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Targeted Australian Anal Cancer Screening Guidelines for People Living with HIV

Australian National Guidelines
(Fourth Edition) 2025

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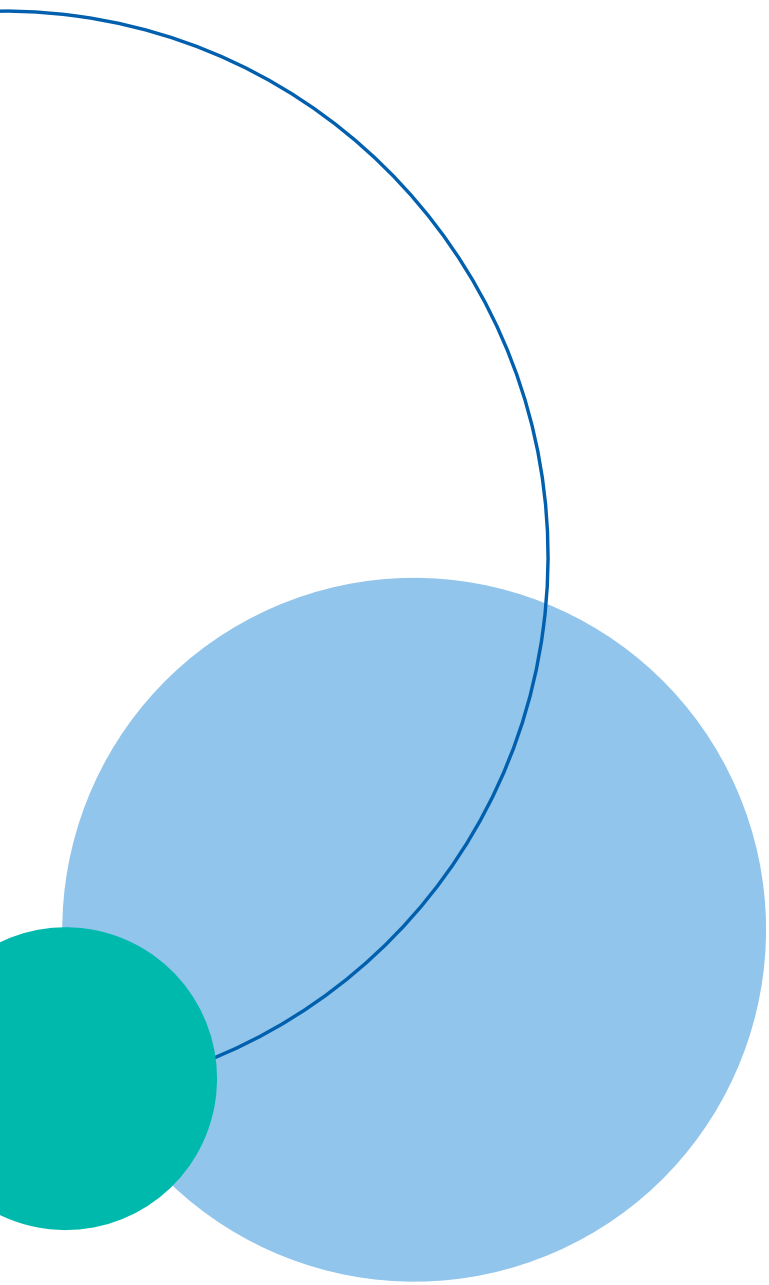

Targeted Australian Anal Cancer Screening Guidelines for People Living with HIV

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Key recommendations of the ASHM Anal Cancer Screening Guidelines Committee

In determining specific recommendations for screening to prevent anal squamous cell cancer (ASCC) in PLHIV in Australia, we must acknowledge that the evidence base is limited. However, based on current evidence we recommend:

Gay, bisexual and other men who have sex with men (GBM) and trans women (TW) LHIV aged 35 years and over should be offered screening[10-17-26]

Cis-women, trans men and other cis-men (not GBM) LHIV over 45 years of age should be offered screening[10-17-26]

The screening modality should be primary high-risk human papillomavirus (HRHPV) testing with cytology triage [17-31-38] (Figure 2)

Screening should be repeated every 3 years for those who screen negative[17-64] (based on screening women LHIV for cervical cancer – every 3 years)

Screening should be discontinued, with shared decision-making, at age 75 years and in individuals with two consecutive negative screening visits who are not currently sexually active [17-18-20-64] (only screen to 74 years for cervical cancer, with some caveats)

All anal cancer screening should include annual digital ano-rectal examination (DARE), examination of the peri-anal region and a thorough medical history. The history should:

Include sexual behavioural history, as anal sexual activity may not have been previously disclosed.

Identify other potential risk activities (such as smoking) and other factors that may contribute to immunosuppression (such as certain drugs)

Elicit symptoms. Symptomatic people should be prioritised, regardless of the algorithm findings. The key anal symptoms are lump, pain and **change** in bleeding pattern (as haemorrhoids are common).

Contents

Introduction

While uncommon in the general population, the incidence of anal squamous cell carcinoma (ASCC) is increasing, and certain groups, including people living with HIV (PLHIV) are disproportionately affected[1,2]. While anal cancer can affect people of all ages, unlike cervical cancer, rates do not start rising until 35 years or older and continue to rise with increasing age[3].

High risk human papillomavirus (HRHPV) can be detected in 88% of ASCC. Approximately 90% of ASCC is caused by HPV16 in the general population, whereas in PLHIV, 70% are caused by HPV16. This places ASCC second only to cervical cancer in the strength of its association with HPV infection[3]. ASCC is one of the most common non-AIDS defining cancers in people living with HIV in Australia[4,5], a finding also reported in other developed countries with similar HIV epidemics[6-8].

