Supplementary Online Content


**eMethods.** Literature Search Strategies for Primary Literature  
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This supplementary material has been provided by the authors to give readers additional information about their work.
eMethods. Literature Search Strategies for Primary Literature

Key:
/ = MeSH subject heading
$ = truncation
* = truncation
ab = word in abstract
ae = adverse effects
adj# = adjacent within x number of words
kw=keyword
mo=mortality
nm = name of substance
pt = publication type
ti = word in title

Cochrane Central Register of Controlled Trials (via Wiley)
#1 ((gynecolog* or gynaecolog* or genital* or pelvis or pelvic or uterus or uterine or ovary or ovaries or ovarian or (fallopian next tube*)) or cervix or cervical or vagina* or vulva* or rectovaginal or bimanual or speculum or well-woman or "well woman" or prolapse*) near/5 (exam* or palpate* or palpation* or assess* or screen* or measur*)):ti
#2 (pelvic or bimanual or gynecolog* or gynaecolog* or rectovaginal):ab,kw next exam*:ab,kw
#3 "cervical spine":ti,ab,kw
#4 (#1 or #2) not #3 in Trials

Ovid MEDLINE search strategy
1 Physical Examination/
2 Diagnostic Tests, Routine/
3 Digital Rectal Examination/
4 Palpation/
5 Mass screening/
6 Early detection of cancer/
7 1 or 2 or 3 or 4 or 5 or 6
8 Genitalia, Female/
9 Pelvis/
10 Adnexa Uteri/
11 Fallopian Tubes/
12 Uterus/
13 Cervix Uteri/
14 Ovaries/
15 Vagina/
16 Vulva/
17 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16
18 7 and 17
19 Gynecological Examination/
20 ((gyn?ecolog$ or genital$ or pelvis or pelvic or uterus or uterine or ovary or ovaries or ovarian or fallopian tube$ or cervix or cervical or vagina$ or vulva$ or rectovaginal or bimanual or speculum or well-woman or prolapse$) adj5 (exam$ or palpate$ or palpation$ or assess$ or screen$)).ti.
21 pelvic exam$.ab.
22 bimanual exam$.ab.
23 gyn?ecolog$ exam$.ab.
24 rectovaginal exam$.ab.
25 ((gyn?ecolog$ or genital$ or pelvis or pelvic or uterus or uterine or ovary or ovaries or ovarian or fallopian tube$ or cervix or cervical or vagina$ or vulva$ or rectovaginal or bimanual or speculum or well-woman or prolapse$) adj5 (exam$ or palpate$ or palpation$ or assess$ or screen$)).ti,ab.
26 limit 25 to ("in data review" or in process or "pubmed not medline")
27 18 or 19 or 20 or 21 or 22 or 23 or 24 or 26

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cervical spine.ti,ab.
27 not 28
Male/ not (Female/ and Male/)
Animal/ not (Animal/ and Human/)
29 not (30 or 31)
clinical trials as topic/ or controlled clinical trials as topic/ or randomized controlled trials as topic/ or meta-analysis as topic/ (clinical trial or controlled clinical trial or meta analysis or randomized controlled trial).pt.
Random$.ti,ab.
control groups/ or double-blind method/ or single-blind method/
clinical trial$.ti,ab.
controlled trial$.ti,ab.
meta analy$.ti,ab.
33 or 34 or 35 or 36 or 37 or 38 or 39
32 and 40
"Sensitivity and Specificity"/
"Predictive Value of Tests"/
ROC Curve/
False Negative Reactions/
False Positive Reactions/
Diagnostic Errors/
"Reproducibility of Results"/
Reference Values/
Reference Standards/
Observer Variation/
Receiver operat$.ti,ab.
ROC curve$.ti,ab.
sensitivit$.ti,ab.
specificit$.ti,ab.
predictive value.ti,ab.
accuracy.ti,ab.
false positive$.ti,ab.
false negative$.ti,ab.
miss rate$.ti,ab.
error rate$.ti,ab.
42 or 43 or 44 or 45 or 46 or 47 or 48 or 49 or 50 or 51 or 52 or 53 or 54 or 55 or 56 or 57 or 58 or 59 or 60 or 61
32 and 62
Mortality/
safety.ti,ab.
harm$.ti,ab.
mortality.ti,ab.
complication$.ti,ab.
(adverse adj2 (interaction$ or response$ or effect$ or event$ or reaction$ or outcome$)).ti,ab.
adverse effects.fs.
mortality.fs.
Pain/
Acute Pain/
pain$.ti,ab.
discomfort.ti,ab.
uncomfortable.ti,ab.
Stress, Psychological/
Anxiety/
((psychological or mental) adj3 distress).ti,ab.
(anxiety or anxious).ti,ab.
embarrass$.ti,ab.

fear$.ti,ab.

