 2007 | Shelley M, Wilt T, Coles B, Mason M | Cryotherapy for localised prostate cancer (Review) | <http://cochranelibrary-wiley.com/doi/10.1002/14651858.CD005010.pub2/pdf> |
| CD006019 | 2006 | Kumar S, Shelley M, Harrison C, Coles B, Wilt TJ, Mason M | Neo-adjuvant and adjuvant hormone therapy for localised and locally advanced prostate cancer (Review) | <http://cochranelibrary-wiley.com/doi/10.1002/14651858.CD006019.pub2/abstract> |
| CD005247 | 2006 | Shelley M, Harrison C, Coles B, Stafforth J, Wilt T, Mason M | Chemotherapy for hormone-refractory prostate cancer (Review) | <http://cochranelibrary-wiley.com/doi/10.1002/14651858.CD005247.pub2/abstract> |
| CD006018 | 2006 | Vale CL | Adjuvant chemotherapy for invasive bladder cancer (individual patient data) (Review) | <http://cochranelibrary-wiley.com/doi/10.1002/14651858.CD006018/abstract> |
| CD006250\* | 2006 | Yuen KK, Shelley M, Sze WM, Wilt TJ, Mason M | Bisphosphonates for advanced prostate cancer (Review) | <http://cochranelibrary-wiley.com/doi/10.1002/14651858.CD006250/pdf> |
| CD005009 | 2007 | De CP, Atallah, AN, Arruda HO, Soares BG, El DRP, Wilt TJ | Intermittent versus continuous androgen suppression for prostatic cancer (Review) | <http://cochranelibrary-wiley.com/doi/10.1002/14651858.CD005009.pub2/abstract> |
| CD004825 | 2007 | Melnik T, Soares B, Nasello AG | Psychosocial interventions for erectile dysfunction (Review) | <http://cochranelibrary-wiley.com/doi/10.1002/14651858.CD004825.pub2/abstract> |
| CD006017 | 2008 | Coppin C, Le L, Wilt TJ, Kollmannsberger C | Targeted therapy for advanced renal cell carcinoma (Review) | <http://cochranelibrary-wiley.com/doi/10.1002/14651858.CD006017.pub2/abstract> |
| CD007091 | 2008 | Wilt TJ, MacDonald R, Hagerty K, Schellhammer P, Kramer BS | 5-alpha-reductase inhibitors for prostate cancer prevention (Review) | <http://cochranelibrary-wiley.com/doi/10.1002/14651858.CD007091/abstract> |
| CD007360 | 2009 | Garimella PS, Fink HA, MacDonald R, Wilt TJ | Naftopidil for the treatment of lower urinary tract symptoms compatible with benign prostatic hyperplasia (Review) | <http://cochranelibrary-wiley.com/doi/10.1002/14651858.CD007360.pub2/abstract> |
| CD006590 | 2010 | Hegarty J, Beirne PV, Walsh E, Comber H, Fitzgerald T, Wallace KM | Radical prostatectomy versus watchful waiting for prostate cancer (Review) | <http://cochranelibrary-wiley.com/doi/10.1002/14651858.CD006590.pub2/abstract> |
| CD006015 | 2010 | Tacklind J, Fink HA, MacDonald R, Rutks I, Wilt TJ | Finasteride for benign prostatic hyperplasia (Review) | <http://cochranelibrary-wiley.com/doi/10.1002/14651858.CD006015.pub3/abstract> |
| CD007234 | 2011 | Daly T, Hickey BE, Lehman M, Francis DP, See AM | Adjuvant radiotherapy following radical prostatectomy for prostate cancer (Review) | <http://cochranelibrary-wiley.com/doi/10.1002/14651858.CD007234.pub2/abstract> |
| CD009397 | 2011 | Guillen, V, Rueda J-R, Ballesteros J, Lopez dAM | Apomorphine for the treatment of erectile dysfunction (Protocol) | <http://cochranelibrary-wiley.com/doi/10.1002/14651858.CD009397/abstract> |