Cervical cancer screening uses a modifiable, evidence-based approach, basing management recommendations on the current understanding of HPV natural history and carcinogenesis[9]. The effectiveness of cervical cancer screening in reducing cervical cancer incidence relies on the successful treatment of the cancer precursor, high-grade squamous intra-epithelial lesion (HSIL). Until recently, similar approaches for anal cancer screening have been impeded by the lack of evidence of anal HSIL treatment efficacy and there being no identified anal cancer screening test with both high sensitivity and specificity. The results of the Anal Cancer/HSIL Outcomes Research (ANCHOR) randomised trial published in 2022 showed that treating HSIL that had been identified through screening, reduced anal cancer incidence in PLHIV in the US by 57% compared with active monitoring alone. ANCHOR reported an anal cancer incidence of 402 per 100,000 person years among participants in the active monitoring (no treatment) arm[10]. A survey conducted by the US Centres of Disease Control in 2019 reported that less than 5% of PLHIV received screening for ASCC despite their significantly higher risk[11]. In Australia, it is recommended that PLHIV receive an annual digital ano-rectal examination (DARE) and examination of the peri-anal area to detect early anal cancer lesions[12]. However, until now, screening for anal and peri-anal cancer precursors has not been recommended. Early detection of ASCC has been demonstrated to improve treatment outcomes and reduce mortality rates[13] and cancers identified early can be treated with local excision only, if adequate excision margins are obtained[14]. Anal cancer survival is closely related to tumour size at presentation, spread to local lymph nodes, and presence of distant metastases. Five-year survival ranges from 85.5% when diagnosed at stage I (small size, no evidence of spread), to 22.1% when diagnosed at stage IV[15]. Significant toxicity occurs with chemoradiotherapy, the recognised standard of treatment for ASCC. Based on the ANCHOR findings, mathematical modelling has estimated that the implementation of annual HSIL screening and treatment in gay, bisexual and other men who have sex with men (GBM) living with HIV would lead to a decline of 44-70% in ASCC incidence[16].

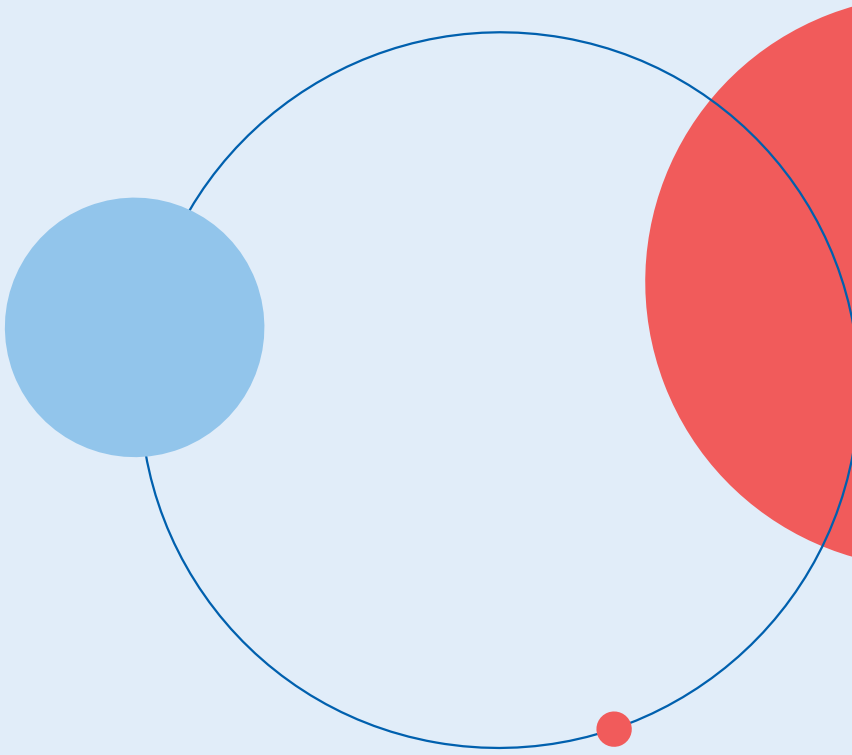
In 2024, the International Anal Neoplasia Society (IANS) consensus guidelines for anal cancer screening were published. These recommend that GBM and trans women living with HIV should be screened annually from the age of 35 years. They also recommend that all other people living with HIV (women, men who have sex with women) should be screened annually from the age of 45 years[17].

In July 2024, the first ever US Department of Health and Human Services (DHHS) guidelines for anal cancer screening in PLHIV were released, incorporated in the Guidelines for the Prevention and Treatment of Opportunistic Infections in Adults and Adolescents with HIV[18].

The guidelines recommend that all people with HIV aged 18 years or older be assessed for anal abnormalities and undergo DARE at least once per year. PLHIV aged less than 35 years with symptoms/signs of anal cancer during DARE are recommended to undergo standard anoscopy. Screening with anal cytology (+/- high risk HPV testing) with subsequent high resolution anoscopy (HRA) is recommended for GBM and trans women aged 35 years and older and for all other PLHIV aged 45 years or older[18].

In light of the elevated risk of anal cancer in PLHIV, established evidence that treating anal HSIL reduces the incidence of ASCC in PLHIV, and the publication of international guidelines, there is a clear need for Australian guidelines for regular screening and early detection of anal cancer in PLHIV. The Australasian Society for HIV Medicine, Viral Hepatitis and Sexual Health Medicine (ASHM) is the peak professional body representing healthcare professionals in HIV, blood-borne viruses (BBV), and sexual and reproductive health. In 2023, ASHM committed to providing recommendations and standards of care for the prevention and early detection of anal cancer in PLHIV. To develop consensus guidelines for ASCC prevention and early detection, ASHM assembled a Guidelines Committee of 14 community, clinical, research, and laboratory representatives with a wide range of professional expertise, including epidemiology, prevention, pathology, sexual health, health promotion, community engagement, colorectal surgery, HRA, and advocacy. A subset of the committee (the Writing Group) was convened to draft guidelines with assistance and overview from ASHM staff and the Guidelines Committee. The Writing Group consisted of five people with expertise in ASCC screening and treatment and working with PLHIV and community expert(s) representing key affected populations. The finalised guidelines were approved by the ASHM Guidelines Committee and the ASHM National Advisory Group for HIV and STIs.

The four priority areas for guidelines development in Australia were: (1) establish the ASCC incidence in PLHIV to substantiate the benefits of screening in this population, (2) ASCC screening tools and testing algorithms, (3) management of screening results and (4) treatment of anal HSIL. The recently published IANS consensus guidelines for ASCC screening and US DHHS recommendations form the basis of Australia-specific recommendations.



