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SEXUAL HEALTH

Abstracts from the IANS 2025 Scientific Meeting: 6–8 June 2025

Royal College of General Practitioners, London, UK

Global conference on anal cancer and other anal HPV-associated conditions

The 2025 in-person event will showcase invited presentations, abstracts, small group sessions and a lively scientific interchange on anal HPV infection, anal squamous intraepithelial lesions and anal cancer.

Anal Cancer

1. Advancing anal cancer screening: the impact of an educational module on provider awareness and implementation of anal cancer screening guidelines

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Background: HPV-related squamous intraepithelial lesions are precursors to anal cancer, disproportionately affecting high-risk populations such as people with HIV, men who have sex with men (MSM), and women with vulvar dysplasia. Despite the importance of early detection, barriers like provider engagement and system-wide support limit screening implementation. This study evaluated an educational module designed to improve provider adherence to screening guidelines at the HIV Ponce Clinic while identifying barriers and facilitators to implementation.

Methods: This two-phase pilot study involved an educational module for HIV ID Clinic providers, followed by in-depth interviews 6 months later. Seven semi-structured interviews assessed providers' knowledge, attitudes, and challenges related to screening. Thematic analysis was conducted independently by two reviewers, resolving discrepancies through discussion or a third reviewer.

Results: Before the module, providers were aware of screening but lacked knowledge of appropriate age, intervals, and protocols for non-MSM individuals. Post-module, all reported greater confidence, with two expanding screening beyond MSM. Previously, screening was inconsistent, with variable use of hrHPV testing and age cutoffs. Post-module, providers implemented key elements, screening more patients over 35.

Facilitators included clinic resources, anoscopy providers, and the module. Barriers included long wait times (6/7 providers), scheduling inefficiencies (4/7), competing priorities (6/7), lab challenges (4/7), and EHR workflow issues (6/7).

Conclusions: The educational module improved providers' confidence in performing screenings, discussing anal cancer with patients, and identifying appropriate referrals for anoscopy, demonstrating its success in fostering competence. However, providers reported systemic challenges, including scheduling inefficiencies and EHR integration barriers, highlighting the need for improved logistical support and guideline refinement.

2. Bridging the gap from women diagnosed with anal cancer: a co-design and evaluation study

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Background: The incidence of anal cancer continues to rise with women disproportionately affected. Intense treatment involving pelvic radiotherapy coupled with stigma and shame commonly associated with a diagnosis of anal cancer can result in life altering consequences for women. Recent qualitative research identified that women feel under-informed about treatment-related changes affecting sexual function and intimacy, leaving them feeling ill-prepared to maintain sexual health and intimate relationships.

This study aimed to co-design an information resource with women with anal cancer and test its usability among end users.

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Methods: Women with lived experience ($n = 4$) and cancer care providers ($n = 4$) from across Australia, New Zealand and USA were recruited to an expert advisory group (EAG). The EAG's primary role was to co-design an information resource intended for women newly diagnosed with anal cancer. A draft resource was reviewed by women with lived experience ($n = 10$), healthcare providers ($n = 10$) and cancer nurses ($n = 10$). Following review, a final draft was user-tested in clinical settings.

Results: The final resource is a colour-printed booklet with dedicated sections covering information identified as relevant to women diagnosed with anal cancer, organised according to key timepoints along the treatment trajectory. The booklet includes a glossary of terms, question prompts and journal section. User-testing is underway at two metropolitan hospitals in Australia.

Conclusions: Co-design is a useful approach to develop meaningful information resources that meet the needs of end users. User-testing is essential to understand the barriers and challenges associated with implementation in clinical settings.

3. Evaluating the financial, environmental impact and patient acceptability of a newly developed high resolution anoscopy (HRA) service for surveillance of patients with ano-genital intraepithelial neoplasia

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Background: HRA is the gold standard for surveillance of anal high grade squamous intraepithelial lesions, however most UK centres rely on multiple biopsies under general anaesthetic. Having set-up the first Regional Anogenital Intraepithelial Neoplasia Service (RAINS) in Northwest of England, this study reports the initial financial and environmental impact of RAINS along with patient acceptability of HRA.

Methods: Patients undergoing HRA between May 2024 and January 2025 were included. Clinical/demographic data, costs of HRA vs conventional mapping under GA were collected. Co^2 emission for GA was calculated using the destiva.app. Standard questionnaire was used for assessment of pain, overall satisfaction scores measured on a scale of 0 (not happy) to 10 (very happy) and willingness to undergo future HRA examinations.

Results: 45 patients were included (median age 56 years and F:M = 3:1). Forty-one completed the procedure and 10 patients had multi-zonal assessment. Median pain score was 4.5 median patient satisfactory score was 10 and all participants expressed willingness to have repeat procedure if required. Compared to 328 mapping biopsies, only 18 biopsies were performed in HRA group and there was significant cost saving in terms of equipment (£150.65 vs £50.36 per procedure). There was immediate reduction in carbon footprint as emission from GA of a dedicated proctology list was calculated to be 35 total CO^2eq(kg).

Conclusions: HRA for diagnosis and surveillance of HPV-related precancerous lesions in anogenital region is cost effective, sustainable and acceptable for patients. Longer term follow up is required to ascertain the clinical efficacy and safety of HRA.

4. Follow-up of anal carcinoma (AC): does HRA decrease the recurrence rate?

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Background: The European (ESMO) and US (NCCN) guidelines recommend follow-up for AC for 5 years using standard anoscopy, DARE and radiological imaging. After Chemoradiation (CR) and Local Excision (LE), high rates of persisting HSIL have been described (CR: 17%, LE: 75%), as well as high rates of high-risk HPV (CR: 17%, LE 75%).

We have been aiming to concentrate the follow-up for AC in our HRA clinic, including cytology and HPV-testing as well as HSIL-treatment, instead of the normal proctology unit, assuming to decrease the recurrence rate for AC. We hereby present the first results of this strategy.

Methods: All patients having been treated in our hospital for AC by LE or CR between January 2018 and December 2023 were recorded including the place of follow-up (HRA-clinic versus normal proctology unit). Primary endpoint was recurrence.

Results: 46 patients (8 male, age median 60) were treated for AC, 11 (24%) by LE, 35 (76%) by CR. 19 (38%) of those patients had their follow-up in the HRA clinic. Patients with follow-up without HRA experienced 3 recurrences (11%) after a median 24 months (11–40). Patients followed with HRA had no recurrence.

Conclusions: Follow-up for AC in an HRA clinic, including treatment of HSIL, does reduce the recurrence rate in this small cohort. Further studies with more patients, possibly multicenter, should confirm those findings.

5. High-risk HPV serotypes and the extent of HSIL in the anal canal of people living with HIV: a case-control study

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Background: High-risk human papillomavirus (HPV) is the primary etiologic factor in high-grade squamous intraepithelial lesions (HSIL), a precursor to anal squamous cell carcinoma. People living with HIV (PLWH) are at an increased risk of developing HSIL and invasive cancer. Evidence suggests that lesions affecting more than 50% of the anal canal circumference have a higher risk of progression. This study examines the association between high-risk HPV serotypes and the extent of HSIL in PLWH.

Methods: A nested case-control study was conducted within a cohort of PLWH diagnosed with HSIL at a tertiary care hospital. Participants underwent high-resolution anoscopy (HRA) and HPV genotyping by PCR. Cases were defined as individuals with HSIL involving more than 50% of the anal canal circumference, while controls had HSIL affecting 50% or less. Statistical analyses included odds ratio (OR) estimation and multivariate logistic regression.

Results: Preliminary findings indicate that HPV-16 was the most prevalent serotype, detected in 67% of cases and 42% of controls (OR: 2.8, $P = 0.003$). Other high-risk serotypes, including HPV-18 and HPV-31, were more frequent in cases than controls, though without statistical significance. Lesions affecting >50% of the anal canal were significantly associated with HPV-16 persistence and immunosuppression (CD4 <200 cells/μL, $P = 0.01$).

Conclusions: Identifying high-risk HPV serotypes associated with extensive HSIL may improve screening and management strategies for PLWH. Given the high burden of anal dysplasia in this population, targeted surveillance and early intervention could reduce the progression to anal cancer. Further prospective studies are needed to refine risk stratification and optimize clinical guidelines.

6. HPV and anal cancer awareness among SMM with HIV: the role of SMM-affirming clinics

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Background: Sexual minority men with HIV (SMM-HIV) are at heightened risk for anal cancer due to persistent high-risk HPV infection, with incidence rates surpassing the general population. Despite preventive interventions, awareness specific to HPV, preferences, and knowledge about prevention have yet to be assessed in Nigeria.

Methods: This study surveyed 250 SMM-HIV at an SMM-affirming clinic in Abuja, Nigeria, to assess topics related to HPV, anal cancer, and vaccine acceptability. From April to June 2024, participants completed a questionnaire on REDCap. Responses were recorded as yes/no or on a 0 (disagree)–10 scale (agree).

Results: Participants had a median age of 29 years (IQR: 25–34), 42% had lived with HIV for 6 or more years, and 51% were current smokers. Most (79%, $n = 198$) had no HPV awareness, while the 51 had historically received care at our SMM-affirming clinic. Knowledge of anal cancer symptoms (Table 1) was limited and ranged from 8.8% ($n = 22$) to 16.8% ($n = 42$), with only 2.4% ($n = 6$) identifying all symptoms. Regarding future anal cancer screening, participants reported a median comfort score of 9 (IQR: 7–10) for SMM-affirming clinics, compared to 2 (IQR: 0–4) for non-SMM-affirming clinics. Only 9% ($n = 23$) believed a vaccine exists to prevent anal cancer.

Conclusions: Findings reveal significant gaps in anal cancer knowledge and HPV vaccine awareness among SMM-HIV. Strong preferences with screening at the clinic present opportunities to enhance health literacy through culturally affirming care. Promoting HPV education in HIV clinics could strengthen knowledge, prevention efforts, and improve health seeking behaviors.

Table 1. Participant responses to signs and symptoms of anal cancer.

Of the following, what are the signs and symptoms of anal cancer?	Frequency (*n*)	Percentage (%)
Bleeding or a bloody discharge from the anus	39	15.6%
Feeling a lump or mass in the anus	42	16.8%
Persistent or recurring anal itching	22	8.8%
Persisting or recuring pain in the anal area	22	8.8%
Change in bowel habits such as going to the bathroom more or less frequently	31	12.4%

7. HPV induced anal cancer – it's not all squamous

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Background: Squamous cell cancers account for 85–93% of anal cancers and 80% of these cancers are associated with HPV16. There have been very rare scattered isolated cases of HPV related anal adenocarcinoma reported in the literature. We present a case of HPV-associated adenocarcinoma of the anus.

Case: A 65-year-old HIV-negative, immunocompetent woman underwent a screening colonoscopy which revealed a concerning-appearing 1cm lesion on retroflex at the anal rectal junction with a superficial biopsy showing a tubular adenoma without dysplasia. Because of the size and distal location, she was referred for surgical excision under high-resolution anoscopy (HRA) guidance of this neoplastic-appearing squamocolumnar junction lesion (Fig. 1). Pathology revealed a 2 mm intramucosal adenocarcinoma within an adenoma (Fig. 2). HPV RNA in-situ hybridization 16/18 within the carcinoma was positive (Fig. 3). Because the lesion was small and isolated only to the mucosa, she elected re-excision of the site which revealed no residual lesion. 4-month follow-up HRA revealed a similar 3 × 5 mm lesion in a different quadrant which was also found to be a superficial HPV-associated adenocarcinoma. Wide excision was also negative.

Conclusions: Adenocarcinomas accounts for 9–14% of anal canal malignancies and are thought to originate from the glandular cells independent of HPV effect. This case, together with other case reports, demonstrates that there may be a dualistic etiology of anal adenocarcinomas with both HPV induced and HPV independent adenocarcinomas. Additional research regarding the epidemiology and response to treatment of HPV-dependent versus independent anal adenocarcinomas is needed.

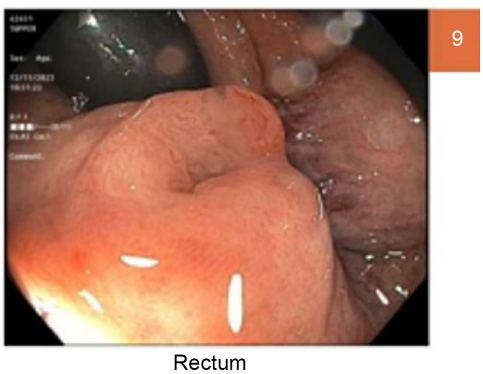

Fig. 1.

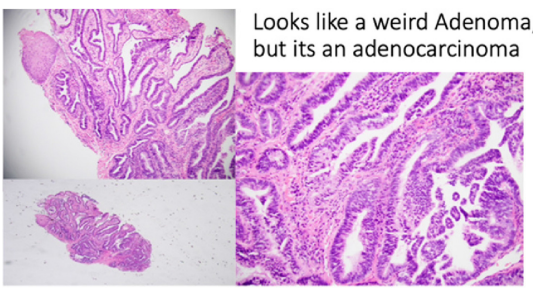

Fig. 2.

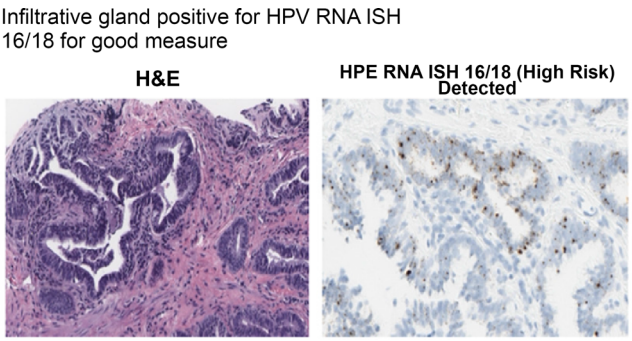

Fig. 3.

8. Improving follow-up for people treated with anal cancer

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Background: Treatment of anal squamous cell carcinoma (ASCC) typically involves chemoradiotherapy (CXRT) and/or Wide Local Excision (WLE), with 10–30% local recurrence, often requiring abdomino-perineal resection (APR). Current follow-up protocols detect locally recurrent cancers only when they are palpable or visible during simple anoscopic examination. In contrast, a combination of high resolution anoscopy (HRA), cytology and high-risk HPV (hrHPV) testing is able to identify both microscopic local ASCC recurrences and HSIL, which are potentially amenable to early intervention. We have evaluated the role of this diagnostic triad in ASCC follow-up.

Methods: A retrospective case note review was conducted of patients attending for post-treatment ASCC follow-up between 1/1/2000 and 6/1/2024.

Results: Of 133 cases, 86 (65.1%) were men who had sex with men and 33 (24.8%) women. Nearly half (45.1%) were HIV-positive. Most (n = 101, 75.9%) underwent CXRT, while 32 (24.1%) had WLE only. At first follow-up, 22 (16.8%) had histological and/or cytological HSIL, and 46 (36.8%) had at least one hrHPV genotype detected. On multivariable analysis, initial WLE treatment modality and HPV16 detection were associated with post-treatment HSIL.

Conclusions: Introducing the diagnostic triad of HRA, cytology and hrHPV testing into routine follow-up could transform ASCC care by enabling earlier interventions and reducing recurrence rates, and the need for APR. We were able to detect residual HSIL in 16.8% and hrHPV in 36.8% of people, which would not have been detected using standard protocols. Longer follow-up will be needed to confirm reduction in local recurrence rates.

9. Improving screening strategies for detecting high-grade squamous intraepithelial lesions as a predictor of anal cancer

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Background: How does anal cytology (aCyt), Aptima, or Hybrid Capture 2 (HC2), alone or in combination predict histological high-grade squamous intraepithelial lesion (hHSIL)?

Methods: Data for 272 participants (71 screening naïve) included complete data for two high-risk HPV (hrHPV) tests, APTIMA+ and HC2, and Dacron aCyt, high-resolution anoscopy, and biopsy. Multivariable fully-adjusted logistic regression models evaluated performance of these single and paired-test strategies to predict hHSIL vs <hHSIL. Odds ratios (OR, 95% CIs) and area under Receiver-Operating Curves (AUC) evaluated the association and discrimination of these methods. Unsatisfactory and abnormal (≥ASC-US) aCyt were compared, as well as between NIL, aCyt, APTIMA (+/−), and HC2 (+/−).

Results: Estimates are in Table 1. Overall, APTIMA, as single or paired test, strongly predicted hHSIL (ORs: 6.71–8.26). In two-test strategies, aCyt was not independently significant for HSIL prediction when paired HC2+ or APTIMA+ (both were significant in combination models with aCyt). Combinations of aCyt, HC2+, and APTIMA+ discriminated between hHSIL and <hHSIL better than the clinical/demographic characteristics alone. Abnormal/unsatisfactory aCyt, HC2+, and APTIMA+ did not discriminate between hHSIL and <hHSIL statistically significantly better than one another. Adjusted analyses for paired tests including a HC2+ test or abnormal/unsatisfactory aCyt did not appreciatively improve the odds of predicting hHSIL, after accounting for APTIMA+ (P-values ≤0.036). All APTIMA+ test strategies (AUCs: ~0.79) discriminated between hHSIL and <hHSIL better than aCyt or HC2+ test strategies alone (AUCs = 0.69–0.75, P-values ≤0.05).

Conclusions: APTIMA+ assay used alone may identify persons with anal hHSIL better than single-test screening with HC2+ or abnormal aCyt.

Table 1. Comparison of contemporaneously performed dacron anal cytology a(Cyt), hrHPV Hybrid Capture 2 (HC2), and hrHPV-APTIMA tests performed at the high resolution anoscopy (HRA) visit for 270 gay, bisexual and other men who have sex with men and two transgender females evaluated at a single clinic visit. Seventy-one participants were screening naïve at the study visit.

Single test strategies[A–C]										**AUCs and *P*-values for statistical comparisons of test strategies**			
		Anal cytology at HRA visit[C]						**Sensitivity**	**Specificity**				
		hrHPV testing[B]		**aCyt ≥ ASC-US vs NIL[C]**		**aCyt unsatisfactory vs NIL[C]**				**Single test comparisons**			
Single test		**Odds ratio**	**95% CI**	**Odds ratio**	**95% CI**	**Odds ratio**	**95% CI**			**AUC[A]**	***P***	***P***	***P***
Covariates alone[A]		–	–	–	–	–	–	–	–	0.663	**Referent**		
aCyt		–	–	**2.45**	(**1.31**, **4.58**)	**1.99**	(**1.02**, **3.91**)	44.3%	72%	0.689	0.1733	Referent	–
HC2		**5.56**	**3.21**, **9.62**	–	–	–	–	57.4%	66.7%	0.751	**0.002**	0.0364	Referent
Aptima		**8.26**	**4.65**, **14.65**	–	–	–	–	69.7%	66%	0.785	<**0.0001**	**0.0020**	**0.05**
Two test strategies[A–C]													
		Anal cytology at HRA visit[C]						Sensitivity	Specificity	Two-test comparisons			
Test 1	Test 2	HrHPV testing[B]		aCyt ≥ASC-US vs NIL[C]		aCyt unsatisfactory vs NIL[C]		Test 1 vs Test 2 *P*		AUC[A]	*P*	*P*	*P*
		Odds ratio	95% CI	Odds ratio	95% CI	Odds ratio	95% CI						
Covariates alone[A]										0.663	**Referent**		
HC2	aCyt	**4.88**	(**2.65**, **8.95**)	1.56	(0.80, 3.06)	1.99	(0.97, 4.06)	**0.043**	61.5%	69.3%	0.762	**0.0007**	Referent	–
Aptima	aCyt	**7.62**	(**4.06**, **14.30**)	1.37	(0.68, 2.78)	1.64	(0.78, 3.46)	**0.002**	63.9%	67.3%	0.794	<**0.0001**	0.064	Referent
		hrHPV testing				hrHPV testing							
		APTIMA				HC2							
Aptima	HC2	**6.71**	(**2.80**, **16.07**)	1.28		(0.54, 3.04)		**0.036**	71.3%	66.7%	0.787	<**0.0001**	0.161	0.363

[A]Adjusted for the effect of age, race (White, not-White), HIV infection (unifected; HIV infection with <500 CD4 cells/mm^3), smoking (former, current, never), self-reported number of male anal-receptive intercourse partners over 24 months before the HRA visit (0, 1, 2–10, >10 partners), and swab-collection order (1st vs. subsequent).

[B]BhrHPV HC2® detects HPV types DNA for HPV types 16, 18, 31, 33, 35, 39, 45, 51, 52, 56, 58, 59, or 68 (Digene Corporation, 2007) and hrHPV APTIMA® detects mRNA for these same HPV types in addition to HPV type 66 (Hologic Inc., 2017).

[C]Models evaluating the single anal cytology test gathered at the HRA visit is classified as one of three outcomes: Unsatisfactory, ≥ASC-US, and NIL.

Digene Corporation (2017) HC2. Hybrid Capture 2 High Risk HPV DNA Test: An In Vitro Nucleic Acid Hybridization Assay with Signal Amplification using Microplate Chemiluminescence for the Qualitative Detection of Human Papillomavirus (HPV) Types 16, 18, 31, 33, 35, 39, 45, 51, 52, 56, 58, 59, or 68 in Cervical Specimens (Educational Insert). Qiagen Corporation. https://www.accessdata.fda.gov/cdrh_docs/pdf/P890064S009c.pdf.
Hologic Inc (2017) APTIMA HPV Test – for an in vitro diagnostic use (Package Insert). Hologic, Inc. & Emergo Europe. https://www.hologic.com/sites/default/files/package-insert/AW-14517-001_003_01.pdf.

