Anal cancer screening – evidence map

March 2017

BACKGROUND: this evidence map has been produced as part of the triage process to assess whether anal cancer should be withdrawn from the list of conditions considered by UK National Screening.

Anal cancer screening was last reviewed in 2013, with the literature search carried out in 2012.

This evidence map aims to find out what the volume of evidence is that would answer the following three questions:

1. Has a screening test for anal cancer been evaluated in the general population?
2. What is the epidemiology/distribution of anal cancer in the adult population?
3. Do any anal cancer screening guidelines recommend screening outside the usual high-risk groups?
   With high-risk groups being defined as
   - Men who have sex with men (MSM)
   - Those people who are HIV positive
   - Post-transplant patients or other immunocompromised populations
   - Women who have anal sex
   - People with genital dysplasia

SOURCES SEARCHED: Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present, Embase 1996 to 2017 Week 10, and the Cochrane Library.

DATES OF SEARCH: 2012-2017

SEARCH STRATEGIES

Medline	**Embase**
Epidemiology 1. Anus Neoplasms/ (5398) 2. Carcinoma, Squamous Cell/ (116003) 3. (anal or anus).tw. (37225) 4. 2 and 3 (1556) 5. ((anal or anus) adj2 (cancer$ or neoplasm$ or carcinoma$)).tw. (2676) 6. 1 or 4 or 5 (6442) 7. prevalence/ (233777) 8. Incidence/ (216125) 9. (prevalen$ or inciden$).tw. (1247588) 10. Epidemiology/ (11981) 11. epidemiolog$.tw. (312560) 12. 7 or 8 or 9 or 10 or 11 (1593975) 13. 6 and 12 (1281) 14. limit 13 to yr="2012 -Current" (515)	**Epidemiology** 1. anus tumor/ (1028) 2. squamous cell carcinoma/ (93053) 3. (anal or anus).tw. (39478) 4. 2 and 3 (1874) 5. ((anal or anus) adj2 (cancer$ or neoplasm$ or carcinoma$)).tw. (3595) 6. 1 or 4 or 5 (5090) 7. prevalence/ (611722) 8. cancer incidence/ (57052) 9. (prevalen$ or inciden$).tw. (1414664) 10. cancer epidemiology/ (41276) 11. epidemiolog$.tw. (309824) 12. 7 or 8 or 9 or 10 or 11 (1761239) 13. 6 and 12 (1591) 14. limit 13 to yr="2012 -Current" (902)
Test accuracy 1. Anus Neoplasms/ (5398) 2. Carcinoma, Squamous Cell/ (116003) 3. (anal or anus).tw. (37225) 4. 2 and 3 (1556) 5. ((anal or anus) adj2 (cancer$ or neoplasm$ or carcinoma$)).tw. (2676)	**Test accuracy** 1. anus tumor/ (1028) 2. squamous cell carcinoma/ (93053) 3. (anal or anus).tw. (39478) 4. 2 and 3 (1874) 5. ((anal or anus) adj2 (cancer$ or neoplasm$ or carcinoma$)).tw. (3595)

6. 1 or 4 or 5 (6442)
7. Papillomavirus Infections/ (20116)
8. (Liquid based cytology or LBC).tw. (1591)
9. (anal rectal cytology or ARC or anal pap smear).tw. (19443)
10. anoscopy.tw. (338)
11. (HPV or (human adj (papillomavirus or papilloma virus))).tw. (40612)
12. Digital Rectal Examination/ (739)
13. digital rectal exam$.tw. (3898)
14. 7 or 8 or 9 or 10 or 11 or 12 or 13 (67923)
15. (screen$3 or detect$3 or test or tests or testing).tw. (3763530)
16. "sensitivity and specificity"/ (313729)
17. Predictive value of tests/ (171660)
18. ((false or true) adj (positive$ or negative$)).tw. (68174)
19. ((positive or negative) adj predictive value$).tw. (51814)
20. (PPV or NPV).tw. (14461)
21. area under the curve.tw.(34731)
22. 16 or 17 or 18 or 19 or 20 or 21 (554833)
23. 6 and 14 and 15 and 22 (76)
24. 6 and 14 and 22 (89)
25. 6 and 14 and 15 (710)
26. 23 or 24 or 25 (723)
27. limit 26 to yr="2012 -Current" (344)

Anal cancer screening guidelines

1. Anus Neoplasms/ (5398)
2. Carcinoma, Squamous Cell/ (116003)
3. (anal or anus).tw. (37225)
4. 2 and 3 (1556)
5. ((anal or anus) adj2 (cancer$ or neoplasm$ or carcinoma$)).tw. (2676)
6. 1 or 4 or 5 (6442)
7. Mass Screening/ (90547)
8. "Early Detection of Cancer"/ (15462)
9. (screen$3 or detect$3 or test or tests or testing).tw. (3763530)
10. 7 or 8 or 9 (3785264)
11. guideline/ (16215)
12. (guideline$ or guidance or recommendation$ or practice$ or polic$ or consensus or statement).ti. (352834)
13. guideline$.pt. (16215)
14. 11 or 12 or 13 (358840)
15. 6 and 10 and 14 (32)
16. (anal and cancer and screen$).ti. (86)
17. 5 and 14 (68)
18. 15 or 16 or 17 (151)
19. limit 18 to yr="2012 -Current" (89)