The recommendations in these guidelines are designed to:

- **Improve awareness among clinicians involved in the care of PLHIV, and among PLHIV, of ASCC as one of the most common cancers in this population**
- **Improve awareness and availability of screening for anal precancers by building on existing international guidelines and the evidence-base for ASCC screening**
- **Assist clinicians to identify and screen PLHIV at higher risk of ASCC**
- **Assist in triaging to prioritise screening and referral of PLHIV at highest risk while screening and treatment services capacity is expanded in Australia**

These guidelines are intended for use by:

- **s100 prescribers and general practitioners who provide care to PLHIV**
- **sexual health, infectious diseases, immunologists and HIV specialists who provide care to PLHIV**
- **colorectal surgeons, general surgeons and gastroenterologists who provide anal dysplasia and cancer services**
- **clinical laboratories and pathology services**
- **trainees, registrars and surgical assistants in each of the above categories**
- **specialist nursing staff who provide care to PLHIV**
- **HIV peer navigators and peer workers**
- **researchers and cancer organisations specialising in anal cancer and/or PLHIV**
- **health program policymakers**
- **health consumers and others with an interest in HIV and anal cancer**

Methods

A. Populations to Screen

Globally, PLHIV experience the highest incidence of ASCC[2]. Despite the benefits for the health of PLHIV, studies have shown that ART has not led to a reduction in the incidence of anal HSIL or anal cancer among PLHIV[4 19]. The extraordinarily high incidence of ASCC in PLHIV has become more evident due to improved access to ART and increased longevity in PLHIV[20 21].

Studies from the past two decades have shown that among PLHIV, the highest ASCC incidence was found among GBM with HIV (85 per 100,000). Women living with HIV (WLHIV) have an incidence of between 18.6 and 35.6 per 100,000[22 23]. A recently published systematic review and meta-analysis of cancer risk in PLHIV found ASCC had a standardised incidence ratio of 37·28 (95% Confidence Interval 23·65–58·75)[24]. These incidence rates are mostly greater than the incidence of cervical cancer among the general female Australian population prior to the introduction of widespread cervical Pap screening in 1991, which was 18 per 100 000 person years[25].

Understanding ASCC incidence by age is essential to inform potential screening programs. A nationwide data linkage study to identify cancer diagnoses in PLHIV was conducted in Australia between 1982 and 2012, demonstrated that the incidence of anal cancer in PLHIV aged between 35 and 64 years has increased significantly over the past three decades[5]. The age-standardised incidence of anal cancer per 100,000 person-years in three age groups, and overall, is shown in Table 1.

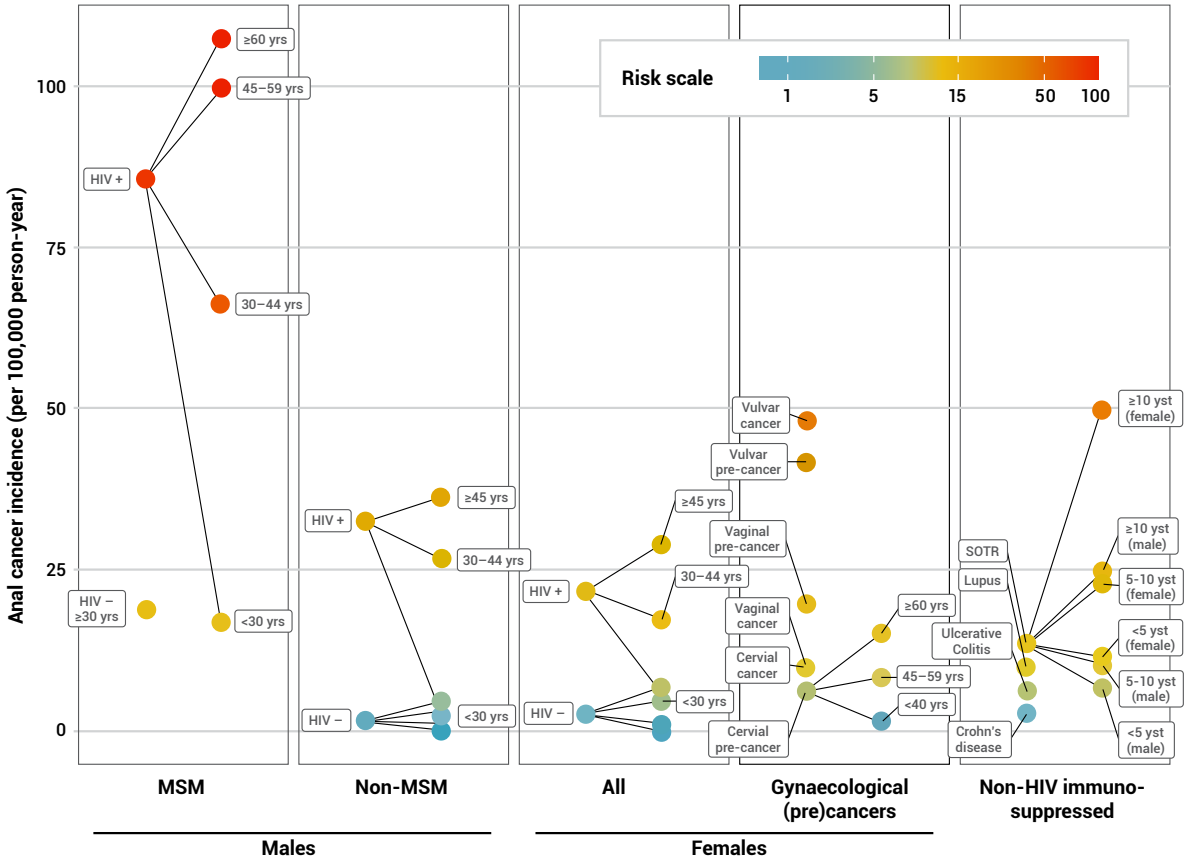
Table 1. Annual age-standardised anal cancer incidence per 100,000 by overall and by three age groups in PLHIV in Australia, from 1982 to 2012

