Supplemental Methods

1. Research Objectives:
   1. To evaluate the diagnostic accuracy of tests/assays to detect cervical precancer for post-colposcopy surveillance
   2. To evaluate the diagnostic accuracy of tests/assays to detect cervical precancer for post-treatment surveillance
   3. To specifically evaluate the diagnostic accuracy of HPV testing alone versus HPV-cytology co-testing for post-treatment surveillance
2. PICOS Components
   1. **P**opulation – women participating in post-colposcopy surveillance or post-treatment surveillance
   2. **I**ndex test: High-risk HPV, cytology, and other assays used in cervical cancer screening and management
   3. **O**utcomes – absolute immediate risks of CIN2+ or CIN3+ at baseline and following a negative (Negative Predictive Value) and positive (Positive Predictive Value) test result
   4. **S**tudies – cross-sectional, retrospective and/or prospective test accuracy studies among women in post-colposcopy or post-treatment surveillance
3. Search Strategy – The search strategy combined terms for the disease concept (identifying literature specific to cervix), the management concept (covering all areas from screening to management) and the test concept (covering all assays evaluated for these indications), linked with “AND” operators.
   1. Databases: PubMed and Embase
   2. Articles published between 1/1/2012 (when ASCCP guidelines were last updated) through 1/28/2019
   3. Search terms:
      1. Disease concept: atypical squamous cells of the cervix[mesh] OR "cervical disease"[tiab] OR "cervical diseases"[tiab] OR "cervical dysplasia"[tiab] OR cervical intraepithelial neoplasia[mesh] OR "cervical intraepithelial"[tiab] OR "cervical neoplasia"[tiab] OR "cervical precancer"[tiab] OR "cervical precancerous"[tiab] OR "precancerous cervical"[tiab] OR "cervix disease"[tiab] OR "cervix diseases"[tiab] OR "cervix dysplasia"[tiab] OR "cervix neoplasia"[tiab] OR CIN[tiab] OR "CIN 1"[tiab] OR "CIN I" OR CIN1[tiab] OR CINI[tiab] OR "CIN 2"[tiab] OR "CIN II"[tiab] OR CIN2[tiab] OR CINII[tiab] OR "CIN 3"[tiab] OR "CIN III"[tiab] OR CIN3[tiab] OR CINIII[tiab] OR "cervical preneoplastic"[tiab] OR "cervical pre-neoplastic"[tiab] OR "preneoplastic cervical"[tiab] OR "pre-neoplastic cervical"[tiab] OR squamous intraepithelial lesions of the cervix[mesh] OR uterine cervical dysplasia[mesh]) AND
      2. Test concept: (ablation[tiab] OR ablative[tiab] OR "abnormal cytology"[tiab] OR follow-up[tiab] OR followup[tiab] OR LEEP[tiab] OR "loop electrosurgical excision procedure"[tiab] OR LLETZ[tiab] OR "large loop excision of the transformation zone"[tiab] OR manage[tiab] OR managed[tiab] OR managing[tiab] OR management[tiab] OR monitor[tiab] OR monitored[tiab] OR monitoring[tiab] OR "post biopsy"[tiab] OR postbiopsy[tiab] OR "post colposcopy"[tiab] OR postcolposcopy[tiab] OR "post screening"[tiab] OR postscreening[tiab] OR "post treatment"[tiab] OR posttreatment[tiab] OR recurrent[tiab] OR "repeat cytology"[tiab] OR "repeat testing"[tiab] OR screen[tiab] OR screened[tiab] OR screening[tiab] OR surveillance[tiab] OR treat[tiab] OR treated[tiab] OR treating[tiab] OR treatment[tiab] OR triage[tiab] OR triaged[tiab] OR triaging[tiab]) AND
      3. Management concept: ("Anyplex II"[tiab] OR Aptima[tiab] OR CareHPV[tiab] OR "cervical cytology"[tiab] OR Cervista[tiab] OR "CINtec PlUS"[tiab] OR Cobas[tiab] OR co-test[tiab] OR co-tests[tiab] OR co-tested[tiab] OR co-testing[tiab] OR cotest[tiab] OR cotests[tiab] OR cotested[tiab] OR cotesting[tiab] OR DNA methylation[mesh] OR "DNA methylation"[tiab] OR "dual stain"[tiab] OR GeneXpert[tiab] OR genotype[tiab] OR genotypes[tiab] OR genotyped[tiab] OR genotyping[tiab] OR HC2[tiab] OR "Hybrid capture"[tiab] OR HPV16/18[tiab] OR 16/18[tiab] OR human papillomavirus DNA tests[mesh] OR HPV[tiab] OR "HPV DNA"[tiab] OR "Linear array"[tiab] OR margins[tiab] OR methylation[mesh] OR methylation[tiab] OR Onclarity[tiab] OR OncoE6[tiab] OR p16[tiab] OR p16/Ki-67[tiab] OR papanicolaou test[mesh] OR pap[tiab] OR PapilloCheck[tiab] OR QiaSure[tiab] OR "RealTime HPV"[tiab] OR mRNA[tiab] OR "SPF10-LiPa"[tiab] OR "Test of cure"[tiab])].
4. Data Collection (Research Objectives 1 and 2)
   1. Selection of studies
      1. Titles and abstracts of identified articles were independently screened for inclusion by all members of the Working Group. Full-text versions of eligible articles were also reviewed by all members to determine eligibility; any questions regarding the inclusion of studies were resolved by discussion with MAC and NW.
   2. Inclusion criteria
      1. Studies were included if they contained original data and reported histologic cervical precancer outcomes by assay/test results. Data on selection criteria, sample size, index testing, and outcome ascertainment were used during the title and abstract review process to filter out irrelevant studies; studies that included non-human or highly-selected populations, lacked histologic endpoints, and/or included ≤25 women were excluded. In the case of sequential or multiple publications where there was a possibility of overlapping data, only data from the most recent publication were included.
5. Data extraction and management
   1. We used predefined data extraction sheets (Excel) created by MAC and NW
   2. Information included:
      1. Authors
      2. Publication date
      3. Study design
      4. Enrollment years
      5. Country
      6. Clinical setting
      7. Inclusion/exclusion criteria
      8. Index test(s)
      9. Clinical referral algorithms
      10. Number of cases and non-cases of cervical precancer, overall and by index test results
      11. Follow-up intervals
      12. Age of study participants
6. Assessment of study quality
   1. We adapted the QUADAS-2 tool to assess study quality in the context of cervical cancer screening and management (see Clarke et al., in this issue)
7. Data Collection (Research Objective 3)
   1. From 1/1/2012 through 1/28/19, only two studies directly compared HPV testing alone to HPV-cytology co-testing for post-treatment management. Therefore, we used data obtained from a previous systematic review published in 20121 that included eight additional studies published between 2004 and 2011 to address this specific question.

1. Kocken M, Uijterwaal MH, de Vries AL, Berkhof J, Ket JC, Helmerhorst TJ, et al. High-risk human papillomavirus testing versus cytology in predicting post-treatment disease in women treated for high-grade cervical disease: a systematic review and meta-analysis. *Gynecologic oncology*. 2012;125:500-7.