10. Initial evaluation of a novel 'Living with and Beyond Anal Cancer' (LWABAC) survivorship programme

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Background: Chemoradiation for anal cancer often results in late bladder, bowel and sexual dysfunction. These symptoms are regarded as 'Pelvic Radiation Disease', which can significantly impact patients' quality of life. To improve outcomes post-treatment, a novel LWABAC seven-week programme led by healthcare professionals was developed. Programme content includes diet/nutrition, continence, the psychological impact of cancer, and 'partnering with your medical team'. An initial pilot evaluation was conducted to assess the impact of the programme.

Methods: Validated questionnaires were disseminated to participants following completion of the LWABAC program. The questionnaire consisted of Likert-scale questions and space for free-text responses to collect quantitative and qualitative data. Descriptive statistics were used to analyze Likert-scale responses, whilst thematic analysis was conducted on free-text responses to identify key themes.

Results: 18 participants completed questionnaires. Four themes were identified: Knowledge; Confidence; Support; Impact. Within free-text responses, participants described feeling supported through sharing experiences with others, stating the program had "changed their future". All Likert-scale responses were neutral or positive (Fig. 1). All participants (n = 18) gained improved knowledge and confidence in seeking information on their cancer/lifestyle, reporting greater control over physical toxicities and emotions regarding their cancer/treatment.

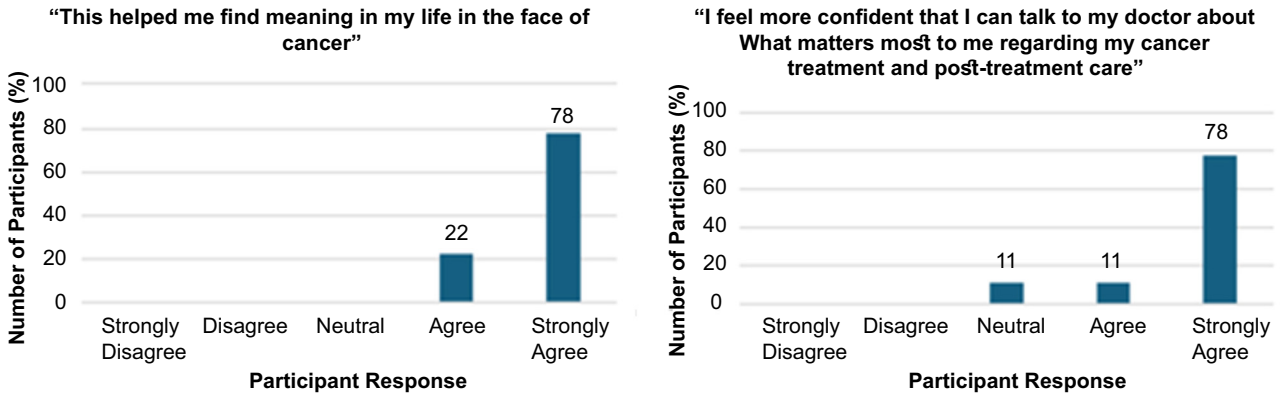

Fig. 1. Participants' responses to a sample of Likert-scale questions from the evaluation questionnaire.

Conclusions: This pilot evaluation of the LWABAC program demonstrated positive findings, empowering participants with knowledge, confidence, support and hope for the future. Further work involves co-designing future iterations of the program and evaluation with anal cancer patient/public involvement representatives. These initial findings provide important insight into the impact of such post-treatment support, with potential to expand across other disease sites.

11. Perianal lesions in MSM living with HIV is an underappreciated risk for precancer and cancer

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Background: Men who have sex with men living with HIV (MSMLWH) are at highest risk for anal cancer which can arise from anal canal mucosa as well as from keratinized skin of the verge and perianal region. Even in experienced high-resolution anoscopy (HRA) programs, perianal biopsies are less frequently performed than intra-anal biopsies. In this study, we aimed to investigate prevalence and risk factors for perianal precancer and cancer among MSMLWH.

Methods: MSMLWH who underwent HRA and intra- as well as perianal biopsy between 2018 and 2024 following abnormal cytology (ASCUS or worse) were included in the study. Data on patient age, histological diagnoses, and high-risk HPV testing were recorded. Risk factors for precancer and cancer were assessed using chi-square and rank-sum tests.

Results: A total of 507 HIV-infected MSM were included in the study, with a median age of 52 years (range: 27–76). Perianal biopsies were diagnosed as benign ($n = 27$, 5%), condyloma/LSIL ($n = 380$, 75%), HSIL ($n = 94$, 18%), and superficially invasive squamous cell carcinoma (SISCCA, $n = 4$, 0.8%). Concurrent intra-anal biopsy results were benign ($n = 82$, 16%), LSIL ($n = 224$, 44%), and HSIL ($n = 200$, 39%). High-risk HPV and HPV16 prevalence were 75% and 29%, respectively. Forty-three individuals (8.4%) had isolated perianal HSIL/SISCCA without intra-anal HSIL. Perianal HSIL/SISCCA was significantly associated with HPV16 infection ($P < 0.001$) and the presence of intra-anal HSIL ($P = 0.002$).

Conclusions: Our results highlight the importance of thorough perianal examination and biopsy in MSMLWH. In a subset of patients, the perianal region may be the only site of precancerous disease.

12. Post-operative outcomes for a novel perineal turnover flap in salvage surgery for anal cancer

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Background: Following extra-levator abdominoperineal excision (ELAPE) for anal squamous cell carcinoma (ASCC), perineal reconstruction is required to fill the pelvic defect. Existing techniques are often painful and wound complications are common. Here, we describe outcomes for a novel perineal turnover (PTO) flap that uses pudendal perforators and leaves a small perineal scar.

Methods: Operative outcomes for all ASCC patients undergoing ELAPE December 2015–December 2024 are reported. Reconstructive techniques were categorized as PTO, PTO + additional flap, inferior gluteal artery perforator (IGAP) flap and other.

Results: Thirty-five ASCC patients underwent ELAPE (mean age 61.7; 15 females; mean BMI 27.2). There were 6 patients with diabetes, 8 smokers and 32 received neoadjuvant chemoradiotherapy. 80% had a laparoscopic procedure. 20 had a PTO flap; 7 had PTO + additional flap; 4 had IGAP flap and 4 had others. The median length of stay was 16 days. There were 3 Clavien-Dindo IIIa and 5 IIIb complications. 14 patients had a wound complication: 5 inflammation/collection, 8 partial wound dehiscence and 1 flap failure. 5 patients with wound dehiscence returned to theatre; 2 of whom had multiple surgeries. There were no significant differences in major complications or wound complications according to type of flap.

Conclusions: The novel PTO flap can be used to reconstruct the pelvic defect following laparoscopic or open ELAPE surgery, with/without vaginal reconstruction, with/without other plastic surgery techniques in a cohort of patients who are high-risk for wound complications.

13. Temporal relationship between gynecologic and anal cancers: evidence from SEER data

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Background: A history of primary HPV-associated cancer increases the risk of developing anal cancer as a second primary malignancy. The IANS guidelines recommend anal cancer screening in high-risk populations – notably among individuals with HPV-associated vulvar precancer or cancer, for whom screening is recommended within one year of diagnosis. This study aims to examine the temporal association between genital, oropharyngeal, and anal cancers to further assess guidelines.

Methods: The Surveillance, Epidemiology, and End Results (SEER) database was used to identify individuals diagnosed with a primary HPV-associated cancer and any secondary HPV-related malignancy between 1969 and 2023 to establish their temporal relationship.

Results: Among 220,128 individuals with an HPV-associated cancer, 2,662 developed a secondary HPV-related malignancy. The median time to secondary anal cancer was 102 months from vulvar ($n = 314$), 81 months from vaginal ($n = 19$), 82 months from oral ($n = 74$), and 191 months from cervical ($n = 51$) cancers. Among those with primary anal cancer ($n = 297$), the median time to secondary malignancy was 25 months for vulvar ($n = 146$), 44.5 months for vaginal ($n = 22$), 29 months for cervical ($n = 15$), and 66 months for oropharyngeal ($n = 114$).

Conclusions: A temporal relationship exists between genital, oropharyngeal, and anal cancers. These findings reinforce the IANS screening guidelines for anal cancer, particularly in high-risk individuals with HPV-associated vulvar precancer or cancer, where screening initiation within one year is considered optimal. Furthermore, they underscore the necessity of genital screening in gynecologic patients with anal cancer.

14. The treatment of anal intraepithelial neoplasia (AIN) and anal squamous cell carcinomas (ASCC) in patients with restorative proctocolectomy and ileal pouch-anal anastomosis due to inflammatory bowel disease: a case series three cases

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Background: Due to their increased risk profile, patients with Inflammatory Bowel Disease (IBD) are included in the IANS screening guidelines. Nevertheless, there is little evidence around treating patients with HSIL and IBD. There exists further clinical complexity in patients with existing Ileal Pouch-Anal Anastomoses (IPAA) who develop HSIL. Although rare, ASCC cases have been identified in patients with IPAA.

Methods: We present our experience of treating IBD IPAA patients with early ASCC and HSIL using HRA in a specialist national anogenital neoplasia tertiary referral service (HANS).

Results: 3 patients were treated between 2017 and 2024 with HPV-related dysplasias within an IPAA. All 3 underwent HRA of the anus and anal-pouch anastomosis including the squamocolumnar junction with ileal not colonic mucosa. These were tolerated with difficulty in clinic. One patient cleared spontaneously their high-risk HPV infection. The second patient was referred to HANS after they underwent incomplete excision of a T2N0M0 ASCC at another centre. The patient not suitable for chemoradiation, therefore, had an HRA-guided excision of the residual ASCC and treatment of HSIL. The third patient developed a T2N0M0 ASCC on HSIL surveillance and they were referred for chemoradiation followed by salvage surgery.

Conclusions: Although rare, patients with IPAA are at risk of ASCC. It is possible to perform HRA in this subgroup of patients, but this should be undertaken by practitioners with experience of post-operative pouch anatomy. Patients known to have hrHPV prior to IPAA formation should be considered for vaccination and HSIL screening.

15. Using patient reported outcome measures (PROMS) to identify late toxicities and impact to quality of life following chemoradiation for anal cancer

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Background: Chemoradiation for anal cancer is often associated with acute and late toxicities which can diminish patients' quality of life (QOL). Research on electronic PROMs (ePROMs) to identify late toxicities following anal cancer treatment is lacking. This clinical audit aimed to utilise ePROMs to identify the incidence/severity of late toxicities following chemoradiation for anal cancer.

Methods: The audit was undertaken at a large cancer centre in North West England. An electronic validated questionnaire was developed and disseminated to patients who completed radical chemoradiation at the cancer centre between 2018 and 2022 ($n = 129$). Incidence and severity of late toxicities were identified using the European Organisation for Research and Treatment of Cancer, Quality of Life – ANL27 (EORTC QLQ-ANL27) questionnaire.

Clinical audit approval was acquired, and participation/consent were obtained via telephone. The small sample size recruited did not yield sufficient statistical power for analysis of significance, thus descriptive statistics were employed.

Results: 32 patients (58%) responded to the questionnaire. The mean age was 60 years old and the median follow-up for all patients was 28 months (range 7–63 months). Patients reported late sexual, bowel and urinary toxicities. Most patients ($n = 21$; 66%) reported that ongoing symptoms after chemoradiation moderately to severely affected their QOL (Fig. 1).

Conclusions: Anal cancer patients continue to experience late toxicities that negatively impact QOL up to 5.5 years post-chemoradiation. This work also evidences successful completion of ePROMs for this patient population, demonstrating potential for future long-term remote follow-up to facilitate toxicity management.

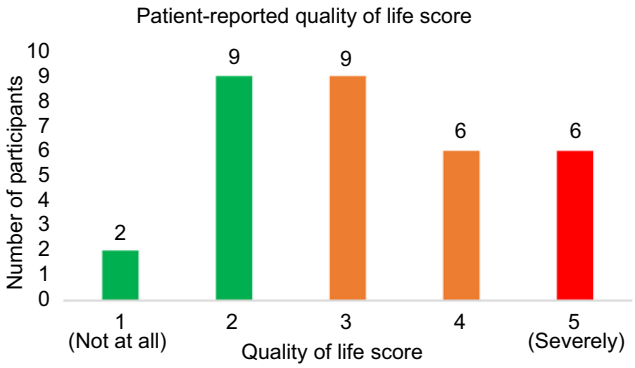

Fig. 1. Patient-reported impact of late toxicities on QOL post-treatment for anal cancer ("how are any ongoing symptoms after radiotherapy affecting your quality of life now?" RAG rating – green: mild impact, amber: moderate impact; red: severe impact to QOL).

Epidemiology and natural history

16. A recent decrease in anal cancer incidence in men in Australia

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Background: A recent plateau or slowdown in the increase in anal cancer incidence has been reported in some countries. We analysed Australian population cancer registry data to assess time trends.

Methods: We extracted number of cancer counts by age, sex, and year from the Australia Cancer Database using ICD-10 code C21 for 1982 to 2020. Time trends in age-standardised incidence rates were examined with change points identified by the Joinpoint Regression Program. Annual percentage changes (APC) were estimated.

Results: A total of 10,827 anal cancer cases were notified, increasing from 44 to 194 per annum in men and 70 to 307 in women between 1982–1985 and 2016–2020. Incidence increased over time in women and peaked in men in 2015. In men, there was a significant increase between 1982 and 2015 (APC: 1.89, 95% CI: 1.49–2.29, $P < 0.001$), followed by a significant decrease between 2015 and 2020 (APC: –3.27, 95% CI: –2.29–4.31, $P < 0.001$). In women, there was a significant increase between 1982 and 2012 (APC: 2.27, 95% CI: 1.84–2.71, $P < 0.001$), and there was no change between 2012 and 2020 (APC: 0.82, 95% CI: –0.32–1.96, $P = 0.158$). Between 2015 and 2020 the largest decrease in age-specific incidence in men was in the 55–64 age group (APC: –9.13, 95% CI: –1.77–15.93, $P = 0.016$).

Conclusions: The incidence of anal cancer has increased more than 2-fold in Australia, but in men only significantly decreased after 2015. It is important to determine the factors underlying these trends and the patterns for people living with HIV and other population subgroups.

17. A stakeholder analysis of interventions to improve linkage to HRA among transwomen

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Background: In a cohort of 80 transwomen (TW) with abnormal anal cancer screening (AACS), only 20% completed High-Resolution Anoscopy (HRA). Table 1 In this stakeholder analysis, we aim to identify interventions to improve linkage to HRA among TW with AACS.

Methods: We interviewed stakeholders about potential interventions targeting facilitators and barriers to HRA completion among TW with AACS, previously identified in a mixed-methods analysis. We assessed with the stakeholders the feasibility and acceptability of such interventions.

Results: Of the 8 stakeholders, 4 were healthcare personnel involved in anal cancer screening, and 4 were TW community leaders. Targets of interventions were socioeconomic barriers, gaps in knowledge about anal cancer, gender affirmation in healthcare, patient-provider dynamics,

sense of community among TW, and the perceived HRA benefit. Stakeholders identified the education of TW about the anal cancer screening continuum as a key intervention. Potential mediums for delivering this education included in-person conversations (with healthcare personnel or trained TW peers) and informational videos. To target healthcare systems, stakeholders working in healthcare suggested educating referring providers about HRA to establish clear expectations for the procedure and integrating HRA into gender-affirming care clinics to improve comfort with HRA providers. Stakeholders identified the availability of resources and the TW's trust as important mediators of feasibility and acceptability.

Conclusions: Implementation challenges in linking TW with AACS to HRA have emerged. Educational interventions targeting both TW and healthcare personnel who screen them are needed to improve HRA completion and anal cancer prevention in this population at high risk for anal cancer.

Table 1. Interventions to improve linkage to HRA for transwomen with abnormal anal cancer screening.

Target audience	Intervention	Persons involved	Evaluation criteria considerations
Transwomen with AACS	In-person education conversations about the continuum of anal cancer screening	Healthcare providers; other healthcare personnel; peers	– ***Feasibility***: the availability of provider time, and human and financial resources – ***Acceptability:*** the trust between patient and person delivering the intervention – ***Considerations:*** information should address low health literacy. Persons providing this information should be well informed about anal cancer
	Educational videos on the anal cancer screening continuum including: – Explanation of the HRA procedure – HRA personal testimonials	Healthcare workers; TW who underwent HRA	– ***Feasibility***: availability of resources to complete the videos – ***Acceptability:*** concerns for confidentiality and the length of videos – ***Considerations:*** information should address low health literacy. Videos should avoid the use of the word 'cancer' since it may be triggering to patients. Videos can facilitate discussions related to sexual health
	Text messages with reminders about HRA appointments and follow-up responses to patient questions	Healthcare personnel; Electronic Medical Record representatives	– ***Feasibility:*** continued phone access among TW and resources to send texts – ***Acceptability:*** concerns for confidentiality
Healthcare providers	Educational sessions with healthcare professionals on the continuum of anal cancer screening to facilitate explanation to TW after referral to HRA	Healthcare personnel, Health systems leadership, Anal cancer screening educators	– ***Feasibility***: the availability of provider time, and human and financial resources – ***Acceptability:*** the prioritization from healthcare personnel of and cancer screening, the availability of an anal cancer screening champion at the healthcare facility, and the commitment from leadership to improve anal cancer screening
	Embedding HRA procedures in primary care offices that serve HW	Healthcare personnel, Health systems leadership, Professional organizations that train HRA providers	– ***Feasibility***: the cost of the HRA equipment and the availability of providers skilled in HRA – ***Considerations:*** address the issue of providers scarcity by training providers who already perform gender-affirming care

Reference

1 Harfouch O, Lisco A, Omari H, Eyasu R, Eyasu R, *et al.* High rates of high-risk HPV anal infection and abnormal cytology in a cohort of transgender people assigned male at birth. *Open Forum Infectious Diseases* 2024; 11(12): ofae662. doi:10.1093/ofid/ofae662

18. Feminizing gender-affirming hormone therapy, HPV, and precancerous anal lesions in high-risk populations: a systematic review

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Background: Human papillomavirus (HPV) is a key etiologic factor in premalignant anal lesions. Feminizing estrogen therapy is widely used in transgender individuals, but its role in increasing the risk of HPV-associated premalignant anal lesions remains unclear. This review examines the potential association between prolonged estrogen use and the development of anal intraepithelial neoplasia (AIN).

Methods: A systematic literature review was conducted across 10 databases, including MEDLINE, Scopus, and Springer. Studies evaluating the association between feminizing estrogen therapy and premalignant anal lesions in transgender individuals were included. The strength of association was assessed using odds ratio (OR) calculations and statistical analyses.

Results: Studies suggest a positive correlation between prolonged estrogen use and increased risk of AIN in transgender individuals. The prevalence of HPV-associated anal lesions in this group ranged from 35% to 70%, significantly higher than in the general population. The risk of malignancy increased with the duration of estrogen therapy: 10% (<1 year), 20% (1–3 years), 30% (3–5 years), and 50% (≥5 years). Estrogen use was associated with an OR of 2.5 for AIN development. Additional risk factors include smoking, immunosuppression, and HIV co-infection.

Conclusions: Feminizing estrogen therapy may contribute to an increased risk of HPV-associated premalignant anal lesions in transgender individuals. Given the high prevalence, routine screening and risk-based preventive strategies should be prioritized to mitigate potential oncogenic effects. Further prospective studies are needed to establish causality and guide clinical recommendations.

19. High grade HPV-related lesions on non-AIDS CD4 deficiency: a case report

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Background: Common variable immunodeficiency (CVID) is the most common presentation of primary immunodeficiencies. 9%–20% of patients with CVID have a CD4+ deficiency. These T cells have been identified as part of the immune response involved in HPV infection, mostly with dysplastic lesions. Patients with primary immunodeficiencies have a high prevalence of HPV infection. Few cases have been reported of HPV-related malignant and premalignant lesions in primary immunodeficiencies.

Methods: We present a case report of a patient with common variable immunodeficiency and anal HSIL.

Results: A 65-year-old woman with common variable immunodeficiency with 236/mm3 CD4 and history of cervical H-SIL and vulvar condylomata 10 years before was referred by her gynecologist for anal cancer screening. She also had urothelial carcinoma of the bladder with local recurrence, both treated with surgery and currently free of disease. The anal PAP smear showed H-SIL. HRA was performed and biopsies confirmed multiple H-SIL lesions. With the aim of reducing the lesion size, four cycles of 5FU cream were indicated and a partial reduction was achieved. The remaining lesions were hyfrecated.

Conclusions: Although most commonly associated with HIV/AIDS immunodeficiency, primary immunodeficiencies also have a high prevalence of HPV infection. CD4+ T cells play an important role in immune response to HPV. The fact that our patient has a non-AIDS CD4 deficiency seems to concur with this hypothesis. Patients diagnosed with primary immunodeficiency would benefit from anal cancer screening.

20. Incidence of anal high-grade squamous intraepithelial lesion (HSIL) is high in attendees of an anal cancer screening clinic in Vancouver, Canada: 2003–2021

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Background: Recent anal cancer screening guidelines recommend yearly screening of key populations, including men who have sex with men (MSM) with HIV as the group with the highest incidence. Despite this, no widespread screening programs exist, and many resource constraints persist. In this study, we describe findings from Canada's largest anal cancer screening clinic over nearly two decades.

Methods: This is a retrospective cohort study of individuals undergoing anal cancer screening in Vancouver, Canada. Demographic and clinical data were analyzed using descriptive statistics, and logistic regression examined predictors of histologic high-grade squamous intraepithelial lesion (HSIL).

Results: There were 1752 individuals between 02/2003 and 06/2021 included in the analysis. Median age was 48 years, with 83.4% males; 59.0% were living with HIV. The period prevalence of HSIL in those with HIV was 44.1% (incidence: 16.8/100 person-years). Being male with HIV was associated with HSIL (odds ratio [OR] 2.2; 95% confidence interval [CI] 1.7–2.8), and previous anal cancer was associated with the development of future invasive carcinoma (OR 9.9; 95% CI 2.3–42.8). Cytology results changed significantly over time, with large reductions in negative results and increases in ASCUS/ASC-H between 2003 and 2021 (Table 1).