	1982-95	1996-99	2000-04	2005-08	2009-12	P-VALUE*
Overall	**26.82**	**18.76**	**25.40**	**38.41**	**44.97**	**0.002**
Age (years)						
15-34	**4.41**	**12.40**	**0.00**	**4.55**	**4.34**	**0.621**
35-64	**24.49**	**16.99**	**41.13**	**41.69**	**66.44**	**<0.001**
≥ 65	**84.83**	**No cases**	**34.86**	**105.22**	**71.43**	**0.553**

A sub-group of the IANS guidelines taskforce undertook a literature review and meta-analysis of ASCC incidence in groups at established elevated ASCC risk, to evaluate ASCC incidence estimates by risk group and age (Figure 1)[26]. Eight studies reported ASCC incidence rates in PLHIV, with the largest contribution from the US HIV/AIDS Cancer Match study (Table 3). The overall incidence rates per 100,000, by risk group, were 85 (95% Confidence Interval (CI) 82-89), 32 (95% CI 30-35) and 22 (95% CI 19-24) for GBM, non-GBM males and females, respectively. The data were further stratified by age group (Figure 1)[26].

In relation to PLHIV being followed-up after treatment for anal cancer, data from the United Kingdom (UK) have reported the detection of HSIL in 13% of all patients after chemoradiation and 74% of all patients after excision only, supporting the need for careful surveillance to detect and treat HSIL among this population with a history of ASCC, particularly following surgical excision[27 28]. PLHIV with previously diagnosed HSIL, for example during an unrelated procedure such as haemorrhoidectomy, colonoscopy or through anal tissues samples taken to investigate other anal pathologies should also be screened regularly for residual HSIL, new HSIL and anal cancer with HRA[29 30].

Figure 1. Anal cancer incidence per 100000 person years, by gender, age and risk group[26]



In the US HIV/AIDS Cancer Match study, the risk of anal cancer increased exponentially from age 30 years and above, in all populations (Table 2)[26].

Table 2: Age-specific anal cancer incidence in PLHIV, U.S. HIV Cancer Match study, 1996-2015

	HIV RISK GROUP								
	MSM			NON-MSM MALES			FEMALES		
Age group (years)	Cases	Person-years	IR per 100,000 person-years (95% CIs)	Cases	Person-years	IR per 100,000 person-years (95% CIs)	Cases	Person-years	IR per 100,000 person-years (95% CIs)
<30	32	190,168	16.8 (11.5-23.8)	2	99,327	2.0 (0.2-7.3)	7	150,038	4.7 (1.9-9.6)
30-44	533	805,573	66.2 (60.7-72.0)	131	492,496	26.6 (22.2-31.6)	91	532,692	17.1 (13.8-21.0)
45-59	695	696,830	99.7(92.5-107.4)	246	674,139	36.5 (32.1-41.3)	136	458,248	29.7 (24.9-35.1)
≥ 60	123	114,467	107.5 (89.3-128.2)	49	144,168	34.0 (25.1-44.9)	19	82,520	23.0 (13.9 – 36.0)

The IANS consensus guidelines taskforce categorised the meta-analysis ASCC incidence estimates into two groups. Risk Category A included high-risk groups with an incidence of at least 17 per 100,000 (defined as at least 10-fold greater incidence compared with the general US population incidence of 1.7 per 100,000 person-years). All PLHIV groups were included in this category. The taskforce developed specific recommendations for age of commencement of screening for PLHIV, determining that screening should begin at age 35 years in GBM and trans women and at age 45 years for women with HIV and non-GBM men. **ASHM's age-based recommendation for ASCC screening corresponds with both the IANS and DHHS guidelines.**

Possible anal cancer screening methods

B. High risk HPV (HRHPV) testing

For cervical cancer screening, Australia and many other high-income countries have recently changed to a system which uses HPV testing as the primary screening test, because this test has a higher sensitivity than cytology. Compared with cytology testing, anal HRHPV testing has a higher sensitivity (92%) but a lower specificity (42%) for the prediction of anal HSIL[31]. HPV testing can be performed on the same specimen as cytology. The "technically unsatisfactory" rate is less than half that of cytology[32]. Extended HRHPV testing (i.e. reporting results for a range of specific HRHPV types in addition to HPV16 and HPV18) rather than partial genotyping (testing which provides results for HPV16, HPV 18 and "all other" HRPV) for PLHIV is recommended, as PLHIV have a more diverse range of causal HPV genotypes in anal cancer and a higher incidence of infections which may be transient[33 34]. Extended genotyping testing may reduce referral rates to HRA, by demonstrating transience for more HPV genotypes than is possible by partial genotyping. Clinicians should discuss with laboratories regarding local availability and utility of various HPV testing methods.

C. Anal Cytology

The most used screening/testing tool in countries in which ASCC screening already occurs is anal cytology, because it is relatively simple to perform, readily available and there is pre-existing laboratory expertise in the closely related field of cervical cytology. Anal cytology has a similar sensitivity to cervical cytology in the detection of HSIL (81.0%), when possible low grade squamous intraepithelial lesion (pLSIL) cytology is used as the referral threshold for referral to HRA[31]. However, the specificity is generally substantially lower (62.0%) than for cervical cancer screening (91.9% for a pLSIL threshold)[35] and varies between different high-risk populations[31]. The specificity can be improved by raising the referral threshold to possible HSIL (pHSIL), but the sensitivity falls and many HSIL lesions will be missed[31].

D. Performance of screening tools

A meta-analysis published in 2022 evaluated the clinical performance of cytology and HRHPV testing in detecting any HSIL in different high-risk groups, including PLHIV. The summary estimates for sensitivity and specificity of *HPV testing* were sensitivity 92% and specificity 42%, *cytology* sensitivity 81% and specificity 62% and *cytology and HPV co-testing* (where HPV testing and cytology are performed at the same time, and testing positive to either cytology or HPV is considered a positive result) sensitivity 93% and specificity 33%[31]. These results suggest no additional benefit is gained by co-testing and that specificity is adversely affected[31]. However, these data were not presented separately for PLHIV. These data are of limited value when determining screening test performance in non-MSM male and female populations living with HIV.