Unnecessary Procedures/

((unnecessary or unneeded) adj5 (diagnostic or treat$ or workup or work up or procedure$)).ti,ab.

overtreat$.ti,ab.

overdiagnos$.ti,ab.

(false adj (assurance or reassurance)).ti,ab.

or/64-87

32 and 88

41 or 63 or 89

limit 90 to english language

PubMed search strategy (publisher-supplied)

#4 Search #3 AND publisher[sh] AND English[Language]

#3 Search #1 AND #2

#2 Search (exam*[title] OR palpate*[title] OR palpation*[title] OR assess*[title] OR screen*[title])

### eTable 1. Inclusion and Exclusion Criteria

<table>
<thead>
<tr>
<th>Topic</th>
<th>Key Question</th>
<th>Inclusion</th>
<th>Exclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Populations</td>
<td>1–3</td>
<td>Age ≥18 years, general unselected females, asymptomatic, not pregnant, women with or without hysterectomy, postmenopausal women</td>
<td>Children and adolescents, age &lt;18 years, pregnant adolescents and women</td>
</tr>
<tr>
<td>Settings</td>
<td>1–3</td>
<td>Developed countries (&quot;very high&quot; development per the Human Development Index), primary care outpatient setting (or similar settings applicable to primary care)</td>
<td>Settings not applicable to primary care</td>
</tr>
<tr>
<td>Conditions</td>
<td>1–3</td>
<td>Gynecologic cancers (e.g., ovarian, vulvar, vaginal, endometrial) and other gynecologic conditions (e.g., candidiasis, human papilloma virus, herpes simplex virus, trichomoniasis, bacterial vaginosis, atrophic vaginitis, fibroids, pelvic organ prolapse, pelvic floor dysfunction, pelvic inflammatory disease, cervical polyps, ovarian cysts, uterine fibroids, endometriosis) not listed in exclusion</td>
<td>Cervical cancer, gonorrhea, chlamydia, any nongynecologic cancer (e.g., colorectal cancer) or nongynecologic condition (e.g., hemorrhoids)</td>
</tr>
<tr>
<td>Interventions</td>
<td>1–3</td>
<td>Pelvic examination (external inspection, internal speculum examination, bimanual examination, rectovaginal examination) for screening; entire pelvic examination or components of pelvic examination</td>
<td>Pelvic examination for diagnosis, digital rectal exam, Papanicolaou test, human papillomavirus test</td>
</tr>
<tr>
<td>Comparisons</td>
<td>1</td>
<td>No pelvic examination</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>Reference standard</td>
<td>No reference standard, or reference standard applied to a nonrandom subset</td>
</tr>
<tr>
<td>Outcomes</td>
<td>1</td>
<td>All-cause mortality, cancer-specific mortality or morbidity for included cancers, disease-specific morbidity for included conditions (may include abnormal bleeding, pelvic pain, incontinence, infertility), quality of life</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>Sensitivity, specificity, likelihood ratios, positive predictive values, negative predictive values</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>Unnecessary diagnostic workup, unnecessary treatment, physical pain/discomfort, barrier to obtaining hormonal contraception, psychological harms</td>
<td>Psychological measures that do not use validated scales of pain/discomfort or other harms</td>
</tr>
<tr>
<td>Topic</td>
<td>Key Question</td>
<td>Inclusion</td>
<td>Exclusion</td>
</tr>
<tr>
<td>--------------</td>
<td>--------------</td>
<td>---------------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Study Designs</td>
<td>1</td>
<td>Systematic reviews, randomized controlled trials</td>
<td>Narrative reviews, editorials, case series, case reports, statistical models that extrapolate beyond direct clinical evidence, cross-sectional surveys with limited generalizability to current U.S. practice</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>Systematic reviews of diagnostic accuracy studies, diagnostic accuracy studies</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>Observational studies not listed in exclusion, randomized controlled trials, controlled clinical trials</td>
<td>Poor-quality studies</td>
</tr>
</tbody>
</table>