Conclusions: In this cohort, nearly half of patients with HIV developed incident anal HSIL, highlighting the importance of screening in this key population. It also highlights the importance of addressing the lack of screening programs for early anal HSIL detection, and the importance of HRA monitoring in those with previous cancer. Further work is also required to understand shifts in cytology results over time.

Table 1.

	2003–2010 (n = 1495 samples)	2011–2015 (n = 2386 samples)	2016–2021 (n = 2738 samples)	*P*-value
Cytology result				
Negative	51.8%	47.6%	36.3%	$P < 0.001$*
LSIL	16.6%	12.6%	13.0%	$P = 0.063$
ASCUS	16.4%	23.1%	34.6%	$P < 0.001$*
ASC-H	3.1%	4.1%	6.0%	$P = 0.007$*
HSIL	4.4%	4.1%	5.2%	$P = 0.382$

Abbreviations: ASC-H, atypical squamous cells – cannot exclude HSIL; ASCUS, atypical squamous cells of undetermined significance; HSIL, high-grade squamous intraepithelial lesion; LSIL, low-grade squamous intraepithelial lesion.
*Statistically-significant.

21. Incidence trends and risk factors for anal cancer in women in a large integrated health system

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Background: Women's anal cancer incidence is twice that of men's and increasing, while cervical cancer incidence is decreasing. We compared incidence rates (IR) and trends of anal and cervical cancer and evaluated anal cancer risk factors.

Methods: Retrospective cohort study (2006–2020) of 3.8 million adult females at Kaiser Permanente Northern California. We identified anal (n = 699) and cervical (n = 928) cancer cases, then, using Poisson regression, calculated IR per 100,000 person-years, average annual percent change, and unadjusted and adjusted IR ratios (IRR). A nested case-control analysis of anal cancer cases and controls (n = 6985) matched 10:1 by age, service area, and medical engagement used backward covariate selection and conditional logistic regression to calculate odds ratios (OR) with 95% confidence intervals (CI).

Results: Anal cancer IR surpassed cervical cancer IR for white women and women aged ≥50 years; trend lines for women ≥50 years crossed in 2010–2011. Anal cancer ORs increased with anal warts (4.59 [95% CI 1.44, 14.60]), non-HPV anal disease (1.25 [95% CI 1.05, 1.49]), and HBV history (1.70 [95% CI 1.36, 2.13]), as well as smoking and non-HIV immunosuppression. Anal cancer odds decreased with negative cervical HPV testing, overweight BMI and non-White race.

Conclusions: Women ≥50 years may become an important future anal cancer screening target; cost, risk/benefit, and approach to screening warrant study in this population. Many risk factors are likely related to HPV acquisition and persistence. Increased anal cancer risk for White women and benign anal disease merit further study.

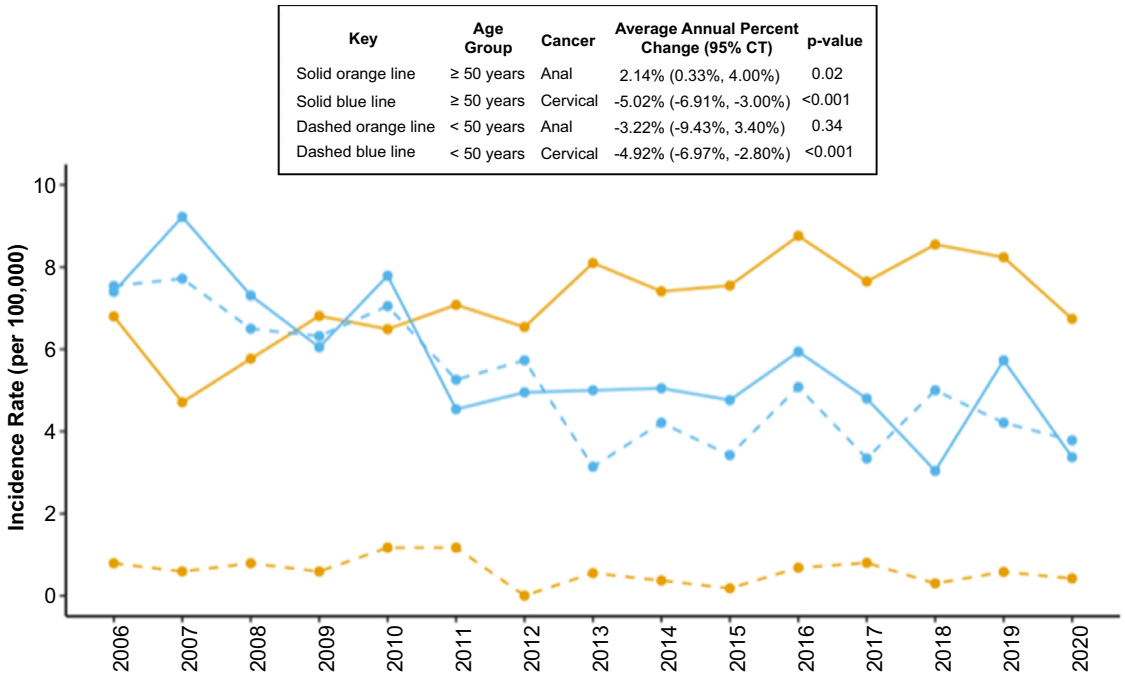

Fig. 1. Incidence rates over time of anal cancer and cervical cancer among women by age group, Kaiser Permanente Northern California, 2006–2020.

22. Prevalence of anal HPV infection and associated lesions in female sex workers from Argentina

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Background: Female sex workers (FSW) are at high risk of acquiring HPV. We aimed to evaluate the prevalence of anal HPV infection and cytological lesions in a cohort of cisgender (CGW) and transgender (TGW) FSW.

Methods: "MAS por Nosotras" is a prospective cohort evaluating sexual and reproductive health of FSW in Argentina. At baseline, anal cytology and HPV genotyping (AmpFire HPV High Risk Genotyping) were offered. Descriptive analysis is presented.

Results: Between June 2023 and March 2024, 200 FSW (99 TGW; 101 CGW) were enrolled. Median ages were 29 years [IQR 24–40] for TGW and 36 years [IQR 30–47] for CGW, ($P < 0.001$). In the previous month, 43.8% of TGW and 22.8% of CGW reported >20 sexual partners ($P = 0.002$); 57.6% of TGW and 52.5% of CGW reported condomless anal and/or vaginal intercourse. Only 2.5% had received quadrivalent HPV vaccine. Baseline HIV prevalence was 34.3% in TGW and 3% in CGW. Anal procedures were accepted by 90% of TGW and 69% of CGW.

Cytology was positive in 48.8% of TGW and 17.2% of CGW, with HSIL diagnosed only in TGW (8.2%).
HPV was detected in 83% of TGW and 67% of CGW (HPV-16: 26.8% and 10.6%; HPV-18: 15.5% and 8.5%, respectively). In 76.1% of TGW and 48.9% of CGW ≥2 genotypes were detected. 96.6% of FSW with HIV and 74.4% without HIV had HPV.

Conclusions: The high prevalence of HPV, particularly among TGW, with HSIL diagnosed among TGW, highlights the need for further studies to inform the design of tailored HPV prevention and screening interventions in FSW.

23. Risk factors for anal human papillomavirus (HPV) infection and anal HSIL among older gay, bisexual and other men who have sex with men (GBMSM)

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Background: There are several well-established risk factors for anal HPV and anal high-grade squamous intraepithelial lesions (HSIL) among GBMSM. However, it remains unclear if these persist in older GBMSM. We evaluate associations between anal HPV/HSIL and self-reported risk factors, including mental health, in GBMSM aged 50+.

Methods: We enrolled 127 GBMSM living with HIV (LWH) and 107 GBMSM not living with HIV (N-LWH). Participants completed a behavioral questionnaire and underwent high-resolution-anoscopy with biopsies if indicated. High-risk HPV DNA genotyping was performed (Atila BioSystems, Ampfire). Past 7-day depression was self-reported through a validated scale. We calculated adjusted odds ratios (aORs) and 95% confidence intervals (CI) through multivariable logistic regression models.

Results: Ages ranged from 50 to 87. 59% attended college; 66% reported white race. 43% reported recent receptive anal intercourse (RAI). 69% of GBMSM-LWH and 58% of GBMSM-N-LWH had HR-HPV. Among those with HR-HPV infections, 58% had anal HSIL. Mean depression score was 7.1; 27% had clinical depression. Recent RAI (aOR: 3.6, (CI: 1.6–8.1), $P = 0.003$), ever-smoker status (aOR:1.8, (CI: 1.0–3.3), $P = 0.004$), and history of anogenital chlamydia (aOR: 3.0, (CI: 1.0–9.2), $P = 0.04$) was associated with anal HPV. Anal HPV was associated with HSIL (HPV16 aOR: 45.1, (CI:15.8–129), $P<0.001$). Among GBMSM with anal HPV infections ($n = 151$), white race (aOR: 2.1, (CI: 1.0–4.3), $P = 0.05$), attending college (aOR: 2.9, (CI: 1.3–6.3), $P = 0.008$), and higher depression score (aOR: 1.5, (CI: 1.1–2.0), $P = 0.02$) was associated with anal HSIL. Age and HIV status were not associated with anal HPV/HSIL in adjusted models.

Conclusions: Ongoing health education on safer sex practices is warranted throughout life. Counseling older GBMSM regarding smoking cessation and providing mental health support could assist with anal cancer prevention efforts and improve general well-being.

Multi-zonal Disease

24. Anogenital neoplasia care (ANNECA) in Europe – a survey

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Background: HPV is causally related to several types of anogenital neoplasia. Care for anogenital neoplasia involves multiple specialist fields. Women with a history of cervical neoplasia are at increased risk of multiple anogenital neoplasia and second cancers occur in the anogenital zones. Results of a survey are presented.

Methods: A questionnaire was developed by iterative process and circulated amongst all specialist fields associated with anogenital neoplasia. All responses were collected centrally. Data was recorded/analysed using Microsoft Excel/Stata.

Results: Of the 455 respondents, 298 collaborated with colleagues to provide care, but only 27.6% were engaged in multidisciplinary team meetings (MDT) for care provision.
Second cancers were observed both in the same anatomical zone (59.4%) as well as in different anatomical zones (45.3%) by the respondents.
Survey also identified significant variability in clinician workload, experience and screening practices.
Low utilisation of high-resolution anoscopy (HRA) by specialists (12.3%) indicate lack of standardisation of practices, though some (12.7%) expressed interest in training in HRA.

97/455 did not offer treatment for anogenital neoplasia, while those who treated utilised multiple modes of treatment, including ablation, excision, topical medications, and cryotherapy amongst others.

Conclusions: Second HPV-related anogenital cancers are a significant clinical reality, underscoring the need for cohesive and comprehensive management pathways. Current practices do not adequately address the multizonal nature of these diseases. Enhanced HRA training, improved guidelines and robust follow-up protocols are essential to optimising care. Concerted effort is needed to align professional development, workload standards and clinical practices across Europe.

Pathogenesis, Molecular Biology and Virology

25. Comparing the immunogenomic profiles of anal and vulval HPV driven disease: implications for future research

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Background: Women with multizonal Human Papillomavirus (HPV) driven anogenital high-grade squamous intraepithelial lesions (HSIL) are at high risk of developing anogenital cancers. These women are burdened by recurrent anogenital lesions requiring repeat biopsy and treatment which is associated with significant morbidity. There is a need to identify novel therapeutic approaches with better efficacy and which can simultaneously target synchronous multi-zonal and -focal anogenital high-grade lesions.

Methods: This study uses multi-omic analysis (WES, RNAseq and FUME-TCRseq) to investigate the mutational and immune landscape of matched FFPE anal and vulval HSIL biopsies from 10 women with multizonal disease. Candidate mutations and pathways, copy number alterations (CNAs), predicted neoantigen profiles (using NeoPredPipe) and TCR repertoires were compared between the matched anal and vulval HSIL samples.

Results: Typical limitations associated with the use FFPE tissue were encountered. There was 5% CNA concordance between anal and vulval HSIL samples. Both pathologies shared common driver mutations as defined by SIFT score. Driver mutations in *USP9X*, *APC*, *TP53*, *CHD4* and *ARID1A* were identified. The matched anal vulval HSIL samples displayed comparable neoantigen burdens with a significantly greater burden derived from common mutations ($P = 0.039$). Where FUME TCRSeq was successful, there was overlap in TCR clonotypes between anal and vulval HSIL.

Conclusions: Despite its limitations, this study supports further research into this important subject. Future work should be carried out using flash frozen synchronous vulval and anal lesions; in turn improving the quality of the biopsies and consequently, reliability of the sequencing data and results generated.

26. Distinct tumor immune microenvironment profiles in regressing versus progressing anal high-grade squamous intraepithelial lesions

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Background: Anal high-grade squamous intraepithelial lesions (HSIL) have varying risks of progression to cancer. All HSIL are currently treated, potentially leading to overtreatment and associated burdens. This study investigated differences in the tumor immune microenvironment (TIME) between regressing and progressing HSIL to inform more tailored therapeutic approaches.

Methods: Multiplex imaging mass cytometry (CYTOF) with a 40-marker panel was used to analyze TIME characteristics in 9 HSIL samples that progressed to cancer, 10 HSIL that spontaneously regressed, 4 anal cancer samples, and 1 normal tissue sample. Findings were validated through multispectral fluorescence microscopy (VECTRA) in an expanded cohort of 13 progressing HSIL-, 5 regressing HSIL-, 12 anal cancer-, and 9 normal tissue samples. In addition, a cross-sectional series of 60 HSIL samples is currently being examined for factors related to TIME differences.

Results: CYTOF data indicated higher densities of macrophages with immunostimulatory characteristics (HLA-DR$^+$) in regressing HSIL and a predominance of undifferentiated macrophages (CD163$^-$, CD204$^-$, HLA-DR$^-$) and macrophages with immunosuppressive characteristics (CD163$^+$ and/or CD204$^+$, HLA-DR$^-$) in progressing HSIL, which also showed more frequent macrophage–T-cell interactions. Validation revealed that progressing HSIL and cancer had an increased overall macrophage density within both stromal and epithelial compartments, with a proportional increase in immunosuppressive macrophages in stromal areas, and a proportional decrease in immunostimulatory macrophages in epithelial regions.

Conclusions: These initial findings suggest distinct TIME profiles in regressing versus progressing HSIL. Understanding these differences might lead to the development of novel biomarkers or immunotherapeutic targets, enabling more individualized treatment approaches.

27. Molecular insights into the natural history of anal HSIL

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Background: Men having sex with men (MSM) living with HIV are at higher risk to develop anal squamous cell carcinoma (ASCC). ASCC is commonly associated with human papillomavirus (HPV) infection and preceded by low- and high-grade anal lesions (LSIL; HSIL). This study aimed to perform a molecular comparison on paired LSIL–HSIL lesions collected in a longitudinal fashion to assess their relationship.

Methods: We identified 23 patients diagnosed with LSIL at baseline (T0) who developed HSIL during 1-year follow-up (T1). Paired biopsies were subjected to a comprehensive molecular analysis including HPV-typing and HPV16 variant analysis, cellular DNA methylation levels and copy number aberrations (CNA).

Results: In total, we tested 50 biopsies issued from 22 patients. After histopathological revision, 23 biopsies were classified as LSIL and 27 as HSIL. High-risk HPV prevalence was 30% and 70% in LSIL and HSIL, respectively. Both methylation levels and CNA were significantly increased in HSIL compared to LSIL. In 15 out of 22 patients, LSIL at T0 was associated with HSIL at T1. Among them, six showed HPV-type persistence with similar or increased methylation levels and CNA in the HSIL at follow-up. Nine patients harbored a different HPV-type in the follow-up biopsy.

Conclusions: A subset of HSIL preceded by LSIL displayed both HPV-type persistence and an increase in molecular alterations, suggesting that some LSIL may indeed progress to HSIL. In contrast, the HPV-type switch in another subset of HSIL preceded by LSIL, may suggest an alternative pathway of anal carcinogenesis, where HSIL develop directly.

28. Prognostic role of CD4+ lymphocytes count in patients living with HIV affected by anal squamous cell carcinoma

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Background: The aim of the study is to evaluate the predictive and prognostic value of HIV infection and CD4+ lymphocyte count <200/mm^3 in pts receiving first-line treatment for ASCC.

Methods: This is a retrospective study conducted at Luigi Sacco Hospital, Milan. We included pts with ASCC diagnosed from January 1998 to October 2022 and treated with local excision or definitive CRT. Treatment response was evaluated according to RECIST 1.1 criteria. Adverse events were assessed following CTCAE v5.0 criteria. Survival curves were plotted using the Kaplan–Meier method.

Results: 63 pts were enrolled. Curative-intent treatment was administered in 60 pts: 75% received CRT, 16.7% surgical local excision. 38 out of 45 pts were evaluable for CRT related toxicities. 94.7% developed at least one toxicity. 39.5% reported a grade 3–4 toxicity, particularly haematologic (18.4%) skin (15.8%) and infectious (15.8%). The response rate (CR + PR) was 96%, the 5ys progression free survival (PFS) was 50% (IC 95%: 37, 66%) and the 5-year overall survival (OS) 64% (IC 95%: 52, 79%). The multivariate analysis found that CD4+ T cell count <200/mm^3 at ASCC diagnosis was related to a worse PFS in HIV+ group, as variable independent from lymph node involvement [HR IC95%: 6.3 (1.7, 23.4); *P* 0.006].

Conclusions: This study demonstrated that in pts living with HIV, a CD4 lymphocyte count <200/mm^3 at ASCC diagnosis is a negative prognostic factor for PFS. This finding suggests that immune surveillance could play a crucial role in long-term disease control in ASCC.

Quality of Life, Sexual Health

29. Barriers and facilitators to anal pre-cancer screening among men who have sex with men living with HIV: a qualitative study

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Background: There is increasing awareness of the potential for anal pre-cancer screening and treatment to the prevention of anal cancer, especially among high-risk populations such as men who have sex with men living with HIV. International screening guidelines exist for this group, but patient perspectives are largely missing from the evidence base. We describe patients' experiences of and perspectives on anal pre-cancer screening to aid future program implementation.

Methods: In a longitudinal qualitative study, we conducted 1–4 semi-structured interviews with 10 cis-gender men in a UK anal pre-cancer screening study, purposively sampled by age and ethnicity. We used thematic analysis informed by the COM-B Model of Behaviour to identify screening barriers and facilitators.

Results: We identified multidimensional barriers to screening relating to psychological capability (lack of knowledge of anal pre-cancer/cancer screening), automatic motivation (pain/discomfort/embarrassment), and reflective motivation (self-perception of low risk and/or identification of cancer screening with women's health only). Participants described facilitators of screening relating to psychological capability (prior knowledge of screening tests and history of pre-cancer diagnosis), physical capability (existing relationship with the HIV service), automatic motivation (advised by regular clinician) and reflective motivation (screening closely identified with being responsible or preserving health).

Conclusions: COM-B allowed us to identify and categorise barriers and facilitators to anal pre-cancer screening in men participating in a screening study. Patients' limited knowledge of screening and anal cancer hindered screening uptake. Prior relationship with the HIV service providing the screening served as a strong facilitator to anal pre-cancer screening. Raising awareness and offering of screening via HIV service can support screening uptake.

30. Patient recovery following high-resolution anoscopy: a survey study

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Background: In-office high-resolution anoscopy (HRA) procedures are minimally invasive but have the potential for post-procedural pain and bleeding. We aimed to measure symptoms after HRA to characterize the timeline of recovery and identify clinical/procedural factors associated with prolonged symptoms.

Methods: This prospective survey study included adults undergoing an in-office HRA procedure. Consented participants completed REDCap surveys on Days 0/1/2/3/7/10 to evaluate pain, bleeding, daily functioning, and management strategies. Demographic, clinical, and procedural data were abstracted from medical records and analyzed in R. Pain, bleeding, and functional impacts were reported as frequencies. Prolonged recovery defined as moderate/severe pain or bleeding persisting beyond 3 days. Logistic regression identified factors associated with prolonged symptoms.

Results: From February to August 2024, 51 patients were recruited, with 39 completing the survey (median age: 54 years, 62% male). Fig. 1 shows trends in pain scores over time. Scores ≥4 (distressing) were reported by 53% on Day-0, decreasing to 21% on Day-2 and 9% on Day-7. By Day-2, 51% had stopped using analgesics. Fig. 2 shows trends in bleeding over time. While bleeding resolved for the majority at Day 2–3, 26% of respondents noted mild/moderate bleeding with defecation that persisted on Day-7. Demographics, body mass index, blood pressure, or number of biopsies did not correlate with resolution of pain/bleeding.

Conclusions: Respondents experienced the most pain and bleeding within 48 h of the HRA, which gradually improved over time. However, symptoms persisted at Day-10 for some respondents. These findings offer valuable insights to guide post-procedural management and expectations.