The aim of ASCC screening in PLHIV is not to identify every anal HSIL lesion. In the Study of the Prevention of Anal Cancer (SPANC), a unique natural history study of GBM with and without HIV, conducted in Sydney Australia, many anal HPV infections and HSIL were transient[36]. Persistence of anal HSIL is a prerequisite for invasion and for this reason, the goal of screening should be to find and treat persistent HSIL lesions.

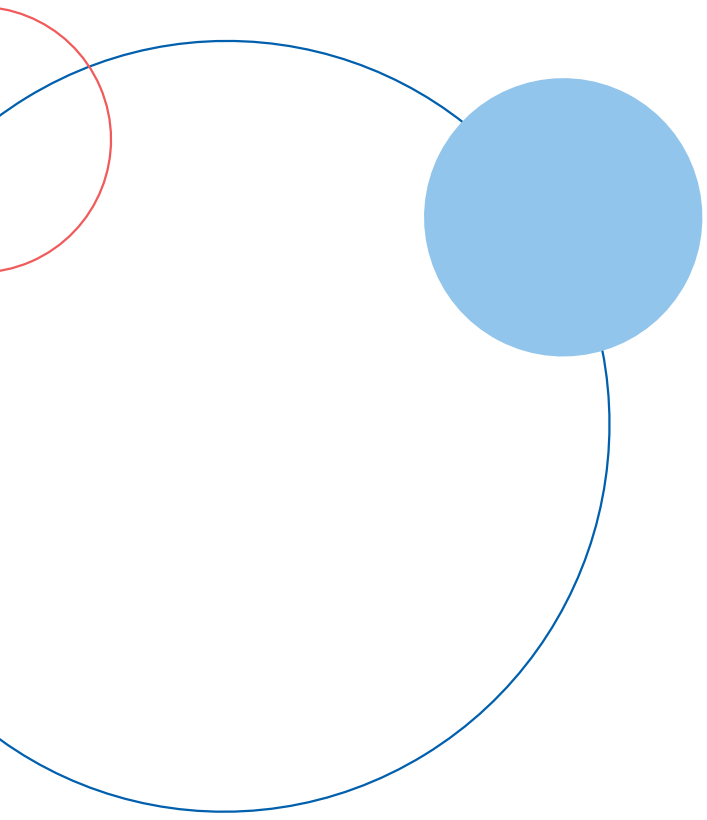
Baseline data from the SPANC study were used to determine the ability of cytology and HPV testing to detect any HSIL in a population of GBM with and without HIV[37]. These data were more recently further evaluated to calculate the theoretical performance of multiple different screening methodologies in the detection of persistent HSIL[38]. An algorithm which used HPV as the primary screening test and cytology as a triage test for those who test HRHPV positive was developed. Those who tested HPV16 positive at baseline were referred regardless of anal cytology status. Those who had tested non16 HRHPV positive at baseline were only referred if they also had possible HSIL (pHSIL) or worse cytology at baseline, or if they had evidence of persistent non16 HRHPV infection at 12-month and had possible LSIL (pLSIL) or worse cytology at baseline. Under this scenario, the sensitivity was 95.5%, and the specificity was 49.1%, with a theoretical HRA referral rate of 59.2%[38].

The IANS guidelines for ASCC screening did not recommend a particular algorithm, but recommended that acceptable screening and management strategies include:

- Digital ano-rectal examination (DARE) in everyone
- cytology alone
- HRHPV testing alone (including genotyping for HPV16)
- co-testing with cytology and HRHPV tests simultaneously
- the use of both tests, with one as the primary screening test and the other as a triage tool.

The IANS guidelines include co-testing as a screening option, despite the evidence suggesting that co-testing has no additional benefit over primary HRHPV testing[31].

These ASHM guidelines do not recommend co-testing.

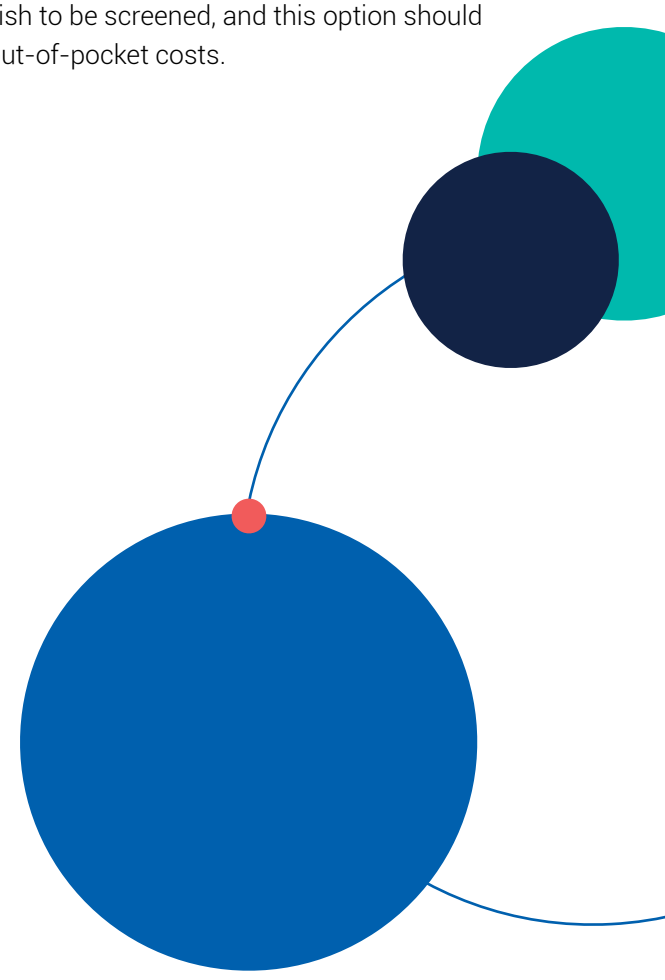


Screening Intervals and Cessation

The IANS guidelines acknowledge that there is virtually no evidence available to determine appropriate screening intervals for those who test screen-negative[17]. The Australian National Cervical Screening Program established in 2017 uses primary HRHPV testing. In non-immunosuppressed individuals, 5-yearly re-screening is recommended in those who screen negative. For PLHIV 3 yearly re-screening is recommended in women who test HPV negative, (**https://www.cancer.org.au/clinical-guidelines/cervical-cancer/cervical-cancer-screening**). In the absence of specific evidence for anal cancer, we recommend a screening interval that is the same as for cervical cancer in PLHIV (i.e. 3-yearly). Re-screening is recommended earlier in the event of development of anal symptoms.