| CD008007 | 2011 | Ilic D, Forbes KM, Hassed C | Lycopene for the prevention of prostate cancer (Review) | <http://cochranelibrary-wiley.com/doi/10.1002/14651858.CD008007.pub2/abstract> |
| CD007853 | 2011 | Ilic D, Misso ML | Screening for testicular cancer (Review) | <http://cochranelibrary-wiley.com/doi/10.1002/14651858.CD007853.pub2/abstract> |
| CD008195 | 2011 | Melnik T, Althof S, Atallah AN, Puga MEdS, Glina S, Riera R | Psychosocial interventions for premature ejaculation (Review) | <http://cochranelibrary-wiley.com/doi/10.1002/14651858.CD008195.pub2/abstract> |
| CD008871 | 2011 | Peinemann F, Grouven U, Hemkens LG, et al | Low-dose rate brachytherapy for men with localized prostate cancer (Review) | <http://cochranelibrary-wiley.com/doi/10.1002/14651858.CD008871.pub2/abstract> |
| CD007349 | 2011 | Rai BP, Shelley M, Coles B, Biyani CS, El-Mokadem I, Nabi G | Surgical management for upper urinary tract transitional cell carcinoma (Review) | <http://cochranelibrary-wiley.com/doi/10.1002/14651858.CD007349.pub2/abstract> |
| CD006885 | 2011 | Shang PF, Kwong J, Wang ZP, et al | Intravesical Bacillus Calmette-Guerin versus epirubicin for Ta and T1 bladder cancer (Review) | <http://cochranelibrary-wiley.com/doi/10.1002/14651858.CD006885.pub2/abstract> |
| CD008976 | 2011 | Shelley M, Cleves A, Wilt TJ, Mason M | Gemcitabine for unresectable, locally advanced or metastatic bladder cancer (Review) | <http://cochranelibrary-wiley.com/doi/10.1002/14651858.CD008976.pub2/abstract> |
| CD006576 | 2011 | Zani EL, Clark OAC, Rodrigues NJN | Antibiotic prophylaxis for transrectal prostate biopsy (Review) | <http://cochranelibrary-wiley.com/doi/10.1002/14651858.CD006576.pub2/abstract> |
| CD009063 | 2012 | Aboumarzouk OM, Nelson RL | Pregabalin for chronic prostatitis (Review) | <http://cochranelibrary-wiley.com/doi/10.1002/14651858.CD009063.pub2/abstract> |
| CD010127 | 2012 | Burden S, Billson HA, Lal S, et al | Perioperative nutrition for the treatment of bladder cancer by radical cystectomy (Protocol) | <http://cochranelibrary-wiley.com/doi/10.1002/14651858.CD010127/abstract> |
| CD004135 | 2012 | Hoffman RM, Monga M, Elliott SP, et al | Microwave thermotherapy for benign prostatic hyperplasia (Review) | <http://cochranelibrary-wiley.com/doi/10.1002/14651858.CD004135.pub3/abstract> |
| CD009625\* | 2012 | Ilic D, Evans SM, Murphy D, Frydenberg M | Laparoscopic versus open prostatectomy for the treatment of localised prostate cancer (Protocol) | <http://cochranelibrary-wiley.com/doi/10.1002/14651858.CD009625/pdf> |
| CD009294 | 2012 | Jones G, Cleves A, Wilt TJ, Mason M, Kynaston HG, Shelley M | Intravesical gemcitabine for non-muscle invasive bladder cancer (Review) | <http://cochranelibrary-wiley.com/doi/10.1002/14651858.CD009294.pub2/abstract> |
| CD010060 | 2012 | Mavuduru RS, Pattanaik S, Panda A, et al | Phosphodiesterase inhibitors for lower urinary tract symptoms consistent with benign prostatic hyperplasia (Protocol) | <http://cochranelibrary-wiley.com/doi/10.1002/14651858.CD010060/abstract> |