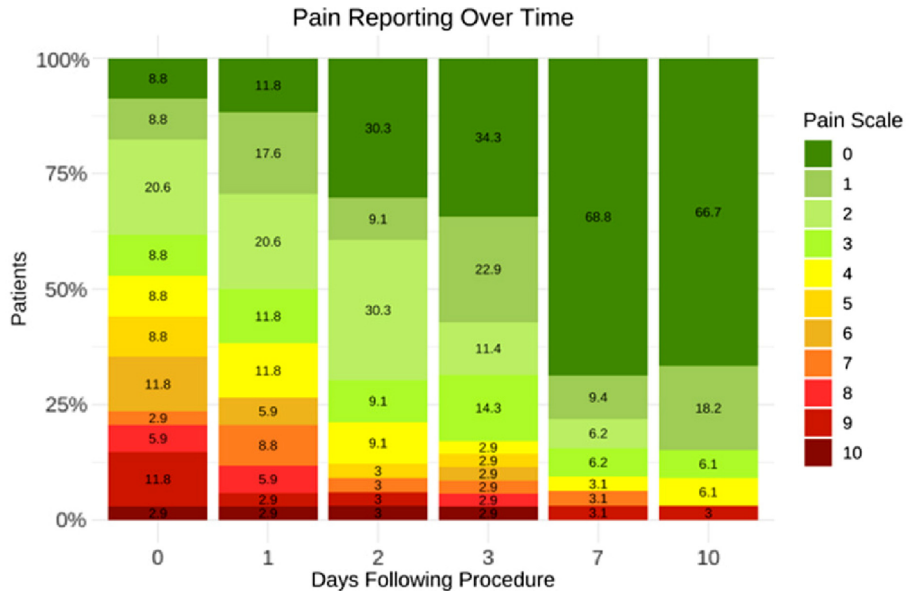

Fig. 1.

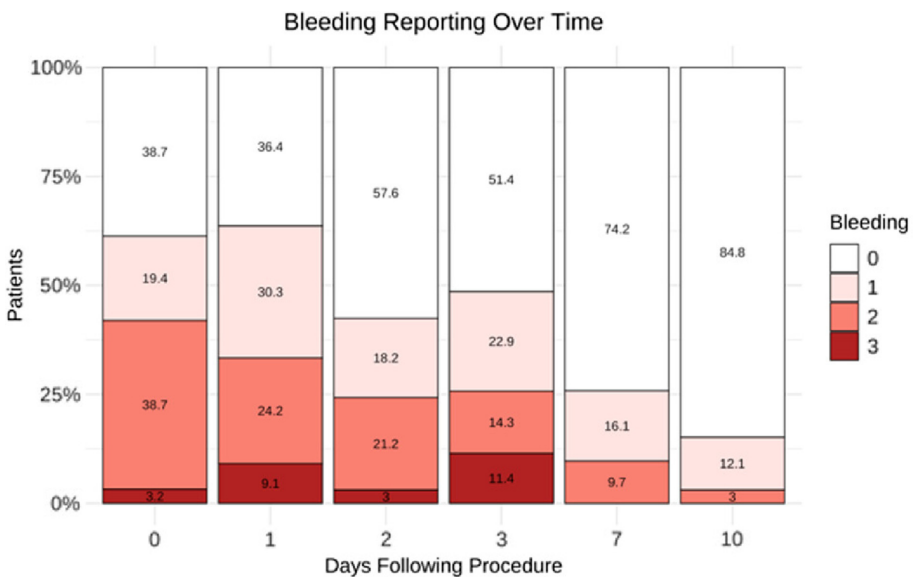

Fig. 2.

31. Pelvic health and sex after cancer: a systematic review of dilators and pelvic therapy in the management of sexual issues following cancer treatment in women

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Background: Sequelae of cancer treatment on anal, vulvar, and vaginal health can include tissue changes as often as well as changes in libido and body image. Atrophic vaginitis is a survivorship issue that affects patients long after radiation treatment has commenced. The impacts of these changes on quality of life, sexual function, and pain, are not routinely discussed in oncological settings, leaving some patients reporting emotional repercussions. Vaginal dilators in combination with pelvic health education and physiotherapy can impact the self-image, sense of sexuality, and sexual relationships among patients following cancer treatment.

Methods: This review synthesizes data from randomized controlled trials, observational and analytical studies and relevant literature published in the last 10 years (2014–2024). Data was collected from peer-reviewed journals.

Results: The findings of this review indicate that vaginal dilators may be of benefit in the management of vaginismus and vaginal stenosis which can be seen following cancer treatment. Dilators can be offered to anyone having pain with examinations and/or sexual activity, which is particularly important for women treated with pelvic or vaginal radiation therapy. Importantly, the benefit of dilator training is greatest when started early, with patients who receive early education theoretically more likely to have successful treatment outcomes. Dilators should not be recommended based on sexual activity or sexual orientation but, rather, to all at risk for vaginal changes and to be proactive in their sexual and vulvovaginal health.

Conclusions: Dilators are found to help improve elasticity, vaginal diameter, vaginal length, and sexual function in people with a vagina following cancer treatment.

32. Quality of life and symptom burden in adults after anal cancer treatment

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Background: Follow-up data for adults with anal cancer (AC) treated with radiation therapy with or without chemotherapy showed skin, genitourinary, anorectal, and ulcer morbidities during a 13-year follow-up.[1]

Methods: 343 adults completed a self-administered online survey recruited from support groups, provider referrals, and AC support organizations. Items included standardized questions developed by patient-advocate and provider experts. Descriptive and tabular statistics explored the data, and multivariable linear regression models predicted risk factors for self-reported *overall health* and *quality of life* (QoL) ratings. Each respondent rated their *overall health* and *QoL* using a visual-analog scale.

Results: Participants were female (85%), White (94%), and 63 years old, on average. Gastrointestinal symptoms included constipation (33.2%) and *new* dietary intolerances (53.9%). Other symptoms rated as *often* and *very often* occurring included: flatulence (45%), anal mucus or stool leakage (31%), frequent (50.7%) or painful (21.4%) bowel movements, anal pain or discomfort (27.3%) during the week prior to the survey. Other symptoms included genitourinary urgency (66%), soreness (36.5%) or itching or irritated treatment-area skin (40.2%). Pain while sitting (28%) or lying (25%), and lower (38.2%) and upper extremity (48.4%) pain were common. Nearly 61% of participants assessed their *overall health* and QoL for the seven days before completing the survey. Two multivariable linear regression models showed four symptoms statistically significantly and negatively affected participants' self-appraisal of *overall health* and *quality of life* individually (Table 1).

Conclusions: Dietary intolerances, difficulty walking, poor balance, and difficulty staying asleep decreased both the self-reported *quality of life* and *overall health* appraisals for adults treated for anal cancer.

Table 1. Comparison two multivariable linear regression models predicting self-reported overall health rating and quality of life rating for the 7 days preceding the online survey for 40% (137/343) of adults with complete data for somatic symptoms participating in an online survey of somatic symptoms among people treated for anal cancer single.

Characteristic	Overall health rating (scale: 1–1000)			Quality of life rating (scale: 1–1000)		
	Parameter estimate	Standard error	Pr > |t|	Parameter estimate	Standard error	Pr > |t|
Intercept	579.12	61.53	<0.0001	639.02	72.70	<0.0001
Age (at survey)	–0.17	0.20	NS	0.07	0.24	NS
Sex (female vs. male)	158.26	56.23	0.0056	87.89	66.51	NS
Marital status	29.25	36.08	NS	14.92	43.36	NS
Symptoms reported since treatment						
New dietary intolerance	–133.56	31.79	<0.0001	–117.54	38.27	0.0026
Difficulty walking	–122.65	43.21	0.0053	–171.51	51.19	0.0011
Poor balance	–86.07	36.68	0.0219	–106.41	44.73	0.0188
Difficulty staying awake	–137.31	33.54	<0.0001	–127.62	40.34	0.0019

Reference

1 Northover J, Glynne-Jones R, Sebag-Montefiore D, *et al.* Chemoradiation for the treatment of epidermoid anal cancer: 13-year follow-up of the first randomised UKCCCR Anal Cancer Trial (ACT I). *Br J Cancer* 2010; 102(7): 1123–8. doi:10.1038/sj.bjc.6605605

Screening, Diagnostics, and Artificial Intelligence

33. 2024 anal cancer screening guidelines: analysis of clinical performance and HRA utilization in a large cohort of persons with HIV

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Background: Persons with HIV (PWH) are at high risk for HPV-associated anal cancer. In 2024, the International Anal Neoplasia Society published guidelines, outlining five anal cancer screening strategies: anal cytology alone, cytology with high-risk HPV (hrHPV) testing triage, hrHPV testing alone, hrHPV testing with cytology triage, or co-testing. Herein we compare the performance of each strategy to detect anal HSIL within a large cohort of PWH who underwent primary anal cancer screening.

Methods: The study included 1223 PWH with concurrent data on anal cytology, hrHPV testing, and high-resolution anoscopy (HRA)-guided biopsy results between 2012 and 2019. Using histologic HSIL as endpoint, we calculated sensitivity, specificity, positive predictive value (PPV), negative predictive value (NPV), and the number of HRA referrals triggered by each screening strategy.

Results: Median cohort age was 45 years (range: 35–86). Most participants were MSM (88%). The histologic anal HSIL rate was 42%. Compared to cytology alone, cytology with hrHPV triage slightly decreased sensitivity (83%) but markedly increased specificity (49%) and yielded the highest diagnostic performance of all screening strategies. hrHPV testing with cytology triage also improved specificity (43%). Both triage strategies reduced the number of HRA referrals to 65% for cytology with hrHPV triage and 70% for hrHPV with cytology triage. Anal cytology and hrHPV co-testing outperformed cytology alone by yielding similar sensitivity (88%) but higher specificity (43%), resulting in fewer HRA referrals (70%).

Conclusions: All triage and co-testing strategies outperformed cytology alone. hrHPV testing improved specificity and reduced HRA referrals, essential for screening guideline implementation.

Table 1. Screening performance of five strategies recommended by 2024 IANS guidelines among 1223 PWH.

Screening strategy	Abnormal triggering HRA referral	Sensitivity (95% CI)	Specificity (95% CI)	Youden's index	PPV (95% CI)	NPV (95% CI)	Number of HRAs generated	HSILs detected ($n = 507$)	HRA/HSIL ratio
Cytology alone	ASCUS or worse	86 (83–89)	31 (28–34)	0.17	47 (44–50)	76 (71–81)	933 (76%)	438 (86%)	2.13
Cytology with hrHPV triage	– ASCUS/hrHPV+– LSIL/hrHPV+– ASC-H/HSIL regardless of hrHPV– HPV16+	83 (89–86)	49 (45–52)	0.32	53 (50–57)	80 (76–84)	790 (65%)	422 (83%)	1.87
hrHPV alone	hr-HPV16+	96 (94–97)	29 (26–33)	0.25	49 (46–52)	91 (86–94)	994 (81%)	486 (96%)	2.04
hrHPV with cytology triage	– hrHPV+/ASCUS or worse– HPV16+ regardless of cytology	88 (85–90)	43 (40–47)	0.31	52 (49–55)	83 (79–87)	851 (70%)	445 (88%)	1.91
Co-testing	– NILM/HPV16+– ASCUS/hrHPV+– LSIL/hrHPV+– ASC-H/HSIL regardless of hrHPV– HPV16+	88 (85–91)	43 (39–46)	0.30	52 (49–55)	83 (80–87)	856 (70%)	445 (88%)	1.92

(hr)HPV, (high-risk) human papillomavirus; ASCUS, atypical squamous cells of undetermined significance; LSIL, low-grade squamous intraepithelial lesion; ASC-H, atypical squamous cells, cannot rule out a high-grade squamous intraepithelial lesion; HSIL, high-grade squamous intraepithelial lesion; PPV, positive predictive value; NPV, negative predictive value; HRA, high-resolution anoscopy.

34. Absence of anal HR-HPV is reassuring but does not rule out HSIL

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Background: Screening for high-grade intraepithelial neoplasia (HSIL) may utilize anal HR-HPV status (high-risk human papilloma virus). In our referral centre for high resolution anoscopy (HRA), testing for HR-HPV is routinely undertaken alongside anal cytology. An audit of anoscopies performed by one provider was performed to better understand the risk of HSIL in the absence of detecting anal HR-HPV.

Methods: Prospective sequential audit of patients undergoing HRA with a single clinician was carried out collecting data on patient demographics, HR-HPV status and histology.

Results: 1016 HRAs were performed; 52% for patients living with HIV, 26% in women. 85% were for follow-up. HSIL was diagnosed in 24% of all encounters. Overall, 6% HRAs demonstrated HSIL despite a negative HR-HPV screen (NPV = 94%). 8 of these cases were in HIV-positive men and the other 8 in HIV-negative women (giving HSIL rates despite HR-HPV negative swab of 8% and 9%, respectively). 10 (4%) had anal canal HSIL, 6 (2%) had perianal HSIL. In cases where HR-HPV was present, 39% had HSIL demonstrated.

Conclusions: A negative HR-HPV test on anal swab occurs in the presence of HSIL in a significant minority of patients. A third of the cases of HSIL found in HR-HPV negative patients was perianal, in a region not sampled by anal swabs. Screening utilizing HR-HPV status for referral to HRA would miss 6% of HSIL in our high-risk cohort. However, as our cohort is not a screening population, the negative predictive value of HR-HPV in potential target screening populations may be different.

35. Anal cytology concordance and high-risk HPV testing correlation with histologic HSIL in an academic high-resolution anoscopy clinic

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Background: Anal cancer screening is performed using anal cytology and testing for high-risk human papillomavirus (HPV) types. At the Stanford PEACH (Prevention and Education of Anogenital Cancers and HPV-associated diseases) program, patients referred for high-resolution anoscopy (HRA) undergo concurrent anal cytology, HPV testing, and HRA-directed biopsies. Here, we report concordance of anal cytology and HPV testing relative to histopathology in this patient population.

Methods: Pathology archives and the electronic medical record were used to abstract HRA data over an 18-month period. Discordances were defined as cytology *undercalls* (NILM/LSIL/ASC-US with histologic HSIL) or cytology *overcalls* (HSIL/ASC-H without histologic HSIL). Sensitivity, specificity, positive predictive value (PPV) and negative predictive values (NPV) of HPV testing for histologic HSIL were calculated, stratified by sex, gender identity, and HIV status.

Results: Between 4/1/2023 and 9/30/2024, there were 277 patient encounters, involving 202 unique patients, during which anal biopsies, anal cytology and HPV testing were collected. 270 (97.5%) of anal cytology tests were satisfactory for evaluation. 178 (65.9%) of anal cytology and biopsies were concordant; discordant cases were comprised of more cytology undercalls (66 [24.4%]) than overcalls (26 [9.6%]). Overall sensitivity, specificity, PPV, and NPV of HPV testing for histologic HSIL was 80%, 72%, 74%, and 78%, respectively. Sensitivity was highest in HIV-positive cis-females (100%) and specificity was lowest in HIV-positive cis-males (58%).

Conclusions: In this academic referral population, we found that cytology more often undercalled than overcalled the histologic grade of anal disease. We found population-specific differences in HPV test accuracy by sex, gender, and HIV status.

Table 1. Anal cytology concordance and high-risk HPV testing correlation with histologic HSIL stratified by HIV status.

	All patients *n* (%)	HIV positive *n* (%)	HIV negative *n* (%)	HIV not reported *n* (%)
Total *N*	270	105	129	36
Anal cytology Concordance				
Concordant	178 (65.9)	64 (61.0)	90 (69.8)	24 (66.7)
Discordant	92 (34.1)	41 (39.0)	39 (30.2)	12 (33.3)
Cyto overcall	26 (9.6)	10 (9.5)	12 (9.3)	4 (11.1)
Cyto undercall	66 (24.4)	31 (29.5)	27 (20.9)	8 (22.2)
HPV testing correlation				
False negative rate	20.0	24.2	10.9	33.3
False positive rate	28.1	41.9	23.0	16.7
Sensitivity	80.0	75.8	89.1	66.7
Specificity	71.9	58.1	77.0	83.3
PPV	74.0	72.3	74.2	80.0
NPV	78.2	62.5	90.5	71.4

Abbreviations: hrHPV, high-risk human papillomavirus; Cyto, cytology; PPV, positive predictive value; NPV; negative predictive value.

36. Anal cytology for anal cancer screening: data from the ANCHOR Study

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Background: The increasing incidence of anal cancer among people with HIV (PWH) is a public health concern. Drawing on evidence from the Anal Cancer/HSIL Outcomes Research (ANCHOR) study, anal cancer screening guidelines have recently been developed; these include anal cytology (AC) as a stand-alone test, but the best method remains unclear.

Methods: ANCHOR was a randomized, controlled trial performed at 25 sites in the United States. PWH, 35 years and older, were screened for histologic anal high-grade squamous intraepithelial lesions (hHSIL) using high-resolution anoscopy (HRA). Using samples for AC collected from the ANCHOR screening visit and evaluated by local laboratories, we determined the sensitivity, specificity, positive predictive value (PPV), and negative predictive value (NPV) of AC as the screening test for detection of hHSIL or worse (hHSIL+).

Results: ANCHOR screened 9930 PWH with mean age of 52 years. The prevalence of hHSIL+ was 56.3%. Over 74% of ACs showed atypical squamous cells of undetermined significance or worse (ASC-US+). AC showing ASC-US+ had a sensitivity 86.0% (CI 85.0–86.9), specificity 33.0% (CI 31.6–34.5), PPV 62.3% (CI 61.1–63.4), and NPV 64.7% (CI 62.6–66.8) for hHSIL+. Sensitivity improved when an HRA impression estimated that greater than 50% of the anal canal or perianus was involved with hHSIL+. Test performance did not differ by age, gender, or race.

Conclusions: Although AC has acceptable sensitivity, its low specificity limits its usefulness as a stand-alone screening test. Caution is needed when choosing AC alone for screening. We await the analysis of HPV testing/typing and other emerging technologies.

37. Anal high-grade squamous intraepithelial lesion measurement exercise (AMEX): understanding disease assessment with standard anoscopy

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Background: Clinical evaluation in a patient with suspected anal high-grade squamous intraepithelial lesion (aHSIL) requires assessors to identify the disease, document its location, and determine its extent.

Methods: A literature review identified seven commonly-used descriptors of aHSIL: canal/perianus, quadrant/octant, number, diameter, area, %area and %circumference. An assessment proforma was developed and ethical approval granted. Two colorectal surgeons undertook blinded disease assessments under general/regional anaesthesia on participants with aHSIL over a 12-month period. Any lesion identified as 'clinically suspicious' for aHSIL was recorded against the descriptors. All lesions were sent for histology. Rater assessments were compared.

Results: Over the study period 55 aHSIL patients underwent assessment. 21 were recruited to AMEX (mean age 61, 8M:13F, 9 smokers, 0 HIV). 47 clinically suspicious lesions were identified; raters agreed on 21/47. There was good agreement between raters for canal/perianus and quadrant/octant; other descriptors were not as consistent. For example, concordant lesions were localised to the same octant 76% of the time and within an 'octant plus one', 100% of the time. 23/47(49%) lesions were confirmed aHSIL histologically; where both raters agreed 62% (13/21) were aHSIL on histology; where only one rater agreed 38% were confirmed aHSIL.

Conclusions: Canal/perianus, quadrant/octant were consistent location descriptors. When two surgeons agree, a lesion is more likely to be aHSIL (62%) compared with a lesion identified by a single rater (38%). Standard anoscopic approach to lesion identification is likely suboptimal even with two raters. Further work assessing lesion descriptors and rater agreement in the setting of HRA is merited.

38. Artificial intelligence and colposcopy: automatic identification of vaginal squamous cell carcinoma precursors

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Background: Human Papillomavirus (HPV) is widely recognized for its association with cervical cancer, but its role in vaginal cancers is equally significant. Colposcopy, a primary tool for examining the female genital tract, has limitations in diagnostic accuracy. The incorporation of artificial intelligence (AI) holds potential to enhance the cost-efficiency of colposcopy. However, no AI models to date have been specifically developed to distinguish low-grade (LSIL) from high-grade (HSIL) squamous intraepithelial lesions in the vagina. The aim of this study is to develop and validate an AI model designed for the differentiation of HPV-associated dysplastic lesions in this region.

Methods: A convolutional neural network (CNN) was developed to differentiate between HSIL and LSIL lesions using still images from vaginoscopies. The dataset comprised 57,250 frames collected from 71 procedures, with 90% allocated to training and validation (including a 5-fold cross-validation) and 10% reserved for testing. The model's performance was evaluated through sensitivity, specificity, accuracy, and the area under the receiver-operating curve (AUROC).

Results: In the training/validation phase, the CNN achieved mean sensitivity, specificity, and accuracy of 98.7% (95% CI: 96.7–100.0%), 99.1% (95% CI: 98.1–100.0%), and 98.9% (95% CI: 97.9–99.8%), respectively. The average AUROC was 0.990 ± 0.004. In the testing phase, the model demonstrated a sensitivity of 99.6%, with specificity and accuracy both at 99.7%.

Conclusions: This study introduces the first AI model developed globally to differentiate HSIL and LSIL lesions in the vaginal region, achieving high and robust performance metrics. Its successful implementation represents a significant step forward in AI-assisted colposcopic evaluation of the female genital tract, signaling a transformative advancement in women's healthcare on a global scale.

39. Artificial intelligence and colposcopy: automatic identification of vulvar squamous cell carcinoma precursors

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Background: Accurate identification of vulvar high-grade squamous intraepithelial lesions (HSIL) is essential for preventing progression to invasive squamous cell carcinoma. This study addresses the gap in artificial intelligence (AI) applications for vulvar lesion diagnosis by developing and validating the first convolutional neural network (CNN) model to automatically differentiate HSIL from low-grade squamous intraepithelial lesions (LSIL) in vulvar colposcopy images.

Methods: Retrospectively collected colposcopy data from 71 procedures (December 2022 to May 2023) yielded 965 annotated frames, categorized using histopathological reports (HSIL or LSIL). The dataset was split into 620 training and 345 testing frames, and a ResNet18 architecture, pre-trained on ImageNet, was fine-tuned for this application.

Results: The CNN demonstrated a sensitivity of 99.7%, a specificity of 100.0%, an accuracy of 99.7%, a positive predictive value (PPV) of 100.0%, a negative predictive value (NPV) of 97.9%, and an area under the receiver operating characteristic curve (AUC-ROC) of 1.00.