There is no recommended upper age limit for anal cancer screening recommended by the IANS guidelines. US DHHS guidelines for anal cancer screening in PLHIV state that screening should be discontinued when life expectancy is less than 10 years and in individuals with two consecutive negative screening visits who are not currently sexually active[18].

The implementation of any recommendations for screening of PLHIV to prevent anal cancer in Australia will be limited by a lack of resources, predominantly of high resolution anoscopists. This deficit will be difficult to mitigate in the absence of defined and adequately reimbursed testing and treating tools. An application for Medicare Benefits Schedule listing of anal HPV testing, cytology, HRA and HSIL treatment (MSAC application 1752, 2024) is currently at the final consideration stage. Realistically, public funding will not occur before financial year 2025/2026. Nevertheless, there will be PLHIV who wish to be screened, and this option should be made available to as many as possible, notwithstanding likely out-of-pocket costs.



Key recommendations of the ASHM Anal Cancer Screening Guidelines Committee

In determining specific recommendations for screening to prevent anal squamous cell cancer (ASCC) in PLHIV in Australia, we must acknowledge that the evidence base is limited. However, based on current evidence we recommend:

1. Gay, bisexual and other men who have sex with men (GBM) and trans women (TW) LHIV aged 35 years and over should be offered screening[10-17-26]
2. Cis-women, trans men and other cis-men (not GBM) LHIV over 45 years of age should be offered screening[10-17-26]
3. The screening modality should be primary high-risk human papillomavirus (HRHPV) testing with cytology triage [17-31-38] (Figure 2)
4. Screening should be repeated every 3 years for those who screen negative[17-64] (based on screening women LHIV for cervical cancer – every 3 years)
5. Screening should be discontinued, with shared decision-making, at age 75 years and in individuals with two consecutive negative screening visits who are not currently sexually active [17-18-20-64] (only screen to 74 years for cervical cancer, with some caveats)

All anal cancer screening should include annual digital ano-rectal examination (DARE), examination of the peri-anal region and a thorough medical history. The history should:

1. Include sexual behavioural history, as anal sexual activity may not have been previously disclosed.
2. Identify other potential risk activities (such as smoking) and other factors that may contribute to immunosuppression (such as certain drugs)
3. Elicit symptoms. Symptomatic people should be prioritised, regardless of the algorithm findings. The key anal symptoms are lump, pain and change in bleeding pattern (as haemorrhoids are common).

Summary of Australian recommendations for anal cancer screening in PLHIV where HRA services are available

1. Who to screen

People living with HIV (PLHIV) who are:

- Gay, bisexual and other men who have sex with men (GBM) and trans women (TW) over 35 years of age; or
- Women (not TW) and men (not GBM) over 45 years of age.

2. How to screen

Anal swab for HRHPV testing
+
Perform DARE (annual)

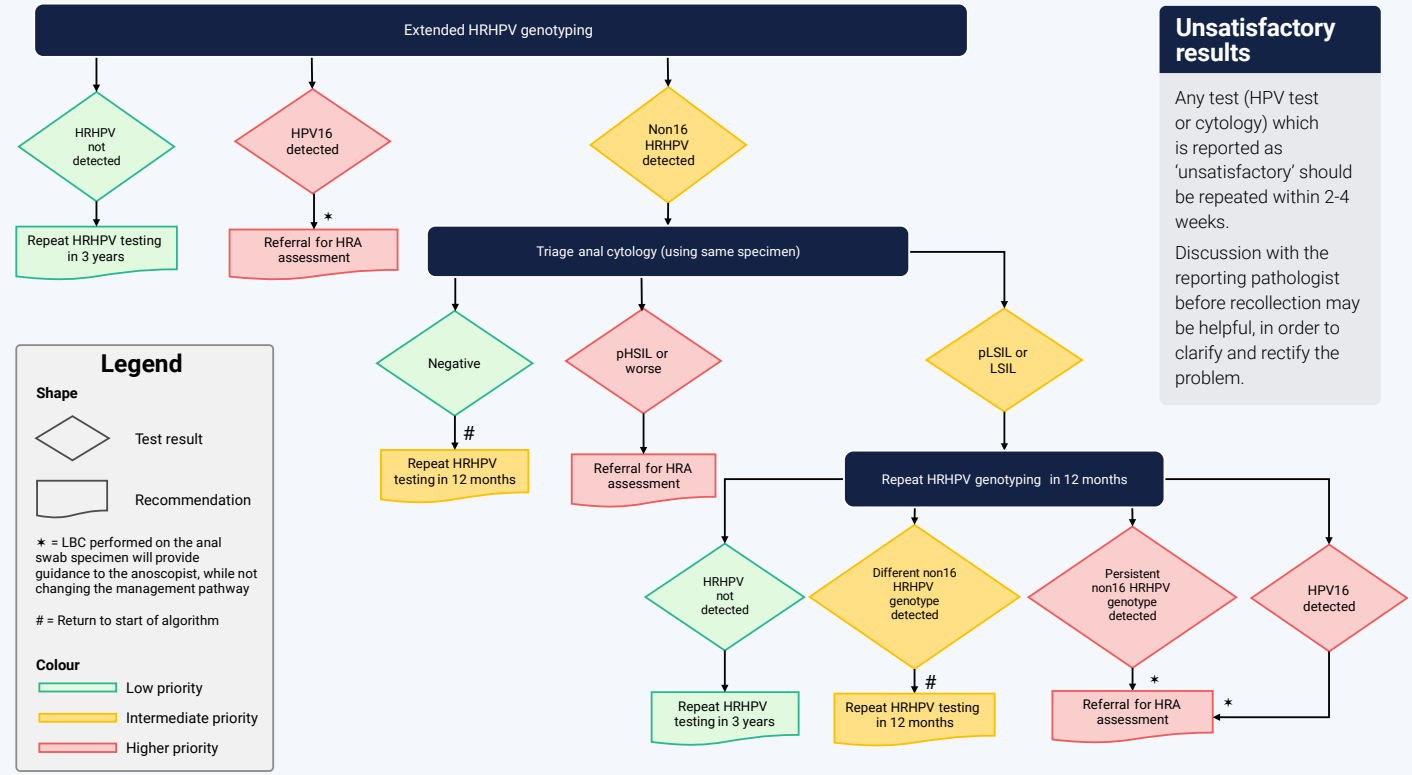
One clinician collected sample required to perform all screening tests -moistened flocked swab eluted into LBC vial prior to DARE.