| CD001423 | 2012 | Tacklind J, MacDonald R, Rutks I, Stanke JU, Wilt TJ | Serenoa repens for benign prostatic hyperplasia (Review) | <http://cochranelibrary-wiley.com/doi/10.1002/14651858.CD001423.pub3/abstract> |
| CD004720 | 2013 | Ilic D, Neuberger MM, Djulbegovic M, Dahm P | Screening for prostate cancer (Review) | <http://cochranelibrary-wiley.com/doi/10.1002/14651858.CD004720.pub3/abstract> |
| CD008529 | 2013 | Parahoo K, McDonough S, McCaughan E, et al | Psychosocial interventions for men with prostate cancer (Review) | <http://cochranelibrary-wiley.com/doi/10.1002/14651858.CD008529.pub3/abstract> |
| CD009071 | 2013 | Perletti G, Marras E, Wagenlehner FM, Magri V | Antimicrobial therapy for chronic bacterial prostatitis (Review) | <http://cochranelibrary-wiley.com/doi/10.1002/14651858.CD009071.pub2/abstract> |
| CD009266 | 2014 | Kunath F, Grobe HR, Rucker G, et al | Non-steroidal antiandrogen monotherapy compared with luteinising hormone?releasing hormone agonists or surgical castration monotherapy for advanced prostate cancer (Review) | <http://cochranelibrary-wiley.com/doi/10.1002/14651858.CD009266.pub2/abstract> |
| CD009629 | 2014 | Mamoulakis C, Sofras F, de la RJ, et al | Bipolar versus monopolar transurethral resection of the prostate for lower urinary tract symptoms secondary to benign prostatic obstruction (Protocol) | <http://cochranelibrary-wiley.com/doi/10.1002/14651858.CD009629.pub3/abstract> |
| CD011903 | 2015 | Aboumarzouk OM, Bondad J, Ahmed K, et al | Robotic versus open radical cystectomy for bladder cancer in adults (Protocol) | <http://cochranelibrary-wiley.com/doi/10.1002/14651858.CD011903/abstract> |
| CD011928 | 2015 | Garcia-Perdomo HA, Lopez HE, Tacklind J | 5-alpha-reductase inhibitors for lower urinary tract symptoms secondary to benign prostatic obstruction (Protocol) | <http://cochranelibrary-wiley.com/doi/10.1002/14651858.CD011928/abstract> |
| CD011864\* | 2015 | Gudeloglu A, Kiziloz H, Neuberger MM, Kuntz GM, Dahm P | Intravesical electromotive drug administration for non-muscle invasive bladder cancer (Protocol) | <http://cochranelibrary-wiley.com/doi/10.1002/14651858.CD011864/abstract> |
| CD011533 | 2015 | Imamura M, MacLennan S, Lam TB, et al | Surgical management for localised penile cancer (Protocol) | <http://cochranelibrary-wiley.com/doi/10.1002/14651858.CD011533/pdf> |
| CD011935 | 2015 | Schmidt S, Kunath F, Coles B, et al | Intravesical bacillus Calmette-Guerin versus mitomycin C for Ta and T1 bladder cancer (Protocol) | <http://cochranelibrary-wiley.com/doi/10.1002/14651858.CD011935/abstract> |
| CD011462 | 2015 | Soh F-Y, James ML, Hickey BE, et al | Altered radiation fractionation schedules for clinically localised and locally advanced prostate cancer (Protocol) | <http://cochranelibrary-wiley.com/doi/10.1002/14651858.CD011462/abstract> |
| CD011673\* | 2015 | Unverzagt S, Moldenhauer I, Coppin C, Greco F, Seliger B | Immunotherapy for metastatic renal cell carcinoma (Protocol) | <http://cochranelibrary-wiley.com/doi/10.1002/14651858.CD011673/pdf> |