Conclusions: These results highlight the transformative potential of AI in improving the accuracy and efficiency of vulvar lesion diagnosis. However, further investigation is needed to address limitations such as dataset size and the absence of procedural splitting. Expanded datasets and collaborative efforts are vital to ensure the model's generalizability and robust application in clinical practice.

40. Australasian Society for HIV Medicine, Viral Hepatitis and Sexual Health Medicine (ASHM) guidelines for anal cancer screening in people living with HIV

I. Mary Poynten[1], Jennifer M Roberts[2], Richard Turner[3], Jane Costello[4], Rick Varma[1,5], Richard J Hillman[1,6], Jennifer McCloskey[7], Jason Ong[8], Joe Givan[9], Zoe Sever[9] and Andrew E Grulich[1], on behalf of the ASHM Anal Cancer Screening Guidelines Committee

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Background: We aimed to develop consensus Australian guidelines for anal squamous cell cancer (ASCC) prevention and early detection in people living with HIV (PLHIV).

Methods: Under the auspices of ASHM, we established a committee of community, clinical, research and laboratory representatives developed guidelines, based on existing international guidelines and on data from the Study of the Prevention of Anal Cancer (SPANC). SPANC provided Australia-specific data on different screening methodologies for the detection of anal HSIL. In order to guide clinical practice, we included recommendations on 1) screening tools and testing algorithms, (2) management of screening results and (3) treatment of anal HSIL.

Results: The key recommendations include screening of gay, bisexual and other men who have sex with men (GBM) and trans-women ≥ 35 years and cis-women, trans-men and other cis-men (not GBM) ≥45 years with primary high-risk HPV testing and cytology triage. Based on recommendations for cervical cancer screening in PLHIV, the recommended screening interval is every 3 years for those who screen negative. Due to limited current capacity, screening is to be prioritised according to risk factors: older age, CD4 nadir ≤200 cells/μL, current smoker, history of anal sexual activity, and current anal symptoms of pain, change in anal bleeding or lump.

Conclusions: The guidelines were released in March 2025. They will assist clinicians to identify and screen PLHIV at higher risk of ASCC and will enable screening and referral of PLHIV at highest risk, while screening and treatment services capacity is expanded in Australia.

41. Bridging the gap: medical students as ambassadors for anal dysplasia and cancer

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Background: Anal dysplasia and cancer are largely stigmatized conditions which creates meaningful barriers to care. There is a lack of awareness about groups at risk for these diagnoses not only amongst the public, but also amongst clinicians and health care providers. We propose that medical students can be critical ambassadors of information and facilitators of dialogue between patients, their treating providers and experts in anal dysplasia and cancer care.

Methods: During 2024–2025 two Virginia Commonwealth University (VCU) medical students created educational materials for patients. A 2-min educational animated video was developed as well as educational pamphlets. The video and educational pamphlets are directed at the populations left out of screening who often lack awareness and access to care. The video highlights an acronym developed and used by the VCU colorectal team –HURTS— to help individuals recognize symptoms of anal dysplasia/cancer: **H**urts, **U**gly, **R**ed, **T**umor, and **S**eepage.

Results: The educational materials were created at the end of the students' clinical rotations to aid in increasing awareness of anal dysplasia and cancer for at risk patients. Initial reactions from VCU colorectal faculty and patient representatives were positive with constructive feedback to guide the development of future materials.

Conclusions: This project explored the potential for student-led initiatives to improve awareness and decrease stigma related to anal dysplasia and cancer through accessible educational materials. Future projects could assess the potential impact on patient engagement and health outcomes.

42. Challenges in histological diagnosis of superficially invasive squamous cell carcinoma of the anus (SISCCA)

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Background: Superficially Invasive Squamous Cell Carcinoma of the Anus (SISCCA) is defined as a minimally invasive cancer characterized by a depth of invasion less than 3 mm and a horizontal spread less than 7 mm. Its histologic diagnosis is often ambiguous and poorly reproducible due to its subtle and ill-defined morphological features. This study aimed to assess interobserver agreement among pathologists and to refine the diagnostic criteria.

Methods: Four gastrointestinal (GI) and four gynecologic (GYN) pathologists independently reviewed pathological slides of 20 anal HSILs with suspected early invasion. Participants classified each lesion as either invasive or non-invasive and documented diagnostic features. Cohen's κ coefficient was calculated to evaluate agreement.

Results: Eight lesions (40%) received unanimous diagnoses, while 12 (60%) had discrepancies. Overall agreement was moderate (kappa 0.46, 95% CI: 0.29–0.48), with similar levels between GI (kappa 0.53, 95% CI: 0.45–0.74) and GYN (kappa 0.46, 95% CI: 0.25–0.48) group. GYN pathologists diagnosed a higher number of lesions as invasive compared to GI pathologists (median 15 versus 11). The most agreed-upon features of SISCCA were the presence of small irregular tumor nests, desmoplastic response, and paradoxical maturation.

Conclusions: Our study highlights significant variability among pathologists in the diagnosis of SISCCA, with only moderate agreement and notable discrepancies in diagnostic criteria. Several key features, such as small irregular tumor nests, desmoplastic response, and paradoxical maturation, can serve as a foundation for standardizing interpretations among pathologists, ultimately improving diagnostic accuracy for SISCCA.

43. Conventional non-invasive biomarkers yield unsatisfactory diagnostic performance for biopsy-proven high-grade anal dysplasia

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Background: Men who have sex with men (MSM) with HIV experience an increased risk for anal cancer caused by high-risk (HR) human papillomavirus (HPV)-types. Screening and treatment of high-grade squamous intraepithelial lesions (HSIL) is recommended. HSIL is diagnosed by biopsy/histology (hHSIL) during high-resolution anoscopy (HRA), yet, non-invasive diagnostics via anal swab sampling are

warranted. We therefore initiated a diagnostic accuracy study to assess the diagnostic performance of anal cytology, HR-HPV, oncogenic E6/E7-mRNA expression and host-cell methylation markers for hHSIL.

Methods: MSM with HIV undergoing HRA were included. Before HRA, anal swabs were obtained for cytology and non-invasive markers. Abnormal findings during HRA were biopsied for histologic evaluation. Here, we present preliminary data comprising the first 155 individuals. This project is supported by the EADV (PPRC-2023-0054), the 2022 research fellowship by the Austrian Society of Dermatology and Venereology and the German National Reference Center for Papilloma- and Polyomaviruses (Grant-No.1369-401).

Results: Among 238 biopsies obtained from 155 individuals, 31% (74/238) hHSIL were diagnosed in 38% (59/155) of patients. The cytology cut-off for abnormal findings at 'ASC-US' achieved a sensitivity of 67.8% and specificity of 62.5% for hHSIL. HR-HPV-typing and oncogenic E6/E7-mRNA expression demonstrated a sensitivity and specificity of 86.4% and 46.9%, and 87.3% and 49.4%, respectively. The composite analysis of ASC-US + HR-HPV + E6/E7-mRNA improved specificity (93.3%) but decreased sensitivity (30.9%).

Conclusions: In this preliminary analysis, currently established non-invasive tests yielded unsatisfactory diagnostic accuracy for anal pre-cancers. Further research on biomarkers is in progress (host-cell methylation markers) and will hopefully improve non-invasive screening.

44. Deep learning and HPV pleomorphic multiorgans induced lesions: automated detection and differentiation of cervical and anal squamous cancers precursors – a multicentric study

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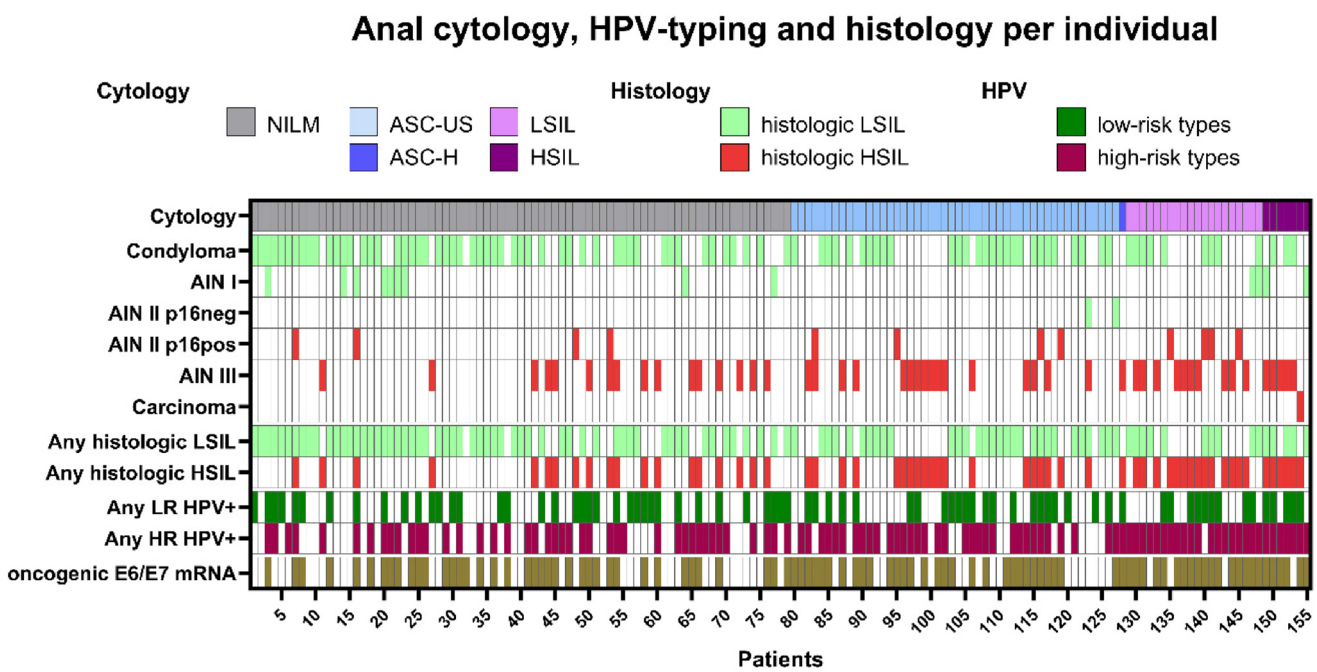

Background: Human papillomavirus (HPV) infection carries significant neoplastic risks in both the cervix and anus. Colposcopy and anoscopy are now essential for assessing HPV-related lesions in these regions, but their complexity has led to a shortage of skilled physicians, especially for early detection. This study aimed to develop an AI-based algorithm to identify and differentiate HPV-related dysplastic lesions, specifically between low-grade (LSIL) and high-grade squamous intraepithelial lesions (HSIL), across cervical and anal exams.

Methods: A multicenter retrospective study using 295 colposcopy and anoscopy exams from high-volume centers across four countries (USA, Brazil, France, and Portugal), using three different device types. A total of 80,167 frames were labeled as LSIL or HSIL, based on pathology, to

develop a Convolutional Neural Network (CNN). The dataset was divided into training (90%, $n = 71,890$) and testing (10%, $n = 8277$) sets to evaluate model performance. Key metrics included sensitivity, specificity, accuracy, positive predictive value (PPV), negative predictive value (NPV), and the area under the receiver operating curve (AUC-ROC).

Results: In the test set, the CNN achieved 93.9% accuracy, with sensitivity and specificity of 91.5% and 96.1%, respectively, and PPV and NPV of 95.6% and 92.4%. The AUC-ROC was 0.96.

Conclusions: This study introduces the first worldwide AI model for detecting and differentiating HPV-related dysplastic lesions in cervical and anal regions. The high accuracy suggests potential improvements in diagnostic precision and cost-effectiveness, enhancing HPV-related dysplasia detection in clinical practice.

45. Demographics, clinical characteristics, and anal disease in an academic high-resolution anoscopy clinic

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Background: Anal cancer screening guidelines are now published, and it is expected that an increasing number of providers will seek training in high-resolution anoscopy (HRA). HRA performance metrics will be important to ensure that lesions are not missed. The Stanford PEACH Program, established in 2021, is a referral program for patients with abnormal anal cancer screening tests. We aim to describe the patient population in this program and the proportions with anal disease based on sex/gender identity and HIV status.

Methods: We extracted HRA and clinical data from the electronic medical record. Descriptive statistics were performed using Excel.

Results: Over an 18-month period, there were 277 HRA visits in which anal cotesting and HRA were performed concurrently, involving 208 unique patients (38.5% living with HIV, 47.1% HIV negative, and 14.4% HIV untested). Cytology interpretations are shown in Table 1. A high-risk HPV test was positive in 53.1% of patients undergoing HRA, and negative in 46.9%. Histologic HSIL was seen in 48.4% of the total population, 58.5% of patients living with HIV, 41.2% of HIV negative patients, and 50.0% of HIV untested patients. By HIV status and sex/gender, nonbinary HIV-negative patients and cisgender females living with HIV had the highest rates of histologic HSIL (100% and 66.7%, respectively), although numbers were small.

Conclusions: There is a high burden of histologic HSIL in patients referred for HRA, with half of patients diagnosed with HSIL on HRA-directed biopsy. Maximizing identification of HSIL should be emphasized in HRA screening and monitoring programs.

Table 1. Anal cytology and histology findings stratified by sex/gender.

	All patients *n* (%)	Cis male *n* (%)	Cis female *n* (%)	Trans female *n* (%)	Nonbinary *n* (%)
Total *N*	277	160	108	7	2
Anal pap test results					
Unsatisfactory	7 (2.5)	2 (1.3)	5 (4.6)	0 (0.0)	0 (0.0)
NILM	30 (10.8)	13 (8.1)	17 (15.7)	0 (0.0)	0 (0.0)
ASCUS	117 (42.2)	67 (41.9)	47 (43.5)	3 (42.9)	0 (0.0)
LSIL	28 (10.1)	21 (13.1)	6 (5.6)	0 (0.0)	1 (50.0)
ASC-H	76 (27.4)	48 (30.0)	25 (23.1)	3 (42.9)	0 (0.0)
HSIL	19 (6.9)	9 (5.6)	8 (7.4)	1 (14.3)	1 (50.0)
Anal biopsy results*					
Non-dysplastic	41 (14.8)	18 (11.3)	22 (20.4)	1 (14.3)	0 (0.0)
LSIL (AIN1)	101 (36.5)	59 (36.9)	40 (37.0)	2 (28.6)	0 (0.0)
HSIL (AIN2 or AIN3)	134 (48.4)	83 (51.9)	45 (41.7)	4 (57.1)	2 (100.0)
Invasive SCC	1 (0.4)	0 (0.0)	1 (0.9)	0 (0.0)	0 (0.0)

*The highest-grade lesion per biopsy series is reported.

46. Developing quality assurance (QA) standards for anal cancer screening and high-resolution anoscopy

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Background: The increased emphasis on anal cancer screening and the expansion of high-resolution anoscopy (HRA) services in the UK necessitates the development of robust quality assurance (QA) standards. This is to ensure patient safety, optimize outcomes, and foster continuous learning. Using principles already applied to the national cervical, bowel and breast screening programmes, Homerton Anogenital Neoplasia Service (HANS) conducted a quality improvement exercise to establish local standards for HRA services.

Methods: A multi-disciplinary working group conducted a review of national cancer screening programs and their QA protocols, focusing on cervical and bowel screening programs to identify best practices applicable to HRA services. The process led to the establishment of local benchmark standards for HRA performance, focusing on four domains; clinical quality, patient experience, teamwork, and training.

Results: The working group met to assess the Homerton HRA service against the identified standards and made recommendations for service improvement. A traffic light system was used to classify performance:

Green: Meeting standards

Amber: Requires improvement

Red: Urgent action needed

Targeted interventions were then made in areas identified for improvement, before re-auditing the service after 6 months. HANS now undertakes an annual audit against these locally developed standards to provide a framework for ongoing monitoring and service improvement.

Conclusions: Developing QA standards for anal cancer screening programs and HRA services is crucial to ensuring high-quality, evidence-based care for patients. Having successfully introduced this framework to the service, it may now serve as a model for other HRA programs around the UK and for non-UK healthcare systems.

47. DNA Methylation Analysis to predict Regression of high-grade anal Intraepithelial Neoplasia in HIV+ men (MARINE): an update of an ongoing cohort study

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Background: Anal high-grade squamous intraepithelial lesions (HSIL), are highly prevalent in men who have sex with men living with HIV (MSMLWH). Around 30% of lesions regress within 1 year, but current histopathological assessment is unable to distinguish between HSIL likely to regress and HSIL likely to persist or progress to cancer. This study aims to assess if host cell DNA methylation markers can predict regression of anal high-grade squamous intraepithelial lesions (HSIL), thus determining the need for immediate treatment or active surveillance. This could reduce overtreatment and the associated anal and psycho-sexual morbidity.

Methods: This is an ongoing active surveillance cohort study in five centres located in Amsterdam, the Netherlands, in 200 MSMLWH diagnosed with HSIL. Participants will not be treated, but closely monitored during 24 months of follow-up with 6 monthly visits including cytology, and high-resolution anoscopy with biopsies. The primary study endpoint is histopathological regression of each baseline HSIL lesion at the end of the study. Regression proportions in lesions with low versus high methylation levels (*ASCL1, ZNF582*), other biomarkers (HPV genotype, HPV-E4, p16INK4A, Ki-67) and immunological markers at baseline will be compared.

Results: To date, 160 participants have been enrolled, and recruitment is ongoing. Of these, 114 have completed the 6-month follow-up visit, 90 have completed the 12-month visit, 39 have completed the 18-month visit, and 8 have completed the study. Biomarker results are not available yet.

Conclusions: DNA methylation markers are a promising tool to stratify HSIL by cancer risk and guide clinical management. Clinical validation is ongoing.

48. Evaluation of the learning curve of the high-resolution anoscopy clinic of the National Institute of Cancerology in Mexico City

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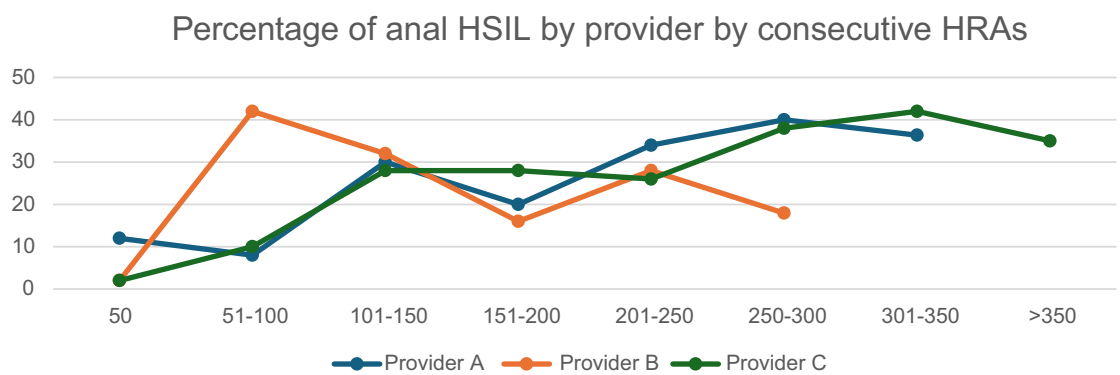
Background: The learning curve for performing high-resolution anoscopies (HRAs) requires at least 50 anoscopies with biopsies and 35% anal high-grade intraepithelial lesions (aHSIL). This study aims to describe the learning curve of the HRAs clinic of the National Cancer Institute (INCan) in Mexico City.

Methods: Clinical data, HRAs, cytology, and biopsies were retrospectively collected during the INCan learning curve between 2021 and 2023. Three HRA providers (A, B, C) participated. Groups of 50 consecutive HRAs were stratified for each provider. Logistic regression was performed to evaluate the factors associated with aHSIL biopsy. The *P*-value <0.05 was established.

Results: 970 HRAs were evaluated; provider A performed 311, B 289, and C 370. Of the HRAs results, 23% were normal, 40% low-grade, 36% high-grade, and 1% other. 17.2% of cytologies were inadequate/not performed, 44.7% negative, 31.6% minor changes, 6% major changes. 634 biopsies were taken, 10.3% negative, 52.4% aLSIL, 37.2% aHSIL, and 0.16% invasive. Provider A had >35% aHSIL at 250 biopsies, provider B at 50 biopsies but then decrease, and provider C at 300 biopsies. Factors associated with aHSIL were HRA with high-grade (OR = 4.4, 95% CI 1.4–2.8), number of biopsies (OR = 2.14, 95% CI 1.7–2.7), cytology with major changes (OR = 1.16, 95% CI 1.04–1.3) and >200 HRAs (OR = 1.99, 95% CI 1.4–2.8).

Conclusions: Two HRA providers showed an increase of aHSIL percentage with more procedures performed. Provider B had a decline in percentage of aHSIL and concurrently left. The curve of the INCan Anoscopy Clinic required 250–300 HRAs to identify >35% of aHSIL; maintaining interest in the procedure may influence improvement in finding aHSIL.



49. High prevalence of HSIL in MSM with high resolution anoscopy in a Latin American country

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Background: Anal cancer is associated with high-risk HPV infection. The progression of lesions is faster and incidence of cancer is higher among men who have sex with men (MSM) and individuals living with HIV. Early diagnosis of high-grade squamous intraepithelial lesions (HSIL) is crucial, as treatment can prevent anal cancer. The prevalence of anal HSIL among individuals during their first visit to a high-resolution anoscopy clinic is presented.

Methods: This is cross-sectional study conducted at the high-resolution anoscopy outpatient clinic of University Hospital in Salvador, Bahia, Brazil, from Jan/2021 to Jan/2025. The study included MSM and transgender women aged 18 years or older, regardless of their HIV serostatus. Participants were invited by attending physicians and could refer others for participation. Participants completed a questionnaire and underwent high-resolution anoscopy, including anal sample collection for HPV PCR testing, cytology and biopsy.