* Very high United Nations Human Development Index (or equivalent), 2014: Andorra, Argentina, Australia, Austria, Bahrain, Belgium, Brunei Darussalam, Canada, Chile, Croatia, Cuba, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hong Kong, Hungary, Iceland, Ireland, Israel, Italy, Japan, Korea, Kuwait, Latvia, Liechtenstein, Lithuania, Luxembourg, Malta, Netherlands, New Zealand, Norway, Poland, Portugal, Qatar, Saudi Arabia, Singapore, Slovakia, Slovenia, Spain, Sweden, Switzerland, Taiwan, United Arab Emirates, United Kingdom, United States.
### Table 2. Quality Assessment Criteria

<table>
<thead>
<tr>
<th>Study Design</th>
<th>Adapated Quality Criteria</th>
<th>USPSTF Ratings</th>
</tr>
</thead>
</table>
| Observational studies (e.g., prospective cohort studies), adapted from the Newcastle-Ottawa Scale (NOS)² | • Was there representativeness of the exposed cohort?  
• Was the nonexposed cohort systematically selected?  
• Was the ascertainment of exposure reported?  
• Was the outcome of interest not present at baseline?  
• Were measurements equal, valid, and reliable?  
• Were outcome assessors blinded?  
• Was followup long enough for the outcome to occur?  
• Was there acceptable followup? | **Good:** Meets all criteria: Comparable groups are assembled initially and maintained throughout the study (follow-up at least 80 percent); reliable and valid measurement instruments are used and applied equally to the groups; interventions are spelled out clearly; all important outcomes are considered; and appropriate attention to confounders in analysis.  
**Fair:** Studies will be graded “fair” if any or all of the following problems occur, without the fatal flaws noted in the “poor” category below: Generally comparable groups are assembled initially but some question remains whether some (although not major) differences occurred with follow-up; measurement instruments are acceptable (although not the best) and generally applied equally; some but not all important outcomes are considered; and some but not all potential confounders are accounted for.  
**Poor:** Studies will be graded “poor” if any of the following fatal flaws exists: Groups assembled initially are not close to being comparable or maintained throughout the study; unreliable or invalid measurement instruments are used or not applied at all equally among groups (including not masking outcome assessment); and key confounders are given little or no attention. |
<table>
<thead>
<tr>
<th>Study Design</th>
<th>Adapted Quality Criteria</th>
<th>USPSTF Ratings</th>
</tr>
</thead>
</table>
| Diagnostic accuracy studies, adapted from the Quality Assessment of Diagnostic Accuracy Studies (QUADAS) I\(^3\) and II\(^4\) instrument | • Could the selection of patients have introduced bias?  
  o Was the spectrum of patients representative of the patients who will receive the test in PC?  
  o Was the selection process clearly defined?  
  o Are there concerns that the included patients and setting do not match the review question?  
 • Could the conduct or interpretation of the index test have introduced bias?  
  o Was the index test interpreted without knowledge of the reference standard results?  
  o If a threshold was used, was it prespecified?  
  o Are there concerns that the index test, its conduct, or its interpretation differ from the review question?  
 • Could the conduct or interpretation of the reference standard have introduced bias?  
  o Is the reference standard likely to correctly classify the target condition?  
  o Was the reference standard interpreted without knowledge of the index test results?  
  o Are there concerns that the target condition as defined by the reference standard does not match the review question?  
  o Did the whole or partial selection of patients receive the reference standard?  
 • Could the patient flow have introduced bias?  
  o Was there an appropriate interval between the index test and reference standard?  
  o Did all patients receive the same reference standard?  
  o Were all patients included in the analysis?  | Good: Evaluates relevant available screening test; uses a credible reference standard; interprets reference standard independently of screening test; reliability of test assessed; has few or handles indeterminate results in a reasonable manner; includes large number (more than 100) broad-spectrum patients with and without disease.  
 Fair: Evaluates relevant available screening test; uses reasonable although not best standard; interprets reference standard independent of screening test; moderate sample size (50 to 100 subjects) and a “medium” spectrum of patients.  
 Poor: Has fatal flaw such as: Uses inappropriate reference standard; screening test improperly administered; biased ascertainment of reference standard; very small sample size or very narrow selected spectrum of patients. |

\(^*\) Good quality studies generally meet all quality criteria. Fair quality studies do not meet all the criteria but not have critical limitations that could invalidate study findings. Poor quality studies have a single fatal flaw or multiple important limitations that could invalidate study findings. Critical appraisal of studies using a priori quality criteria are conducted independently by at least two reviewers. Disagreements in final quality assessment are resolved by consensus, and, if needed, consultation with a third independent reviewer.
References