6. 1 or 4 or 5 (5090)
7. papillomavirus infection/ (10109)
8. (Liquid based cytology or LBC).tw. (2438)
9. (anal rectal cytology or ARC or anal pap smear).tw. (19440)
10. anoscopy.tw. (545)
11. (HPV or (human adj (papillomavirus or papilloma virus))).tw. (45316)
12. digital rectal examination/ (7010)
13. digital rectal exam$.tw. (4957)
14. 7 or 8 or 9 or 10 or 11 or 12 or 13 (76387)
15. (screen$3 or detect$3 or test or tests or testing).tw. (3919542)
16. "sensitivity and specificity"/ (271048)
17. predictive value/ (115493)
18. ((false or true) adj (positive$ or negative$)).tw. (69123)
19. ((Positive or negative) adj predictive value$).tw. (68018)
20. (PPV or NPV).tw. (24882)
21. area under the curve.tw. (47102)
22. 16 or 17 or 18 or 19 or 20 or 21 (459875)
23. 6 and 14 and 15 and 22 (101)
24. 6 and 14 and 22 (110)
25. 6 and 14 and 15 (876)
26. 23 or 24 or 25 (885)
27. limit 26 to yr="2012 -Current" (549)

Screening guidelines

1. anus tumor/ (1028)
2. squamous cell carcinoma/ (93053)
3. (anal or anus).tw. (39478)
4. 2 and 3 (1874)
5. ((anal or anus) adj2 (cancer$ or neoplasm$ or carcinoma$)).tw. (3595)
6. 1 or 4 or 5 (5090)
7. cancer screening/ (60039)
8. early cancer diagnosis/ (988)
9. (screen$3 or detect$3 or test or tests or testing).tw. (3919542)
10. 7 or 8 or 9 (3931564)
11. practice guideline/ (303567)
12. (guideline$ or guidance or recommendation$ or practice$ or polic$ or consensus or statement).ti. (314784)
13. guideline$.pt. (0)
14. 11 or 12 or 13 (535322)
15. 6 and 10 and 14 (70)
16. (anal and cancer and screen$).ti. (123)
17. 5 and 14 (167)
18. 15 or 16 or 17 (275)
19. limit 18 to yr="2012 -Current" (177)

Cochrane

#1 MeSH descriptor: [Anus Neoplasms] this term only (93)

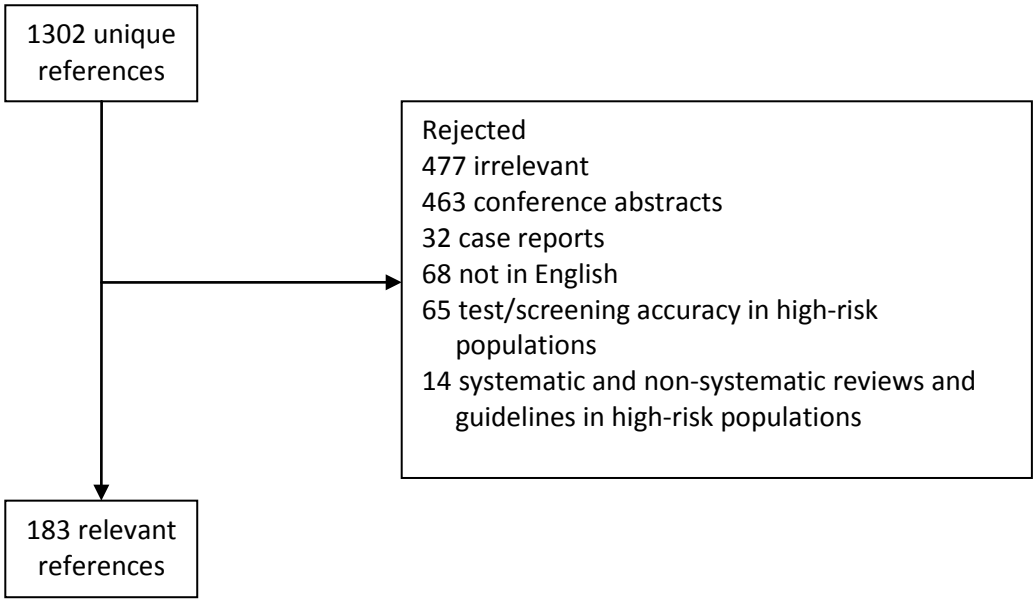
#2	MeSH descriptor: [Carcinoma, Squamous Cell] this term only (2398)
#3	(anal or anus):ti,ab,kw (2804)
#4	#2 and #3 (19)
#5	("anal cancer*" or "anal neoplasm*" or "anal carcinoma*" or "anus cancer*" or "anus neoplasm*" or "anus carcinoma*" or "cancer* of the anus" or "neoplasm* of the anus" or "carcinoma* of the anus" or "cancer* of the anal" or "neoplasm* of the anal" or "carcinoma* of the anal"):ti,ab,kw (213)
#6	#1 or #4 or #5 Publication Year from 2012 to 2017 (115)

All searches carried out on 6 March 2017

	Epidemiology	Test accuracy	Screening guidelines
Medline	**515**	**344**	**89**
Embase	**902**	**549**	**177**
Cochrane Library			**115**

After duplicates were removed, 1302 unique references (from a total of 2691) were sifted for relevance to the questions.