Results: 184 participants were included, 169 MSM and 15 transgender women, with a mean age of 41.4 years (±11). Of these, 134 (72.8%) were individuals living with HIV. 123 patients were positive (36 HPV 16 (29.3%)) and 28 for HPV 18 (22.8%). 112 biopsies performed identified

103 cases of low-grade squamous intraepithelial lesions (LSIL) and 19 of HSIL (17.0%; 95% CI: 11.1–25.0). HSIL was associated with detectable HPV 16 (34.6%; p = 0.012).

Conclusions: There was a high prevalence of HPV and HSIL in this population. Understanding the characteristics of individuals undergoing high-resolution anoscopy in a Latin American country contributes to planning anal cancer screening strategies and preventive measures.

50. High Risk HPV testing in an anal HSIL surveillance programme for men and women: negative HPV testing may allow longer surveillance intervals

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Background: The incidence of anal cancer is rising, largely caused by high-risk HPV (hrHPV). Anal cancer is preceded by high-grade squamous epithelial lesions (HSIL), identifiable by high resolution anoscopy (HRA). There is limited data on the value of hrHPV testing to detect HSIL. We prospectively compared the predictive value of hrHPV for HSIL in our patient cohort.

Methods: An unscreened, unselected cross-section of patients attending consecutively for surveillance with a history of anogenital HSIL had initial (at 0–6 months) and second subsequent HRAs (performed by a variety of practitioners) recorded prospectively over 42 months. Procedures routinely included anal cytology, hrHPV and HRA-directed biopsies.

Results: A total of 118 cases of HSIL were identified in a cohort of 248 men and 117 women (159 HIV positive, 206 HIV negative) monitored. HSIL was histologically proven and, where histology was not done, diagnosed using clinical impression. 6% (7) of all HSIL cases tested hrHPV negative, 5 were HIV-negative, and all such lesions were documented as small (<2 octants). In HIV-positive patients, the sensitivity for detecting anal HSIL was 97%, specificity 46%, PPV 52% and NPV 96%. In HIV-negative patients, sensitivity was 91%, specificity 55%, PPV 44% and NPV 94%.

Conclusions: In a post-HSIL surveillance program using HRA with concurrent anal cytology and hrHPV testing, it may be reasonable to extend surveillance intervals for hrHPV-negative cases. However, hrHPV testing alone can miss some HSIL. This is concerning, given that hrHPV positivity may be the gateway to HRA for new screening programmes.

51. High-resolution anoscopy (HRA) in anal HPV-related changes: optimizing training and care

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Background: Anal HPV-related changes may progress to malignancy, particularly in identified high-risk groups. HRA allows for the detection of HSIL (high-grade squamous intraepithelial lesions), guiding treatment and follow-up. Targeted guidelines have been developed to ensure these groups receive appropriate care through HRA. A significant challenge remains the insufficient number of trained HRA providers in many regions. To address this, it is crucial to estimate the number of specialists required per capita in different settings. This estimate may be highly heterogenous among areas, depending on characteristics of a given patient population, provider population and healthcare system.

Methods: A Monte Carlo simulation will be used to generate patient populations with various characteristics and simulate their screening and disease follow-up. This will allow us to estimate the number of patients and patient encounters through time, as well as its potential variability, under various assumptions about the patient population, the natural history of disease and test characteristics. This will allow us to anticipate the possible burden on the various healthcare systems, depending on system specifics and details about the patient population in a given area, and estimate how different approaches to screening may influence the healthcare system burden.

Results: Based on this simulation/model, we will demonstrate the applicability of the formula in real-life scenarios and settings using an interactive approach with the audience.

Conclusions: This *knowledge* will help plan training programs and ensure sufficient expertise tailored to the needs of specific populations and healthcare systems.

52. Implementing anal cancer screening guidelines in the U.S.: provider perspectives on barriers and facilitator

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Background: The purpose of this study was to explore provider-reported barriers and facilitators to implementing the International Anal Neoplasia Society (IANS) guidelines for anal cancer screening.

Methods: We conducted in-depth interviews with 13 healthcare providers who provided sexual health services specifically for men who have sex with men (MSM) patient populations. Five clinicians worked in telemedicine. Structured template analysis was performed using the Exploration, Preparation, Implementation, Sustainment (EPIS) framework. We focused specifically on implementation of routine anal cytology screening.

Results: Eight relevant themes were identified describing barriers and facilitators to implementing anal cancer screening for MSM. Outer context barriers included the absence of U.S. Preventive Services Task Force guidelines, lack of reimbursement, limited clinical support resources, and the constraints of telemedicine. Inner context barriers included limited provider knowledge of anal cancer screening and IANS guidelines, beliefs related to screening effectiveness, and perceived patient discomfort and stigma. Participants expressed commitment to improving care, recognized the need for training, suggested EMR integration, and welcomed patient-centered strategies. In addition, the need for self-collection of anal swabs that can be delivered via mail was essential for telemedicine practices.

Conclusions: Successful implementation of IANS guidelines requires expanding provider knowledge through training, improving reimbursement structures, and normalizing/supporting discussions around anal health. Incorporating self-collection screening methods (e.g., anal pap) and enhancing telemedicine follow-up could address key barriers and increase access to screening.

Learning objectives:

1. Identify barriers to implementing anal cancer screening guidelines for MSM on PrEP.
2. Discuss the potential of home kits and telemedicine to address implementation challenges.
3. Develop strategies to enhance provider training and patient engagement in anal cancer prevention.

53. Implementing high-resolution anoscopy guidelines in the U.S.: geographical analysis of administrative codes from the Medicare provider utilization and payment data

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Background: The purpose of this study was to characterize the availability of high-resolution anoscopy (HRA) services in the United States using Medicare claims data.

Methods: Data were from 2013 to 2021 Provider Utilization and Payment Data provided by the Centers for Medicare & Medicaid Services. We identified three CPT codes (46600, 46601, 46607) associated with HRA procedures, achieving a sensitivity of 94.7% when compared to a provider list from the Anal Neoplasia Clinic, Research, and Education Center. We geocoded claims data to the county level and merged it with HIV incidence data. Counties were categorized by HRA availability: 0 = none, 1 = anoscopy unspecified HRA, and 2 = specified HRA based on billing codes. Descriptive analyses were performed in R.

Results: Of 1,505,820 clinicians, 0.18% had unspecified HRA and 0.008% had specified HRA. Colorectal surgeons accounted for 47.3% of HRA providers, followed by general surgeons (25.1%) and gastroenterologists (10.6%). Mean HIV rates were higher in counties with specified HRA (660/100,000) compared to those without (159/100,000). County HIV-rates were not associated with availability of HRA providers. In states with the highest quartile of HIV incidence, counties without HRA availability were most prevalent in Georgia (109 counties), Texas (78 counties), and Mississippi (61 counties).

Conclusions: HRA availability is limited nationwide, with notable gaps in the South. These findings highlight critical disparities in access and the need for targeted interventions to expand HRA services in underserved regions.

Learning objectives:

1. Describe the geographic distribution and disparities in high-resolution anoscopy (HRA) availability across the United States, particularly in counties with high HIV incidence.
2. Analyze the relationship between county-level HIV prevalence and the presence of HRA providers, highlighting key gaps in access.
3. Identify priority areas for targeted interventions to expand HRA services and address disparities in anal cancer prevention.

54. Improving anal dysplasia detection: lessons from Beaumont Hospital's HRA service

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Background: Anal cancer while rare in the general population, has a worryingly high incidence in certain high-risk populations such as Men who have sex with Men (MSM) and HIV + patients. HPV associated anal dysplasia within the anal squamous epithelium has been established as a precursor to anal squamous cell carcinoma.

Historically, mapping biopsies have been the standard method for identifying abnormal tissue, involving systematic but non-targeted sampling. High-resolution anoscopy (HRA) has emerged as a novel approach, offering precise visualization and targeted biopsies. Beaumont Hospital established Ireland's first HRA service in January 2024, providing a unique opportunity to assess the real-world application of this advanced technique.

Methods: Since launching in January 2024, the Beaumont HRA service has performed 43 procedures on 37 patients, primarily under general anaesthesia. Both mapping biopsies and HRA-guided biopsies were used to detect high-grade squamous intraepithelial lesions (HSIL) and low-grade squamous intraepithelial lesions (LSIL). Outcomes were analysed to assess the effectiveness of each method.

Results: HRA-guided biopsies significantly outperformed mapping biopsies, detecting abnormalities in 93% of cases compared to 65%.

Conclusions: Beaumont Hospital's experience shows that HRA is more effective than mapping biopsies for detecting anal dysplasia. Moving forward, the service aims to make procedures more patient-friendly by transitioning to clinic-based settings with local anaesthesia, adding cytology and HPV testing, and continuously improving through regular audits. These advances not only improve diagnostic accuracy but also ensure a more streamlined, accessible approach to preventing anal cancer.

55. Initial experience with high-resolution anoscopy at a Brazilian cancer research center: a partnership with the AIDS Malignancy Consortium

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Background: Anal squamous cell carcinoma (SCC) disproportionately affects high-risk populations, including men who have sex with men (MSM), transgender women, and people living with HIV (PLWHIV). In Brazil, prevention and treatment strategies remain limited.

Methods: In 2020, a partnership with the AIDS Malignancy Consortium (AMC) facilitated the establishment of high-resolution anoscopy (HRA) at a Brazilian cancer research center. Three surgeons underwent rigorous training and achieved certification. Despite delays caused by the COVID-19 pandemic, the program launched in 2022.

Results: From March 2022 to December 2024, the program conducted 491 exams, 327 HRA screenings, 64 follow-ups, and 100 treatments. Among individuals (175 MSM, 121 women, 31 transgender women, 13 lupus patients and 1 solid organ transplant recipient), the prevalence of high-grade squamous intraepithelial lesions (HSIL) was 40%. The outpatient service now operates 3 days per week, serving approximately 40 patients monthly. Additionally, the center leads two prospective studies focusing on PLWHIV, incorporating HPV genotyping and microbiome analysis using next-generation sequencing (NGS).

Conclusions: This collaborative initiative highlights the feasibility of establishing a comprehensive HRA program in a resource-limited setting. By integrating early detection, treatment, and training, the program enhances anal cancer prevention and care in Brazil. Continued investment is essential to ensure sustainability and expand access to high-risk populations. Future efforts could include community education initiatives and partnerships to increase awareness and screening uptake.

56. International consensus on clinical test performance for anal cancer screening: an eDelphi study

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Background: Current screening tests for anal high-grade squamous intraepithelial lesions (HSIL) have limited performance, and there is a need for tests that can stratify HSIL by cancer risk to guide clinical management. Establishing minimum performance criteria is important when developing new tests, determining positivity thresholds, and designing effective testing algorithms.

Methods: We performed a modified Delphi methodology consisting of two sequential survey rounds among clinical and research anal dysplasia experts. In the first round, experts provided input on the minimally acceptable sensitivities and specificities for tests using anal swabs and biopsies in different populations. They also provided the maximum acceptable number of interventions (swabs, HRAs, treatments) needed to prevent one case of anal cancer. In the second round, experts reviewed the first round's results and indicated their agreement to achieve consensus.

Results: Twenty-eight experts from 16 countries participated in the first round, and 25 participated in the second round. Consensus was achieved on minimally acceptable sensitivities and specificities for anal swab tests in populations with 50% and 30% HSIL prevalence. Consensus was also reached on minimally acceptable sensitivities and specificities for anal biopsy tests, as well as on the maximum acceptable number of anal swabs and HSIL treatments required to prevent one anal cancer.

Conclusions: Expert consensus was established on minimum acceptable performance parameters for anal swab and biopsy tests and on acceptable numbers of interventions for anal cancer prevention. These findings provide guidance for the development and evaluation of new screening tests aimed at reducing anal cancer incidence.

57. Needs assessment for implementation of anal precancer screening among people living with HIV according to health system stakeholders in Ontario, Canada

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Background: We conducted a needs assessment for implementation of the IANS anal precancer screening guidelines among people living with HIV in Ontario, Canada, by assessing healthcare provider, organization, and system barriers for adoption of anal screening.

Methods: We used a phenomenology qualitative design with semi-structured, virtual interviews with key informants, guided by the Theoretical Domains Framework (TDF) and the Consolidated Framework for Implementation Research (CFIR). Eligible participants were professionals with experience with the healthcare system in Ontario involving the provision, administration, or management of services. Recruitment was purposive via professional networks. One coder (DG) deductively and inductively analyzed recorded transcripts to identify themes within TDF and CFIR domains.

Results: To date, we conducted 13 interviews out of an anticipated 30. Identified themes covered all CFIR domains (innovation, individual, and implementation domains, and inner and outer setting) and five TDF domains (environmental context, professional role and identity, skills, emotions, and knowledge). Barriers include a lack of knowledge about the guidelines, who is recommended for screening, and how to

screen; lack of resources, namely high resolution anoscopy (HRA) services; and, among patients, limited awareness of the need for screening and trauma and stigma. Facilitators include increased access to HRA specialists, simplification of the guidelines for providers, opinion leaders, and, among patients, education, fostering positive beliefs about the process, and patient-peers to support implementation.

Conclusions: Our findings suggest ways to equitably implement the guidelines tailored to local settings. These will be used to inform the development of an implementation toolkit to support scale-up.

58. Proficiency and certification criteria for clinicians participating in The Anal Cancer HSIL Outcomes Research (ANCHOR) Trial

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Background: Participation in the ANCHOR trial required two ANCHOR-certified high resolution anoscopy (HRA) clinicians per site who completed standardized training and evaluation. On-site training was provided to clinicians lacking experience or local mentors. All clinicians submitted logs for proficiency analysis and underwent on-site exam evaluation. The goal of certification was to ensure that all sites provided competent and technically similar exams.

Methods: Sites with colposcopes and photo-documentation capability were considered for inclusion. Clinician requirements included completion of an HRA course, observation in an experienced clinic and log submission. Log proficiency metrics were determined through consensus by the ANCHOR Quality Assurance (QA) committee, based on clinical practice and training experience. A QA committee member provided onsite or remote training and evaluation of HRA exams to certify proficiency.

Results: 75 clinicians were certified at 25 sites. An additional 13 clinicians and 7 sites began certification but declined to continue. Logs were evaluated for HRA metrics (Table 1). Those most frequently missed were percentage of intra-anal high-grade squamous intraepithelial lesions (HSIL), inadequate percentage of perianal biopsies and HSIL, and number of biopsies per exam. Additional log cases were required by ~1/4 clinicians until metrics were satisfactory. The final requirement for certification was on-site evaluation of HRA exams. Criteria for satisfactory exams are listed in Table 1. ~ 1/3 clinicians required additional training on-site or remote training (via Zoom or recorded videos) to complete certification.

Conclusions: 75 clinicians completed all certification criteria. Certification was rigorous and time-consuming, but was achievable in varied clinical settings.

Table 1.

Metrics	Proficiency requirement	Rationale
Discrepant cytology/histology	<5%	Indicates missed HSIL
Number of biopsies in new screens	≥50% of exams with ≥2 biopsies	Fewer biopsies may indicate missed lesions
Percentage of HSIL	≥35%	Rates of HSIL in high-risk populations is higher; this was considered a minimal acceptable threshold
Percentage of cases with perianal biopsies	5%	Perianal disease is often missed, indicates a more thorough evaluation, considered a minimal acceptable threshold
Percentage of HSIL in perianal biopsies	10%	Indicates ability to find HSIL on the perianus (25% of anal cancers are from the anal margin).
Insufficient biopsies or rectal biopsies	<5%	Indicates difficulty with obtaining good samples or of not being clear where the SCJ is located.
Insufficient cytology	<5%	Adequate cytology needed to evaluate potential missed lesions.
Satisfactory certification exam requirements		
New clinicians (61)	8 exams, 5 with histology	Entire SCJ visualized without aid from examiner. All lesions were seen and correctly targeted for biopsy.No discordant cytology/histology.Exam length was ≤ 25 min and no serious complications.
Previously certified (AMC) clinicians (14)	4 exams (HRA or treatment)	Same criteria

59. Psychometric validation of the adapted champion health belief model for anal cancer screening among people living with HIV

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Background: Health Belief Model (HBM) is the predominant approach to promoting healthy behaviors, yet its psychometric properties in the context of anal cancer screening among people living with HIV (PLWH) remain underexplored. This study aimed to validate the Adapted Champion Health Belief Model (ACHBM) Scale for anal cancer screening among HIV-positive adults, a high-risk population disproportionately impacted by anal cancer disparities.

Methods: We employed a cross-sectional secondary data analysis ($N = 110$) of the parent study, *Multi-level Barriers to Follow-Up After Anal Cancer Screening in People Living with HIV (FACS)*. The ACHBM, a 39-item instrument, measured five health belief constructs: perceived susceptibility, perceived seriousness, perceived benefits, perceived barriers, and motivation. Exploratory factor analysis (EFA) identified latent constructs, while confirmatory factor analysis (CFA) validated the scale's structure. Internal consistency was assessed using Cronbach's alpha, and correlations were examined with psychosocial and demographic predictors.

Results: EFA and CFA supported a refined 21-item ACHBM scale with a robust five-factor structure. Cronbach's alpha ranged from 0.64 to 0.91, indicating acceptable reliability. Motivation was strongly correlated with perceived seriousness ($\rho = 0.932, P < 0.001$), while perceived benefits were inversely related to perceived barriers ($\rho = -0.500, P < 0.001$). Regression analyses revealed significant associations between race, gender identity, and clinical history with ACHBM constructs.

Conclusions: The ACHBM demonstrates strong psychometric properties for assessing anal cancer screening beliefs among PLWH. Findings highlight the importance of addressing psychosocial barriers and disparities to improve anal cancer screening adherence in high-risk populations. Future research should explore longitudinal applications of the ACHBM.

60. Quality improvement project to decrease no-show rates at high resolution anoscopy clinic

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Background: Our Colorectal Surgery high resolution anoscopy procedural clinic, initiated in 2023, had a high rate of late cancellations or no shows. Baseline data showed a 14% late cancellation rate and a 7% no show rate. These events decrease clinical efficiency, and result in open spots that could not be utilized by patients on the waiting list.

Methods: We initiated a quality improvement project to improve the late cancelled appointment rate from 14% to 8% without adversely impacting no show appointment rate (7%). Late was defined as cancellation within 24 h of the scheduled procedure. The quality improvement team identified that contacting the patient before the procedure would be beneficial to set expectations and improve patient education. A scheduled, pre-visit nurse phone call was provided 1–2 weeks prior to the procedure to establish appointment confirmation and provide pre-visit education.

Results: During the initial 2 months of the intervention, the scheduled pre-visit nurse phone call resulted in zero late cancellations. An additional benefit was a zero no show rate.

Conclusions: Pre-visit phone calls drastically improved no show and late cancellation rates in our procedural high resolution anoscopy clinic. These calls provided an opportunity to provide patient education and set expectations for the procedure. Ultimately, this quality improvement project improved clinic efficiency, increased the number of patients able to be cared for in the clinic, and decreased the number of patients on the waitlist.

61. SAVETHEBOTTOMS!!! Assessing the gay male experience with anal cancer screening in the United States

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Background: Men who have sex with men (MSM) are at increased risk for anal cancer, but little is known about their awareness of anal cancer or prior experience with screening.

Methods: We surveyed MSM >18 years living in the US via Instagram/Facebook June–July 2023 ($N = 2367$) regarding anal cancer knowledge, perceived risk, and prior screening. Additional items assessed demographics, sexual health, and sexual practices. Screening was defined as undergoing anal swab for anal cytology.

Results: The median age was 36 (range: 18–85). Most were white, cis-gender, college-educated, higher income (Table 1), and accessed sexual healthcare (68% HIV test past year, 52% prior/current PrEP, 42% HPV vaccine). Only half (54%) were aware of their increased risk. Only 20% had discussed their risk with a provider or had undergone screening. Those previously/currently on PrEP, living with HIV, or age ≥45 years were more likely to have had a discussion with a provider or to have undergone screening versus no PrEP, HIV-, and age <45 years (Table 2). Still, only 62% of those living with HIV and only 23% of those ≥45 had undergone screening.

Conclusions: This population of educated, high-income MSMs with access to sexual healthcare was largely unaware of their increased risk for anal cancer and few were counseled about their risk or offered screening, even among those at highest risk (HIV+, age ≥45). Improved awareness of anal cancer risk and IANS guidelines for screening among MSM populations and their providers is critical.

Table 1. Participant demographics, sexual healthcare use, anal cancer awareness and screening ($N = 2367$).

Median age (range)	36 (18–85)	HIV test past year	68%
White race	83%	Current/prior PrEP	52%
Cisgender man	93%	HPV vaccine	42%
College graduate	78%	Have heard of HPV	90%
Annual income >$50,000	76%	Knew HPV causes anal cancer	62%
Living with HIV	6%	Knew of increased anal cancer risk	54%
Role in sex "versatile"	64%	Provider discussion re: anal cancer	20%
Lifetime sex partners >10	62%	Prior anal cytology	20%

Table 2. Prior anal cancer discussions and screening (via cytology) stratified by PrEP, HIV, and age ($N = 2367$).

	Discussed anal cancer risk with provider	*P*-value	Previously had anal cytology for anal cancer screening	*P*-value
PrEP		<0.0001		0.0004
Prior/current	18%		16%	
Never	12%		12%	
HIV		<0.0001		<0.0001
+	47%		62%	
–	15%		14%	
Age		<0.0001		<0.0001
45 years+	23%		23%	
<45 years	15%		15%	

*Percentages reflect those who answered "yes" to "Has a provider talked to you about your risk for anal cancer?" and "Have you undergone an anal swab to test for precancerous cells of the anus?"