Information

- High Resolution Anoscopy (HRA) – limited capacity in Australia
- No HRA available locally – screening remains annual DARE + symptom awareness**
- Screening services should prioritise + current smoker / nadir CD4<200 / older age / anal symptoms/ additional immunosuppressive agents

** people with anal lumps suggestive of cancer require immediate referral to surgeon.

3. Screening algorithm



Unsatisfactory results

Any test (HPV test or cytology) which is reported as 'unsatisfactory' should be repeated within 2-4 weeks.

Discussion with the reporting pathologist before recollection may be helpful, in order to clarify and rectify the problem.

Definitions

HIV = human immunodeficiency virus, **HPV** = human papillomavirus, **HRA** = high-resolution anoscopy, **HSIL**= high-grade squamous intraepithelial lesion, **HRHPV** = high-risk human papillomavirus, **LBC** = liquid-based cytology, **LSIL**= low-grade squamous intraepithelial lesion, **GBM** = Gay, bisexual and other men who have sex with men, **MSW** = men who have sex with women, **PLHIV**= People living with HIV, **pLSIL** = possible low-grade squamous intraepithelial lesion, **TW** = trans women

Published January 2025 by ASHM. Guidance provided on this resource is based on guidelines and best practices at time of publication.

Management of screening test results

A. Where HRA services are available

Abnormal screening results require more detailed investigation, ideally with HRA and biopsy, given that pre-cancerous HSIL lesions are typically asymptomatic and impalpable on DARE. The IANS recommendations for the management of test results modified for "low HRA capacity", defined as greater than 6 months waiting time for HRA following referral for an abnormal screening test result, are shown in Table 3.

B. Where HRA services are not available

ASHM recommends that HIV referral services treating PLHIV develop facilities for diagnostic HRA as a priority. For at-risk individuals who live in areas with no certified HRA providers and are unable to travel, ASCC screening – including management of abnormal test results - should consist of an annual symptom assessment and DARE, practice guidelines for which have been published by IANS[39]. A positive DARE result is defined as a visible or palpable lesion of the peri-anus or anal canal that would arouse suspicion of pre-cancer or invasive disease. Such cases should be urgently referred to a local General or Colorectal Surgeon, potentially for examination under anaesthesia (EUA) and biopsy. Individuals should also be advised to present for care if any unexpected anal symptoms (pain/bleeding/lump) develop between screening appointments.

Table 3: Frequency and management of HPV screening test results[17]

POPULATION	INTERVAL IF PREVIOUSLY HPV-NEGATIVE	TRIAGE TEST	HRA	HPV TESTING INTERVAL AFTER NEGATIVE HRA
1. GBM and TW living with HIV [a]	3 years	Cytology	**Immediate HRA regardless of cytology result** • HPV16 positive **Immediate HRA dependent on cytology result** • Non16 HRHPV with cytology report of pHSIL, HSIL or carcinoma **HRA after 12 months** • Persistent non16 HRHPV with cytology report of pLSIL or LSIL **No HRA** • Non16 HRHPV with negative cytology report	1 year
2. Women, trans men and MSW living with HIV [b]	3 years			
3. PLHIV after treatment for anal cancer [c]	6 months			
4. PLHIV with incidental HSIL [d]	3 years			

Abbreviations

HIV = human immunodeficiency virus, HPV = human papillomavirus, HRA = high-resolution anoscopy, HSIL= high-grade squamous intraepithelial lesion, HRHPV = high-risk human papillomavirus, LSIL= low-grade squamous intraepithelial lesion, GBM = Gay, bisexual and other men who have sex with men, MSW = men who have sex with women, PLHIV= People living with HIV, pLSIL = possible low-grade squamous intraepithelial lesion, pHSIL = possible high-grade squamous intraepithelial lesion, TW = trans women

Notes

a Age ≥35 years

b Age ≥45 years

c Chemoradiotherapy and/or surgery etc

d Lesions found at haemorrhoidectomy, colonoscopy or during diagnosis of other anal conditions

Anal HSIL treatment

For biopsy-proven HSIL of the anal canal or peri-anus, active treatment has been shown to significantly reduce the incidence of progression to invasive ASCC in PLHIV[10]. Treatments should aim to eradicate, attenuate, or control disease, while minimising disturbance of normal anorectal function. Indiscriminate wide local excision is therefore no longer recommended, due to the high rates of complications such as anal stenosis and faecal incontinence. Current treatment options include HRA-guided lesional ablation, and local topical therapies. Clinicians may initiate treatment based on the first HRA and biopsy that confirms HSIL, although discretion may be exercised in individuals with a low risk of progression.

A. Ablative treatments

Local ablative therapy involves targeted destruction of HSIL lesions with protocols developed for modalities such as electrocautery (also known as hyfrecation)[40] laser[41], or infrared coagulation[42 43]. The ANCHOR study, which reported a 57% decline in cancer risk, was based on these ablative treatments (mostly electrocautery). Because the anal canal and peri-anus represent a field of change with respect to HRHPV exposure, targeted ablative techniques such as electrocautery have been shown to have recurrent/persistence rates in excess of 50%[44]. High-risk patients must therefore be counselled that they will be treated within a chronic disease framework, with close follow-up and the likelihood of repeated treatments. In general, it is advisable that patients resume their prescribed screening program 6 months after an initial ablative treatment, unless symptoms intervene. If cleared of HSIL on two consecutive occasions, they may be able to revert to their standard screening intervals.