| CD012275 | 2016 | Djulbegovic M, Mhaskar R, Reljic T, et al | Intravesical therapy for non-muscle invasive bladder cancer: a network meta-analysis (Protocol) | <http://cochranelibrary-wiley.com/doi/10.1002/14651858.CD012275/abstract> |
| CD012320 | 2016 | Franco JV, Tirapegui FI, Garrote V, Vietto V | Interventions for treating chronic prostatitis/chronic pelvic pain syndrome (Protocol) | <http://cochranelibrary-wiley.com/doi/10.1002/14651858.CD012320/abstract> |
| CD012059\* | 2016 | Han J, Sukumar S, Bakker CJ, Ebell MH, Dahm P | Desmopressin for treating nocturia in men with lower urinary tract symptoms suggestive of benign prostatic hyperplasia (Protocol) | <http://cochranelibrary-wiley.com/doi/10.1002/14651858.CD012059/pdf> |
| CD012045\* | 2016 | Krabbe L-M, Kunath F, Schmidt S, et al | Partial nephrectomy versus radical nephrectomy for clinically localized renal masses (Protocol) | <http://cochranelibrary-wiley.com/doi/10.1002/14651858.CD012045/pdf> |
| CD012206 | 2016 | Pagliara TJ, Goldfarb R, Philippou YA, Risk MC, Edwards ME, Dahm P | Non-surgical therapies for Peyronie's disease (Protocol) | <http://cochranelibrary-wiley.com/doi/10.1002/14651858.CD012206/abstract> |
| CD012336 | 2016 | Pang R, Zhou X-Y, Wang X-l, Wang B, Yin X-L, Bo H | Anticholinergics combined with alpha-blockers for treating lower urinary tract symptoms related to benign prostatic obstruction (Protocol) | <http://cochranelibrary-wiley.com/doi/10.1002/14651858.CD012336/abstract> |
| CD012250 | 2016 | Shaik MZ, Ebrahim S, Kredo T | Circumcision devices versus standard surgical techniques in adolescent and adult male circumcisions (Protocol) | <http://cochranelibrary-wiley.com/doi/10.1002/14651858.CD012250/abstract> |
| CD012112\* | 2016 | Shepherd AR, Shepherd E, Brook NR | Intravesical Bacillus Calmette-Guerin with interferon-alpha versus intravesical Bacillus Calmette-Guerin for treating nonmuscle-invasive bladder cancer (Protocol) | <http://cochranelibrary-wiley.com/doi/10.1002/14651858.CD012112/pdf> |
| CD012044 | 2016 | Silva V, Grande AJ, Stanton KR, Peccin MS | Physical activity for lower urinary tract symptoms secondary to benign prostatic obstruction (Protocol) | <http://cochranelibrary-wiley.com/doi/10.1002/14651858.CD012044/abstract> |
| CD012111\* | 2016 | Sultan S, Modh R, Coles B, Dahm P | Alvimopan for recovery of bowel function after radical cystectomy (Protocol) | <http://cochranelibrary-wiley.com/doi/10.1002/14651858.CD012111/pdf> |
| CD010716 | 2016 | Weitz M, Portz S, Laube GF, Meerpohl JJ, Bassler D | Surgery versus non-surgical management for unilateral ureteric-pelvic junction obstruction in newborns and infants less than two years of age (Review) | <http://cochranelibrary-wiley.com/doi/10.1002/14651858.CD010716.pub2/abstract> |
| CD012228 | 2016 | Zegelbone PM, Reljic T, Wilson D, et al | Chemoprevention agents for prostate cancer (Protocol) | <http://cochranelibrary-wiley.com/doi/10.1002/14651858.CD012228/abstract> |
| CD012305 | 2016 | Zeng S, Zhang Z, Bai Y, Sun Y, Xu C | Antimicrobial agents for preventing urinary tract infections in patients undergoing cystoscopy (Protocol) | <http://cochranelibrary-wiley.com/doi/10.1002/14651858.CD012305/abstract> |