62. SAVETHEBOTTOMS!!!: Results & follow-up after onsite anal cancer screening at an LGBT-focused community event

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Background: Men who have sex with men (MSM) are at increased risk for anal cancer but infrequently undergo screening. We previously described the feasibility, acceptability, and preliminary efficacy of onsite anal cancer screening (via anal swab for cytology and high-risk HPV) at LGBT-community events. Here we describe the follow-up and results of HRA after community-event based screening.

Methods: MSM 18+ years were offered screening at our city's Pride Festival (self or clinician-swab). Demographic and sexual health/practice data were obtained. Positive screens (abnormal cytology or high-risk HPV) were contacted first by the study investigator (discuss results/follow-up) and then a clinic nurse coordinator (schedule HRA). HRA (+biopsy/fulguration) was performed. Post-HRA surveys were completed. We compared those with positive *versus* negative screens, those who completed *versus* did not complete follow-up HRA, and those with HSIL *versus* no HSIL on HRA.

Results: 144 participants underwent onsite screening (Table 1). Thirty-nine screened positive. Twenty-five (64%) underwent HRA and nine were found to have HSIL. There were no significant demographic/clinical differences between positive/negative screens or those who did/did not complete follow up. Those with HSIL on HRA had more anal sex partners in the past year compared to the remainder of the cohort.

Conclusions: Poor follow-up is an inherent challenge following community-based disease screening events. However, we report a follow-up rate after community-event based anal cancer screening that is comparable to follow-up rates after clinic-based anal cancer screening reported in the literature. Community-event based anal cancer screening may be an innovative way to reach this under-screened population.

Table 1. Participant demographics.

	All participants ($n = 144$)	Positive screens ($n = 39$)	HSIL (HRA) ($n = 9$)	No HSIL (HRA) ($n = 16$)	*P*-value*
Median age, (IQR)	37 (30–50)	37 (33–47)	38 (35–49)	37 (33–50)	0.54
White race	81%	90%	100%	94%	1.0
Cisgender male	97%	92%	100%	94%	1.0
Living with HIV	10%	10%	0%	12.5%	0.52
Live within 10 miles	76%	80%	78%	94%	0.30
HPV vaccine	48%	49%	44%	56%	0.84
PrEP	54%	69%	67%	71%	0.19
>10 partners (year)	25%	31%	**67%**	**13%**	**0.03**
>10 partners (life)	74%	70%	100%	56%	0.17

**P*-values are for HSIL vs No HSIL.

63. Screening high risk groups with anal cytology and dare

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Background: Our HRA service is in high demand with capacity struggling to meet an increasing referral rate. In light of recently published IANS screening guidelines,[1] we postulated that some of the referrals we currently direct straight to HRA could be assessed in a nurse-led screening clinic with DARE and cytology assessment as recommended in resource poor areas, in order to direct HRA to those most in need.

Methods: A retrospective review of internal referrals to the AIN service was conducted to identify patients potentially suitable for screening by anal cytology and DARE using the IANS screening criteria.

Results: 60 referrals received over a 23-month period were reviewed. Median age 60 (IQR: 47–67); 47 (78%) female; 2 (3%) living with HIV. 31 patients (52%) met criteria for screening with anal cytology and DARE. 15 patients were still awaiting either initial outpatient assessment or HRA 5 months after referral. Of the 17 screening-eligible patients who have undergone HRA, none have had AIN; all have had negative anal cytology.

Conclusions: Implementation of IANS screening criteria may assist in targeting resource allocation. We propose to introduce a nurse-led clinic to deliver screening by anal cytology and DARE. With better selection for HRA, waiting times to first assessment will decrease for patients in higher risk groups, and adherence to recommended HRA surveillance intervals should improve.

Reference

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64. Self-collected anal HPV testing in high-risk women without HIV: performance and acceptability

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Background: Screening strategies for anal hrHPV often rely on clinician-collected samples, which can be resource-intensive, and may create participation barriers. Self-collected anal hrHPV testing offers a potentially cost-effective and more acceptable alternative. Here we assessed diagnostic accuracy and acceptability of self-collected anal hrHPV samples compared with clinician-collected samples among high-risk women without HIV.

Methods: We enrolled women without HIV with a history of genital high-grade intraepithelial lesions or cancer aged ≥35 years in a longitudinal anal screening study. At baseline, participants were provided with specimen collection kits and instructions on how to collect anal and vaginal specimens. Following self-collection, participants underwent anal sample collection by a clinician. A survey was then administered to assess participants' experience with the collection process.

Results: Ninety participants (mean age 52 years) provided samples. Self-collected anal samples frequently failed internal quality control (20%) resulting in a high proportion of inadequate samples compared with self-collected vaginal (7%) and clinician-collected anal (2%) samples. Among participants with adequate self- and clinician-collected anal samples, 21% and 39% tested positive for hrHPV on self- vs clinician-collected samples, respectively with agreement on only 44% of cases. Most participants (65%) were concerned that they didn't properly collect the specimen; however, this was not associated with specimen inadequacy ($P = 0.2$). Many participants preferred to have a clinician collect the sample in the future (39%).

Conclusions: In a cohort study of anal cancer screening for high-risk women without HIV, a large proportion of self-collected anal HPV tests were inadequate and result concordance with clinician-collected samples was low.

65. Squamous intraepithelial lesions: agreement of clinical suspicion versus pathology result

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Background: High-grade squamous intraepithelial lesions (HSIL) are precursors to anal squamous cell carcinoma. High-resolution anoscopy (HRA) is the gold standard for their detection, though it has a long learning curve, making the procedure operator-dependent. Accurate detection of HSIL relies on both technique and the practitioner's diagnostic impression. This study compares the clinical impressions of trained practitioners with pathology results.

Methods: We included HRAs performed by two experienced practitioners (LLR, DC) at a private center in Buenos Aires, Argentina. The clinical HRA impressions were compared retrospectively with the most severe pathology result.

Results: A total of 695 HRAs (471 patients; 47.7% MSM HIV-positive) were performed between July 2022 and November 2024. Of these, 503 exams had both clinical impressions and pathology results available for comparison. When LSIL was suspected ($n = 316$), pathology confirmed 278 LSIL, 19 HSIL, and 19 non-HPV related lesions. When HSIL was suspected ($n = 178$), 142 were confirmed as HSIL, 35 as LSIL, and one as another lesion. When a scar was suspected ($n = 9$), only two were HPV-related lesions (LSIL).

Concordance agreement showed substantial agreement in the HSIL group ($k = 0.76$, 95% CI: 0.68–0.84), moderate agreement in the LSIL group ($k = 0.68$, 95% CI: 0.59–0.78), and no agreement in the scar group ($k = 0.19$, 95% CI: 0.19–0.24).

Conclusions: For experienced practitioners, the clinical impression of HSIL using HRA shows substantial agreement with histopathology, while it is moderate for LSIL. Clinical suspicion should always be confirmed by pathology. New strategies to improve the agreement and shorten the learning curve are needed.

66. Surgeon perspectives on HRA

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Background: Anal cancer and cervical cancer share the same underlying cause – the human papillomavirus (HPV). Despite the similarity, rates of cervical cancer have declined whereas rates of anal cancer continue to rise. Cytology testing and colposcopy are importance factors for cervical cancer control. Whereas, the analogous care model for anal cancer – anal cytology and high resolution anoscopy (HRA) – although effective, has largely been limited to selected populations including MSM living with HIV. Expanding the scope of the anal cancer screening and prevention more broadly has challenges that include clinician resources. Understanding the perspectives of colon and rectal

surgeons on this care process and their role is an important factor in guiding future strategies to provide screening and prevention for anal dysplasia and cancer.

Methods: A combination of random, convenience and purposive sampling was used to recruit survey participants at the 2024 annual American Society of Colon and Rectal Surgeons meeting. Survey questions included queries about attitudes, experience and knowledge related to screening for anal dysplasia and cancer, HRA and anal cytology.

Results: A total of 23 surgeons participated in the survey. More than half indicated they do not perform HRA for anal dysplasia screening and prevention. Among those that do, more than half perform the ablative procedure in the operating room and few described techniques that align with the "gold standard" proposed by IANS.

Conclusions: Workforce issues, quality standards, and access to care pose practical limitations for applying the cervical dysplasia care model to anal dysplasia.

67. Swab-based anal cancer screening in HIV-positive men: projected outcomes for different screening algorithms

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Background: Screening for and treatment of anal cancer precursor lesions, high-grade squamous intraepithelial lesions (HSIL), can prevent anal cancer. Recent guidelines set by the International Anal Neoplasia Society recommend digital anal rectal examination (DARE) and anal swab-based screening of high-risk individuals by means of high-risk (hr) HPV testing or cytology. We used our biobank containing data of more than 600 high-resolution anoscopy (HRA) screened participants (94% HIV-positive men) to compare the possible screening algorithms.

Methods: We selected those participants in whom anal swabs were successfully tested on hrHPV and cytology, parallel to HRA screening (DARE followed by complete visual inspection by HRA). We compared outcomes of several strategies (single-test, co-testing, two-step testing) with one or two positive tests required for HRA referral, resulting in 20 possible screening algorithms. The number of missed HSIL, missed anal cancers, number of tests, and HRA referral rates were compared between algorithms. We also assessed the sensitivity of DARE to detect anal cancer.

Results: 298 screening participants were included. The percentage of missed HSIL was lowest with hrHPV testing, either alone (14.2%) or combined with cytology (≥ASCUS threshold: 4.4%; HSIL threshold: 8.8%) (co-testing or two-step testing, with ≥1 positive test required for HRA referral). Using these screening algorithms, 61.0, 79.0 and 63.7% of the participants were referred for HRA. A positive DARE detected all anal cancers.

Conclusions: Anal swab-based hrHPV testing (with or without cytology) had the highest sensitivity to detect HSIL. Moreover, DARE is a simple and reliable procedure to detect anal cancer.

68. The addition of high-risk HPV testing as a triage tool in anal cancer screening optimizes the referral rate in a Canadian cohort of men who have sex with men living with HIV

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Background: Recent guidelines by the International Anal Neoplasia Society (IANS) recommend anal cancer screening using cytology and high-risk human papillomavirus (hrHPV) testing. Currently, anal hrHPV testing is not available in Canada. With no organized screening programs

and extremely low capacity for screening, Canada's high-resolution anoscopy (HRA) programs urgently need better ways to triage those at highest need for HRA. This study examined the impact of adding hrHPV testing to anal cancer screening in a cohort of men who have sex with men (MSM) living with HIV (LWH).

Methods: HPV Screening and Vaccine Evaluation (HPV-SAVE) is a cross-sectional screening study examining the addition of hrHPV as a triage tool in those initially screened with cytology in MSM LWH recruited from Toronto, Vancouver, and Ottawa, Canada. Demographic and clinical data were analyzed using descriptive statistics, and the IANS anal cancer screening guidelines were used to estimate theoretical HRA referral rates across different screening strategies.

Results: The analysis included 799 individuals (12/2015–03/2024). Median age was 50 years (IQR: 39–57), 97.8% identified as gay/bisexual, and 16.6% received HPV vaccination. Referral rates for cytology alone and cytology with hrHPV triage are provided for both standard and low-capacity settings (Table).

Conclusions: In this screening cohort, hrHPV testing reduced HRA referrals by ~50% in standard settings but theoretically increased them marginally in low-capacity settings, likely due to additional hrHPV+ ASCUS and LSIL referrals. While these findings support incorporating hrHPV testing into anal cancer screening algorithms, careful resource allocation is needed in low-capacity settings.

Table 1. Theoretical referral rates for HPV-SAVE participants based on different screening algorithms.

Primary screen	Triage	Test result	Referral rate (standard)[A]	Referral rate (low-capacity)[A]
Cytology	None	ASCUS or worse[B]	53.8%	HSIL/ASC-H: 5.6%
Cytology	hrHPV testing of ASCUS or worse	ASCUS or LSIL and hrHPV+	20.7%	HPV-16+: 7.3%
		ASC-H or HSIL (regardless of hrHPV)	5.6%	5.6%

Abbreviations: ASC-H, atypical cells – cannot rule out HSIL; ASCUS, atypical squamous cells of undetermined significance; HRA, high-resolution anoscopy; hrHPV, high-risk HPV testing; HSIL, high-grade squamous intraepithelial lesion; LSIL, low-grade squamous intraepithelial lesion; NA, not applicable.

[A]The IANS anal cancer screening guidelines define 'low-capacity' for HRA as a wait time of 6 months of greater; standard settings are those with capacity to see referrals within 6 months.

[B]BASCUS or worse: cytology result of ASCUS, LSIL, ASC-H or HSIL.

69. The Pilot of Anal Screening Study (PASS): anal cancer screening in people living with HIV

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Background: People living with HIV (PLHIV) are at highest risk of anal cancer. Screening PLWHIV and treatment of identified anal high-grade squamous intraepithelial lesions (HSIL) is now recommended to reduce cancer incidence. We set out to investigate implementation of such a program in a large HIV clinic in Sydney, Australia.

Methods: PLHIV aged 35+ were invited to participate in an anal screening program. Following informed consent, participants underwent digital anorectal examination (DARE) and anal swabs (self- and clinician-collected) for HPV and cytological testing. Positive results for HPV16, Atypical Squamous Cells – cannot exclude HSIL (ASC-H), HSIL, or abnormal DARE led to immediate referral for high-resolution anoscopy (HRA). The rest returned in 6 months for repeat tests. Screening logs captured reasons for declining screening.

Results: Of 226 people invited to participate, 54 (23.9%) declined (49.1% "not interested"), 112 (49.6%) did not respond to repeated contact, and 60 (26.5%) consented (median age 57.5 years). Of those who consented, the prevalence of any high-risk HPV was 66.1%, and the prevalence of any cytological abnormality was 78.7%, of which 48.6% was ASC-H/HSIL. No differences were found between self- and clinician-collected swabs. Thirty-eight participants (63.3%) were referred for HRA (32 at baseline, and seven at follow-up), with 100% attendance. Of these, 42.1% were diagnosed with histological HSIL.

Conclusions: Despite significant efforts expended on recruitment, only a quarter of PLWHIV approached agreed to participate. Those who underwent screening had excellent adherence (100% HRA attendance). Further research is required to understand and address barriers to initial screening program uptake.

70. Update on German–Austrian guidelines on screening for anal dysplasia and anal carcinoma

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Background: The international anal neoplasia society has recently published guidelines on anal cancer screening. Regional differences in epidemiology, access, and availability call for national guidelines. We therefore revised the German–Austrian 2015 guidelines on anal dysplasia.

Methods: In 03/2024, representatives of different medical societies (Dermatology, Surgery, Infectious Diseases, Gynaecology, Gastroenterology, HIV medicine, Pathology and Virology) and community representatives of people living with HIV (PLWH) were invited. The previous guideline was revised in three working groups, incorporating recently published data and drafting new recommendations. A nominal group process was deployed to achieve a consensus for all 42 recommendations among 29 representatives from 22 German or Austrian specialist societies.

Results: Screening of PLWH age 45+, or earlier if risk factors are present (Fig. 1), is recommended and screening is suggested for HIV-negative men who have sex with men/transgender women age 45+, women after vulvar (pre)cancer and solid-organ transplant recipients 10-year+ post-transplant. Screening comprises inspection, digital anorectal examination (DARE), and cytology (+HR-HPV if available). Clinical abnormalities or cytology "ASC-US or worse" require referral to high-resolution anoscopy (HRA). If HRA is unavailable, cytology should be omitted and only DARE should be performed for early detection. Electrocautery, 85%-trichloroacetic acid, and surgical excision are suggested treatment options for high-grade anal dysplasia, whereas infrared coagulation, cryotherapy, laser-ablation and imiquimod can be considered.

Conclusions: The revision of this interdisciplinary consensus-based guideline can aid anal cancer screening implementation in Germany and Austria. DARE for early detection, if HRA is unavailable, may increase this guideline's acceptance and benefit the screening population.

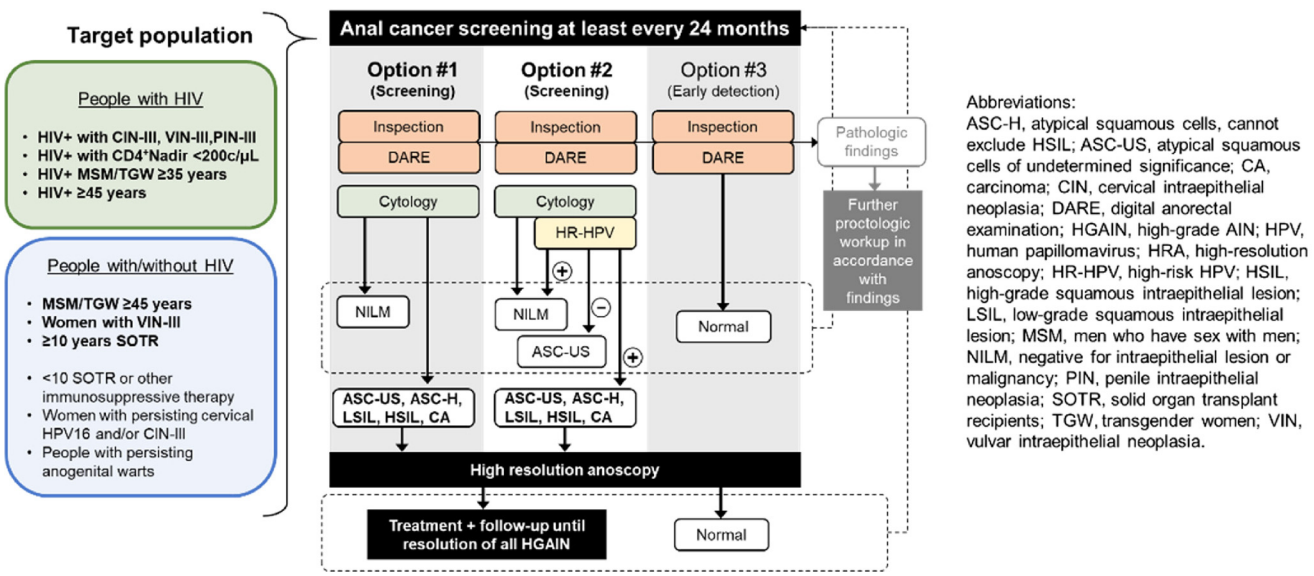

Fig. 1.

71. Factors associated with delays in screening for anal cancer at a tertiary care center

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Background: Guidelines recommend screening high-risk individuals to prevent anal cancer. However, implementation at different phases of evaluation and treatment has not been evaluated. At UCSF patients are initially assessed at the Anal Neoplasia Clinic (ANCRE) with a small percentage of challenging cases referred for surgical procedures such as ablation or excision under anesthesia. We examined characteristics associated with cancellations for patients needing these procedures.

Methods: We examined patients referred by ANCRE for high resolution anoscopy-guided excision or ablation under anesthesia at UCSF Health from 2012 to 2024. Our primary outcome was cancellation of the operation within 1 week of surgery. We constructed a generalized estimating effects logistic regression model with a logit link and exchangeable correlation structure, adjusting for factors including demographics, HIV infection, Charlson Comorbidity Score, number of completed ANCRE appointments in 6 months pre-operatively and prior ANCRE no-shows.

Results: We examined 587 operations on 415 individual patients. Ten percent ($N = 60$) were cancelled within 1 week of the scheduled surgery date and 6% ($N = 34$) were cancelled on the day of surgery. People with substance use disorders, HIV and prior ANCRE no-shows had 2.7 (95% CI 1.2–6.1; $P = 0.02$), 4.3 (95% CI 1.3–14.0; $P = 0.015$) and 2.4 (95% CI 1.2–4.7; $P = 0.014$) times higher adjusted odds of cancelling within the same week compared to those without cancellation, respectively.

Conclusions: Patients with substance use disorders, HIV, and prior ANCRE no-shows more commonly cancelled surgical procedures close to surgery date and had consequent delays in diagnosis or treatment. More must be done to understand barriers and facilitators to anal cancer screening.

72. Psychosocial factors associated with HPV infection in transgender women in Argentina

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Background: HPV is highly prevalent in transgender women (TGW), yet associated psychosocial factors remain understudied. This analysis assessed psychosocial factors in association with anal HPV infection in TGW in Argentina.

Methods: Data from TGW in a psychosocial health cohort (TransCITAR) and an HPV epidemiology cohort (FH30) were integrated and analyzed. Anal samples were obtained for HPV genotyping (WHO-validated PCR). Surveys assessed sociodemographics, sexual behavior, substance use (AUDIT, DAST-10), depression (CES-D), and gender-related violence.

Results: We included 105 TGW (median age: 31 years; IQR: 27–37). The median time between HPV testing and psychosocial evaluation was 63 days (IQR: 22–92). Anal HPV was detected in 91.4% (79.2% high-risk HPV) being more frequent in those with HIV (56.3% vs 22.2%). 89.5% reported prior STIs. Socio-demographic vulnerability was high: 29.5% immigrants, 81.1% internal migrants, 42.9% unstable housing, 51.4% reliance on social assistance. Psychosocial stressors were high: 32.4% depressive symptoms, 27.6% suicide attempts, 59.3% lifetime physical violence, 23.9% sexual violence. Participants with HPV, compared with those without, were more likely to report lifetime sex work (85.4% vs 55.6%), >100 lifetime sexual partners (77.1% vs 55.6%), drug use in the past year (70.4% vs 58.0%), and chemsex (84.4% vs 77.8%).

Conclusions: These findings suggest a strong interplay between HIV co-infection, psychosocial stressors, sexual behaviour and anal HPV infection. Addressing these factors through tailored interventions is crucial for effective HPV prevention and care, emphasizing both medical and social determinants of health.