Inclusions and exclusions:
Case reports, conference abstracts and publications not in English were excluded.



183 references were deemed to be relevant
These references are categorised as follows

Screening/test accuracy systematic reviews	**1**
Epidemiology – systematic reviews	**8**
Epidemiology – UK and equivalent populations • General population primary studies (22) • General population reviews (11) • MSM primary studies (4) • MSM reviews (1) • MSM with or without HIV primary studies (7) • MSM with or without HIV reviews (2) • MSM with HIV primary studies (9) • People with HIV primary studies (37) • People with HIV reviews (7) • People with genital dysplasia (7) • Immunosupressed/transplant patients primary studies (6) • Immunosupressed/transplant patients reviews (2) • Other (4)	**119**
Epidemiology - Global • Primary studies (3) • Non-systematic reviews (1)	**4**
Epidemiology – other countries • General populations (6) • High-risk populations (28)	**34**
Screening reviews	**17**
Total	**183**

Summary of results

Test accuracy in the general population

No studies validating the test in the general population were retrieved with this search.

A record for one systematic review was retrieved.[1] This systematic review by Hayes, Inc. assesses high-resolution anoscopy for the evaluation of anal lesions. The MeSH headings assigned by the CRD were: Anal Canal; Anus Neoplasms; Carcinoma, Squamous Cells; Diagnosis; Mass Screening; Proctoscopy; Prognosis; Sensitivity and Specificity. However, there is no information on the population(s) that the test was evaluated in.

Epidemiology

The majority of epidemiological studies retrieved focussed on epidemiology in high-risk groups.

In addition to the epidemiology studies retrieved in the search, the most up-to-date UK statistics on cancer incidence were found through Cancer Research UK's cancer statistics for 2014.
In the UK in 2014, there were 1,307 new cases of anal cancer (434 in men and 873 in women). This accounts for less than 1% of all cancer cases in the UK.

The age standardised rate for persons in the UK was 2.2 per 100,000 of the population in 2014.
The age standardised rate was 1.5 per 100,000 for males and 2.7 per 100,000 for females.

These, and more detailed anal cancer statistics for the UK, can be found at:
http://www.cancerresearchuk.org/health-professional/cancer-statistics/statistics-by-cancer-type/anal-cancer (accessed 22 March 2017)

Office for National Statistics *Cancer registration statistics, England: first release, 2015* was released in February 2017. Anal cancer was not included in the top 24 cancer registrations by site.
Full details:
https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/conditionsanddiseases/bulletins/cancerregistrationstatisticsengland/firstrelease2015 (accessed 24 March 2017)

Screening guidelines

No guidelines that included screening in the general population for anal cancer were retrieved with this search.

The reference lists of guidelines that were retrieved were scanned for possible references to screening in the general population. No further relevant references were found.

A search of grey literature sources was also carried out to try and find guidelines that include screening in the general population. However, none were found.

For example, the US Preventive Services Task Force and the Canadian Task Force of Preventive Health Care have not assessed the possibility of screening for anal cancer in any populations.
In addition, the Centers for Disease Control and Prevention states:
"Currently, there are insufficient data regarding the natural history of HPV infection, and the evolution of anal dysplasia, as well as data regarding the efficacy of anal Pap smears and subsequent interventions for the prevention of anal cancer. This data would be needed to provide recommendations for the use of anal Pap screening in individuals (MSM and women) who have engaged in anal sex. The prevalence of abnormal Pap smears is high in these populations (particularly in individuals who are HIV+)…"
https://www.cdc.gov/std/tg2015/qa/screening-qa.htm (accessed 23 March 2017)

The Agency for Healthcare Research and Quality's "National Guideline Clearing House" database was also searched but did not retrieve any guidelines that included screening for anal cancer in the general population.

A further internet search ("anal cancer" screening (guidelines or recommendations) "general population") was carried out to find if any guidelines recommend screening in the general population. The first ten pages of results were scanned for relevant guidelines. No guidelines were retrieved.

In summary, no national or international guidelines on screening for anal cancer in the general population were retrieved.

The majority of the non-systematic reviews on screening discussed the possibility that screening in high-risk groups may be promising but also highlighted the lack of randomised trials in these groups.

References

Screening/test accuracy systematic review

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Epidemiology – systematic reviews (8)

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Epidemiology – UK and equivalent populations (119)

- General population primary studies (22)

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- General population reviews (11)

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- MSM primary studies (4)

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- MSM with HIV primary studies (9)

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