B. Topical treatments

The treatment protocols available for topical agents generally have comparable efficacy to the ablative therapies for intra-anal and peri-anal disease clearance[45 46]. Given the issues surrounding self-application and their common side-effects, topical treatments are largely confined to perianal disease. Trichloroacetic acid has been shown to have reasonable efficacy with minimal side-effects when applied directly to two or fewer lesions under HRA guidance[47]; however, it is less effective for bulky lesions and more than one application is typically required to achieve remission. 5-fluorouracil[48], cidofovir[49], and imiquimod[50] can all be self-applied by patients, although compliance is often an issue due to the high incidence of side effects such as skin irritation and anal burning sensation on defaecation. These agents also have the advantage of not being dependent on HRA guidance. However, because of the non-targeted nature of topical application, they are generally used to "downstage" rather than eradicate extensive disease to make it more amenable to eventual ablative treatment.

C. HPV Vaccination

HPV vaccination is not approved as a therapeutic agent for anal HSIL. There is conflicting evidence regarding its efficacy as an adjuvant following HSIL treatments to prevent or minimise recurrence[51-54]. Post-treatment vaccination to prevent future HPV infection, particularly with HPV16[55], may nevertheless be discussed with patients, on the understanding that vaccination is not Medicare-funded for people older than 25 years. In people who test negative to HPV16, consideration should be given to vaccination, due to the possibility of new infection, while once again noting that the vaccine is not funded in this age group for men or women.

D. General advice

There is strong evidence to recommend smoking cessation to reduce the risk of recurrence or progression of HSIL post-treatment[56]. A general recommendation for all-cancer prevention is increased dietary intake of green-yellow and cruciferous vegetables[57] and exercise[58].

It should be noted that some patients will enter a screening protocol having already been diagnosed and/or partially treated for their HSIL, such as by a surgeon performing haemorrhoidectomy or a gastroenterologist noting lesions on retroflexion of the colonoscope. In such cases, clear excision margins on histology do not preclude the need for full HRA as multifocal disease is common.

Useful Links

1. St Vincent's Hospital Sydney Dysplasia and Anal Cancer Services (DACS)
   https://www.svhs.org.au/our-services/list-of-services/hiv-immunology-infectious-disease/dysplasia-and-anal-cancer-services
2. Positive Life NSW
   https://www.positivelife.org.au/hiv-info/medications/anal-cancer-screening/
3. Internation Anal Neoplasia Society
   https://www.iansoc.org/Patient-Support
4. Anal Cancer Foundation
   http://www.analcancerfoundation.org/

Appendix 1. Details of sampling and reporting

Before commencing anal screening, it is advisable to contact your pathologist to obtain advice on appropriate sampling devices and collection media, as samplers and collection fluids are not always interchangeable. It is also important to ascertain whether the laboratory offers NATA-accredited HPV genotyping. At the time of writing, specific Medicare rebates for anal HPV and cytology testing are not available.

The anal canal should be sampled with an appropriate collection device, usually a Dacron or flocked swab. The aim is to obtain an appropriately cellular sample, which is representative of the circumference and length of the canal (UCSF resource: Obtaining a specimen for anal cytology | Anal Neoplasia Clinic, Research and Education Center). There is no clear relationship between recent sexual activity and cellularity[1] but by convention, most individuals are advised against douching and receptive anal intercourse for 24 hours prior to the procedure. Lubricant should **not** be used before or during sampling, as this can interfere with test preparation and interpretation. Sampling of the canal should occur **without** direct visualisation as the presence of the anoscope interferes with access to the mucosal surface[2].

The anal swab must be collected prior to digital ano-rectal examination.

Self-collection may be more acceptable to those being screened, but a recent meta-analysis showed a small drop in performance compared to clinician-collected samples[3]. In the current guidelines, **self-sampling is not recommended** but this is an area of further research.

As the swab sample will be used for both anal HPV and cytology testing, it must be submitted in a vial of appropriate fixation solution, provided by the manufacturer of the particular liquid-based cytology (LBC) technique (eg ThinPrep or SurePath) or by the pathology laboratory. After collection, the swab should immediately be very vigorously rinsed in the fixative, to maximise cellularity of the specimen. The head of the device should **not** be detached to leave in the vial. After rinsing, the swab may be safely discarded in clinical waste.

An appropriate request form should accompany the specimen to the laboratory. At a minimum, this should indicate that the test requested is 'anal cancer screening as per ASHM guidelines', as this will communicate the HIV status and the need for extended HPV genotyping +/- reflex LBC.

Detection of at least 14 high-risk HPV genotypes is standard in Australia laboratories processing cervical specimens. The cervical testing usually includes only partial genotyping, individually identifying only HPV16 and HPV 18, while the other 12 genotypes are detected and reported as a panel of 'other high-risk' types. Extended HPV genotyping is recommended for anal testing as this will help to enable differentiation of transient and persistent infections. The 14 genotypes individually detected are:16,18,31,33,35,39,45,51,52,56, 58,66,68.

A small proportion of samples may be reported as 'unsatisfactory' or 'invalid' for PCR and genotyping. This may be due to absence of DNA (insufficient cells) or the PCR reaction may be 'inhibited' if a competitive substance is present, thereby rendering the PCR unreliable. When encountered, these results may necessitate recollection.

LBC methods are far preferable to the conventional "smear" technique and are recommended by these guidelines. The resultant slide should be manually screened by a suitably trained cytologist. A similarly suitably experienced cytopathologist should take responsibility for a final report, utilising the Australian

Modified Bethesda System, which is already used in Australia for cervical cytology reporting (See Table A1). This is easily translatable to the Bethesda System 2014, if required[4]. If the slide is not assessable, the term 'Unsatisfactory' will be used. The main reason for such a report is poor cellularity and the collection should be repeated within 2-4 weeks. Discussion with the reporting pathologist before recollection may be helpful, to clarify and rectify the problem. A comment will also be made about the presence or absence of transformation zone cells, an important quality measure[5].

Table A1:Australian Modified Bethesda System for reporting anal cytology [6]

Negative	**There is no evidence of a squamous intraepithelial lesion or malignancy**
PLSIL	**Possible low-grade squamous intraepithelial lesion**
LSIL	**Low-grade squamous intraepithelial lesion**
PHSIL	**Possible high-grade squamous intraepithelial lesion**
HSIL	**High-grade squamous intraepithelial lesion**
SCC	**Squamous cell carcinoma**
Unsatisfactory	**Insufficient cellular material**

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