\*Replaced by a 2017-2018 Review

**Table 2: Use of Clinical Trial Registries (n=36)**

|  |  |  |
| --- | --- | --- |
| Clinical Trial Registry | # CSR/Ps | Percentage\* |
| ClinicalTrials.gov | 28 | 78% |
| WHO ICTRP | 27 | 75% |
| ISRCTN | 11 | 31% |
| Other | 16 | 44% |

\*Percentage of the 36 SR/SRPs that reported using clinical trial registries

**Table 3: Consistency Between Reported Search Strategies in SR/SRPs with > 1 Search Strategy**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Textwords** | **Subject Headings\*** | **Use of publication type filters#** | **Use of field tagsǂ** |
| **Yes** | 14 | 14 | 12 | 12 |
| **No** | 6 | 5 | 5 | 7 |
| **Total** | 20 | 19 | 17 | 19 |

*\* As adjusted for different controlled vocabularies*

*# For all databases except Central*

*ǂ Comparative usage but in correct syntax for each individual database*

**Table 4: Reporting Completeness by Type and Date**

|  |  |  |  |
| --- | --- | --- | --- |
| **Reported Database Search Strategies** | **MeSH Term List at Bottom of Document** | **Protocols (Year)** | **Reviews (Year)** |
| Absent | Absent | CD009397 (2011)  CD011533 (2015) |  |
| Absent | Present |  | CD001044 (1998)  CD001526 (1999)  CD001043 (1999)  CD002080 (1999)  CD001987 (2000)  CD003506 (2001)  CD001041 (2002)  CD007091 (2008)  CD006017 (2008)1  CD007360 (2009)  CD004135 (2012) |
| Medline/PubMed Search Only | Present |  | CD001986 (2000)  CD002079 (2001)  CD004721 (2002)  CD005246 (2004)2  CD006018 (2006)2 CD006019 (2006)  CD005247 (2006)  CD006250 (2006)7  CD005010 (2007)7  CD004825 (2007)3  CD005009 (2007)  CD006015 (2010)  CD006576 (2011)  CD008195 (2011)  CD008007 (2011)  CD007234 (2011)  CD007853 (2011)  CD009063 (2012)4  CD009071 (2013) |
| Medline/PubMed Search Only | Absent | CD010060 (2012)6  CD009625 (2012)7  CD010127 (2012)  CD012044 (2016)  CD012206 (2016)  CD012045 (2016)7 CD012111 (2016)7 | CD008871 (2011)5 |
| Incomplete but more than Medline/PubMed | Present |  | CD001423 (2012)  CD004720 (2013) |
| Incomplete but more than Medline/PubMed | Absent | CD011903 (2015)  CD011928 (2015)  CD012250 (2016)8 |  |
| All Complete | MeSH Check Tags Only |  | CD006590 (2010)  CD007349 (2011)  CD008976 (2011)  CD006885 (2011)  CD009294 (2012)  CD008529 (2013)  CD009266 (2014) |
| All Complete | Absent | CD009629 (2014)  CD011935 (2015)  CD011864 (2015)7  CD011673 (2015)7  CD011462 (2015)9  CD012228 (2016)  CD012275 (2016)  CD012305 (2016)  CD012320 (2016)  CD012336 (2016)  CD012059 (2016)7  CD012112 (2016)7 | CD010716 (2016) |

*1External search strategy cited*

*2Uses Dickersin 1994 RCT filter*

*3Incomplete – mixes text word phrases with unclarified Cochrane pub type*

*4Incomplete with unrecognizable syntax*

*5Reports OVID & PubMed strategies for Medline*

*6Reports a textword-only search strategy*

*7Replaced by completed review or updated review in 2017-2018 after our analysis was completed*

*8Only missing CINHAL*

*9Full PubMed conversion of OVID Medline search not provided*