73. The mediating role of social support in the relationship between stigma and depression among people living with HIV

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Background: Stigma and social support are critical social determinants – stigma drives health inequities, while social support can improve outcomes – contributing to mental health outcomes among people living with HIV (PLWH). While stigma is associated with increased

depressive symptomology among PLWH, the role of social support in this relationship remains unclear. This study examines the extent to which social support mediates the relationship between internalized HIV stigma and depression among PLWH in Atlanta, GA.

Methods: Cross-sectional data from the *Multi-level Barriers to Follow-Up After Anal Cancer Screening in People Living with HIV* ($N = 126$) were utilized. Depression was measured using the Center for Epidemiologic Studies-Depression Scale, stigma via the Internalized AIDS-Related Stigma Scale, and social support via the Medical Outcomes Study Social Support Survey. Mediation analysis was conducted using multiple linear regression models, adjusting for age, race, and marital status.

Results: Adjusted mediation analysis revealed that social support significantly partially mediated the relationship between stigma and depression. The estimated average causal mediation effect (0.65) was statistically significant (95% CI = [0.16, 1.28], $P = 0.006$), although the estimated average direct effect (0.44) was not (95% CI = [–0.71, 1.52], $P = 0.45$). The total effect estimate (1.09) was statistically significant (95% CI = [0.13, 2.05], $P = 0.03$). Approximately 57.7% of the total effect of stigma on depressive symptoms is mediated through social support (95% CI = [0.06, 3.19], $P = 0.03$).

Conclusions: These findings suggest that social support may be crucial in developing targeted interventions to buffer stigma's adverse mental health effects among PLWH.

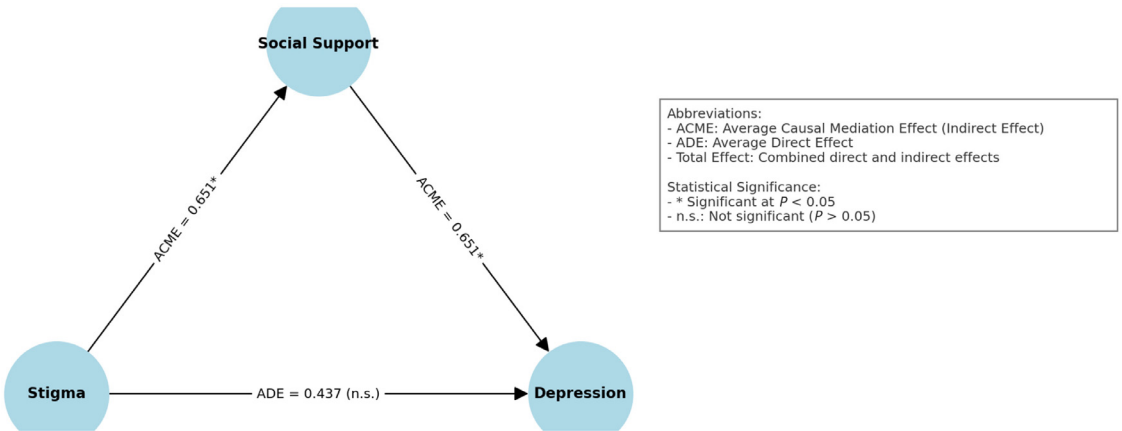

Fig. 1. Mediation model of stigma, social support, and depression.

74. Working to expand IANS outside US: the experience of the European Task Force

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Background: IANS aims to address people of all countries interested in preventing Anal Cancer. Nevertheless, the society emerges from the US, thus focusing partly on North American circumstances. People from other regions of the world may feel less addressed by IANS and its offers than the society may wish.

Methods: The idea was to get more Europeans involved in IANS to spread information about HPV related dysplasia of the anus and, ideally, have them contribute to the society. A monthly Zoom Meeting was set up, and Europeans were addressed via IANS website or personally. The aim was to support exchange between Europeans and to have a monthly scientific input.

Results: It turned out to be crucial to have a fixed time (at the moment every first Thursday of the month) to not have people miss the event. Having the possibility for Non-Members to participate in the live meetings seemed to be a good idea to get providers involved but took some time to set up.
We found out that also people from Africa, sharing the same time zone, are interested in the meetings and are grateful for the possibility to participate for free.

Conclusions: Having a chapter of IANS addressing a specific region seems to help to get people outside IANS involved, to make knowledge available for interested people more easily and to facilitate exchange between members. Other regions have started to found their own chapters, making IANS more available to their regional and/or language needs.

75. A compassionate use study of topical intra-anal artesunate for anal high-grade squamous intraepithelial lesions

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Background: Treatment of anal HSIL decreases the incidence of anal cancer in people living with HIV. Recurrence rates with electrocautery ablation are common due to persisting HPV infection. A phase one study showed that Artesunate suppositories are a safe treatment for anal HSIL.

Methods: We conducted a compassionate use trial evaluating the safety and tolerability of topical intra-anal artesunate in biopsy-proven recurrent HPV-associated anal HSIL. Ten adults >35 years old were treated with Artesunate 40% ointment 1 mg/mL packet daily for three 5-day cycles every 2 weeks. Participants underwent HRA, HPV test, and cytology every 3–4 months for 1 year. Biopsies were taken of suspected persistent, recurrent, or new anal HSIL. The primary endpoint was safety and tolerability of topical Artesunate for the treatment of anal HSIL. Regression of anal HSIL at 3–4 months was assessed.

Results: Six of the 10 participants had HRA with biopsy at 3–4 months. Anal HSIL was not detected in three participants (50%). A partial response was detected in two participants. Accrual for the trial has been completed and additional clinical data are maturing. Artesunate is well tolerated. Most adverse events were Grade 1. One participant had a Grade 2 event.

Conclusions: Topical Artesunate treatment of anal HSIL is tolerable and feasible. Clinical outcomes to date are promising.

76. Anal high-grade squamous intraepithelial lesion recurrence: an analysis of 368 patients

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Background: Anal squamous cell carcinoma (SCC) disproportionately affects populations including men who have sex with men (MSM) and persons living with HIV (PLWH). Anal SCC is preceded by high-grade intraepithelial lesions (HSIL). While the incidence of anal cancer in high-risk populations has been well-described, HSIL recurrence and time to recurrence after treatment is less explored.

Methods: A retrospective analysis of 368 patients treated for HSIL was performed. Patients were treated with electrocautery ablation or surgical excision within 6 months of diagnosis.

Results: 368 patients (median age = 55) diagnosed with HSIL were followed for a median of 3 years (range, 3 months–12 years). 83.2% were PLWH, 55.7% were MSM, 52.4% were MSM with HIV, and 64.4% were male. Median time to recurrence was 7 months and was not significantly impacted by HIV infection, MSM status, or sex ($P > 0.05$). Cumulative recurrence at 6 months and 1 year was 14.4% (95% CI, 10.8%–18.0%) and 40.2% (95% CI, 35.2%–45.2%). At 2 and 3 years was 53.8% (95% CI, 48.7%–58.9%) and 59.0% (95% CI, 53.9%–64.0%). Before 2 years, MSM status, HIV infection, and sex did not consistently impact recurrence rates. At 2 years, recurrence was significantly higher in PLWH, MSM, MSM with HIV, and males compared to their lower-risk counterparts ($P < 0.05$). At 3 years, MSM status no longer impacted recurrence, but HIV infection and sex did ($P < 0.05$).

Conclusions: HIV infection, MSM status, and male sex significantly increase HSIL recurrence at 2 years following treatment. However, time to recurrence is not impacted by these factors.

77. Cryoablation with liquid nitrogen for high grade AIN: a good option for effective and painless treatment?

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Background: Treatment of high-grade AIN (HSIL) has been proven to reduce incidence of anal carcinoma (AC). A wide choice of treatment methods has been described. Main goal is to have a treatment method with no long-term sequelae, causing only minimal pain, easy to use for the provider, cost-effective and diminishing the recurrence rate.
The aim was to assess cryotherapy using liquid nitrogen as a treatment option for HSIL.

Methods: All patients having been treated with cryoablation for HSIL from 1 January 2022 to 30 June 2023, were retrospectively extracted from our prospective database. Number of cryoablations, time to recurrence and procedure-related morbidity were noted, as well as patient characteristics. Any new occurrence of HSIL, regardless of the location, was counted as recurrence. Application takes place without local anesthetics and is easy to apply using the aerosol device.

Results: 12 patients (10 men having sex with men living with HIV (MSMLWHIV), two women (no HIV)) had HSIL-treatment, all by three cryoablations. Four recurrences (33%) occurred after a median 8 months (2–18). One patient experienced severe pain which needed analgesics for a few days and then dissolved. All other patients described mild to moderate discomfort during the application and no or very mild discomfort for the following hours. No other complications were observed.

Conclusions: Cryoablation using liquid nitrogen is a safe and easy to use treatment option for HSIL which causes minimal pain and yields recurrence rates similar to other local treatments in this small cohort of patients.

78. High-grade squamous intraepithelial lesions (HSIL) treatment by electrocautery ablation in a low-middle income country by a newly certified physician

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Background: Anal cancer prevention, through HSIL treatment, is limited in Africa. Our study describes the initial treatments performed by a Nigerian clinician certified in high resolution anoscopy (HRA). He had five separate "in-country" training visits for HRA and ablation.

Methods: Since May 2023 IMPACT screened MSM in Abuja, Nigeria aged ≥25, living with HIV, and had receptive anal intercourse. In June 2023, electrocautery HSIL ablation began. We analyzed the treated participant subset.

Results: Of 83 persons diagnosed with HSIL from 2023 to 2025, 90% ($n = 75$) underwent electrocautery ablation. Eight were untreated due to other health priorities (1), scheduling difficulties (4), and loss to follow-up (3). Median age was 32 years, median time from HIV diagnosis 6.5 years, most with high ART adherence and 31% had concomitant condyloma (Table 1). At screening, 71% had ≥2 biopsies, identifying a median of one HSIL. All had intra anal HSIL with one having perianal HSIL as well. Eight (11%) required multiple treatments because of disease burden (2), patient intolerability (1), and infrastructure challenges (5). Median time to treatment was 6 weeks. On a scale of 0 (lowest) to10 (highest), pre-treatment anxiety was 0.5, post-treatment pain was 0, and post-treatment satisfaction was 10. Since treatment, 20% ($n = 15$) returned (median 5 months) for post-ablation HRA and 7 (35%) had presumed recurrence (pathology pending) undergoing immediate preemptive treatment.

Conclusions: HSIL treatment is feasible and acceptable in Abuja, Nigeria. Effective mentorship has the potential to bring anal cancer prevention to resource-limited settings. Longer follow-up is required to determine ablation efficacy.

Table 1. Patient and clinical characteristics of MSM with treated HSIL ($n = 75$) between 2023 and 2025.*

Characteristics	Median (interquartile range)	Characteristics	N (%)
Age	32 (30–38)	High school education	28 (37)
Years living with HIV	6.5 (5–10)	>High school education	47 (63)
No. HSILs diagnosed	1 (1–2)	ART adherence (≥95% of pills)	41 (55)
Time to treatment (weeks)	6 (3–15)	Condyloma present	23 (31)
Time to F/U (months)	4 (3.5–13.5)	Internal HSIL only	74 (99)
Pre-treatment anxiety	0.5 (0–3)	Internal and external HSIL	1 (1)
Post-treatment pain	0 (0–2)	Single treatment	67 (89)
Post-treatment satisfaction	10 (10–10)	Multiple treatments	8 (11)
		No. of F/U of 75	15 (20)
		No. biopsied of 15 F/U	7 of 15
		Possible metachronous and local recurrence	2 of 7
		Possible local only recurrence	2 of 7
		Possible metachronous only recurrence	3 of 7

Abbreviations: No., number; F/U, follow-up; ART, antiretroviral therapy; MSM, men who have sex with men.
*349 underwent HRA: 305 underwent biopsy with HSIL in 83, LSIL in 117, benign in 58, biopsies pending for 47, and 44 had no sign of HSIL and no biopsy.

79. Imiquimod for anal high grade intraepithelial neoplasia: a systematic review

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Background: Imiquimod can be considered as a topical treatment for anal condyloma and Anal High Grade Squamous Intraepithelial Lesion (HSIL). The present systematic review aimed to investigate the efficacy of imiquimod in Anal High Grade Squamous Intraepithelial Lesion (HSIL).

Methods: Electronic databases (Pubmed, MEDLINE, EMBASE and Cochrane Library databases) were searched from inception until December 2024 and articles reporting imiquimod as a treatment for anal HSIL.

Results: Five studies were identified (two randomized controlled trials and three prospective non-randomized studies), containing data on 126 men of have sex with men living with HIV with anal HSIL. Most studies contained significant bias which prevented direct comparison. Reported complete response (CR) rates ranged between 14.3–78.6%, and 21.4–67% partial response (PR) rates of 3-weekly application for 16 weeks imiquimod course. A second course of imiquimod led to incremental response (CR 15–23.8%, PR 19–30%). Perianal HSIL showed superior response rates compared to intra-anal lesions (perianal HSIL CR ranging from 71.4 to 100%, intra-anal HSIL CR from 10.8 to 33.3%). However, anal HSIL recurrence rates were high, and there are no long-term data on its efficacy. No studies investigated the role of imiquimod in women or in HIV- patients.

Conclusions: Imiquimod can be proposed as a safe option for treatment of anal HSIL.

80. Long term outcome of ablation for male anal HSIL: HSIL-free status is key

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Background: Ablation is the mainstay of anal high-grade squamous intraepithelial lesion (aHSIL) treatment to prevent anal squamous cell carcinoma (ASCC).

Methods: Retrospective consecutive cohort study at a tertiary HSIL referral centre, including 136 men receiving treatment for aHSIL between December 2014 and 2019. Participants were followed 6–12 monthly until 2023.

Results: 136 men underwent high resolution anoscopy (HRA) for median 5.5 years (IQR 2.9–7.2 years) after ablation of 188 HSIL lesions, of whom 27/136 had had previous HSIL ablation. 117/136 (86%) were men who have sex with men (MSM), 106/136 (78%) were living with HIV (LWH).

Initially, 122/136 (90%) men who underwent a median 1.5 (range 1–6) ablations with diode/CO2 laser became HSIL-free within median 7.2 months (IQR 5–14.4 m), developing one ASCC (0.8%) during follow-up; the other 14/136 (10%) underwent median 2 (range 1–8) ablations, never becoming HSIL-free of whom 5 (37%) developed ASCC ($P < 0.01$).

67/122 (55%) of those who had become HSIL-free developed further HSIL during follow-up, at either same or different sites, being HSIL-free for median 16 months (IQR 20m). Same site (+/− 1 octant) recurrence was 103/188 (55%) after index ablation, perianal (23/49, 47%) and anal canal (80/139, 58%), (n.s.), with IN3 vs IN2 twice as likely to recur (OR 1.9, P –0.04).

Conclusions: During surveillance for aHSIL, HSIL eradication is associated with lower progression to ASCC. Multiple ablations +/− topical treatments may be required, however HSIL-free status is achievable in 90%. In those never HSIL-free, close HRA-based surveillance is recommended to detect cancer early.

81. Management of advanced HSIL: a care pathway for complex cases

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Background: Anal HSIL (high-grade squamous intraepithelial lesions) presents a diagnostic and therapeutic challenge, particularly in advanced cases with extensive intra-anal and/or peri-anal involvement. While early detection is crucial, late-stage patients often experience delays due to fragmented referrals across multiple specialists. To address this, the establishment of specialized care centers within existing healthcare systems is emphasized to ensure streamlined and timely management of these complex cases.

Methods: Several cases of advanced HSIL with extensive disease were analyzed. Patients received individualized diagnostic and treatment plans and were referred directly to experienced HRA providers or multidisciplinary teams specializing in anal pathology. Comprehensive documentation, including photographic and histopathological analyses, was used to support systematic care. Based on these cases, a practical, adaptable algorithm for managing advanced HSIL is proposed.

Results: Case analysis highlights the impact of early referral and systematic diagnostics in identifying SISCCA or early invasive carcinoma, facilitating timely treatment. Centralizing care pathways for advanced HSIL has been shown to reduce delays, improve diagnostic accuracy, and enhance treatment outcomes.

Conclusions: A care algorithm adaptable to various healthcare systems is proposed, allowing for flexible integration into diverse regional or national contexts. Additionally, it provides a structured approach for cases where early carcinoma is clinically suspected but remains undetected in initial biopsies, ensuring appropriate follow-up and intervention. To illustrate these findings, representative cases and their management pathways will be presented. By centralizing expertise and streamlining referrals, this approach minimizes delays, optimizes diagnostics, and ensures timely treatment, ultimately improving patient outcomes while preserving quality of life.

82. Outcomes of electrocautery ablation of HSIL in HIV+ and HIV– MSM

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Background: Treatment of anal HSIL can prevent SCCA. Electrocautery represents one of the preferred treatment modalities. Data comparing outcomes of anal HSIL treatment between different populations could inform future guidelines on follow-up after ablation of precancerous lesions.

Methods: We retrospectively analyzed follow-up data from 73 MSM (52 HIV+ and 21 HIV–) after their first electrocautery ablation of histology proven anal HSIL.

Results: Table reports the main characteristics of the study population. All HIV+ participants were on effective antiretroviral treatment. Median follow-up was 24 ± 11.2 months for HIV+ participants and 18 ± 7.9 for HIV– individuals. HSIL recurrence was similar between the two groups (33% vs 33%; $P = 0.96$). Similarly, no differences were observed in months to recurrence (12 ± 5.6 vs 12 ± 6.4; $P = 0.90$) and number of treatments needed to ablate baseline HSIL (2 ± 1 vs 2 ± 0.5; $P = 0.16$). Risk factors for recurrence were HPV16 infection for HIV+ and >1 lesion at baseline for HIV–. Rate of metachronous lesions was similar between the two groups (respectively 38% vs 29%; $P = 0.42$), as well as time to onset (12 ± 5 vs 9 ± 11.7; $P = 0.88$) and number of metachronous HSIL (1 ± 0.9 vs 1 ± 0.5; $P = 0.80$). Risk factor for metachronous HSIL was the presence of a single lesion at baseline.

Conclusions: Although in all participants recurrence of HSIL and onset of metachronous lesions were frequent after electrocautery ablation, screening could have the potential to equalize risk between different populations.

Table 1.

	HIV+ (52)	HIV– (21)	*P*
Age	45 ± 9	40 ± 11	**0.02**
CD4 nadir	367 ± 233 cells/uL	NA	
Current CD4	803 ± 311 cells/uL	NA	
Current CD4/CD8	1 ± 0.49	NA	
BMI	23.9 ± 2.2	23.0 ± 2.6	0.08
Smokers	48%	29%	0.35
Gardasil uptake (catch-up)	51%	57%	0.55
HR-HPV	96% (HPV16 44%)	99% (HPV16 48%)	0.87 (0.74)
AIN2	66%	43%	0.38
AIN2+	34%	57%	0.31
>1 HSIL	63%	54%	0.21

83. Patient experiences following circumferential radiofrequency ablation as treatment for intra-anal HSIL

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Background: Circumferential radiofrequency ablation (cRFA) is a well-established treatment for oesophageal dysplasia and has recently been explored for managing intra-anal HSIL. By treating the entire squamo-columnar junction, cRFA offers a treatment approach analogous to that routinely used for cervical HSIL. This study evaluated patient-reported experiences during the first 2 weeks following cRFA.

Methods: Under light sedation and bilateral deep pudendal nerve blocks, patients with histologically confirmed, persistent, intra-anal HSIL underwent cRFA using a Barryx catheter. Symptom diaries were prospectively collected from the first 60 participants. Patients rated symptoms on a 5-point scale: 0 ("not at all"), 1 ("a little"), 2 ("a fair bit"), 3 ("quite a lot"), and 4 ("very much"). Responses were analyzed for Days 1, 7, and 14 post-treatment.

Results: The mean age of participants was 58 years (range: 37–79); 52.4% were living with HIV, and 19% were women.

- **Day 1:** Mean symptom scores for anal pain, discomfort, bleeding, and discharge were all 1, with faecal incontinence scoring 0.
- **Day 7:** Mean scores for anal pain increased to 2, while other symptoms remained stable at 1, and faecal incontinence remained 0.
- **Day 14:** Mean scores for all symptoms resolved to 0.

Conclusions: The combination of light sedation and deep pudendal nerve blocks was associated with low symptom scores on Day 1, slight increases by Day 7, and full resolution by Day 14. cRFA was a well-tolerated and acceptable treatment for intra-anal HSIL, which can be performed without the need for intra-procedural HRA.

84. Radiofrequency ablation – an effective HSIL treatment, particularly were HRA capacity is limited

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Background: HRA-directed electrocautery has a high recurrence rate (~60%). Radiofrequency ablation (RFA) delivers precise energy pulses with minimal disruption to the mucosa, does not require intra-operative HRA, and is routinely used for managing oesophageal dysplasia. This study evaluated the efficacy of RFA for persistent intra-anal HSIL.

Methods: A prospective trial enrolled 62 participants with persistent intra-anal HSIL. This report focuses on the outcomes of the first 50 who underwent circumferential RFA. Subsequent, targeted, RFA was offered to those with residual HSIL.

Results: Among the first 50 participants, 40 (80%) were male, and 28 (56%) were living with HIV. The median pre-treatment HSIL area was three octants (range: 1–7). HPV16 was detected in 34 (68%) participants, either alone or with other high-risk HPV (HRHPV) genotypes, while non-16 HRHPV genotypes were detected in 13 (26%).

Following a single circumferential RFA, 17 (34%) participants achieved complete HSIL clearance. Among those with residual disease, the median affected area decreased by 67% to 1 octant. Of the 47 HRHPV-positive participants, 6 (12.8%) achieved complete viral clearance. HSIL persistence was significantly associated with baseline HPV16 positivity ($P = 0.014$) and a higher number of affected octants ($P = 0.011$). HIV status was not associated with treatment outcomes.

Conclusions: A single RFA treatment achieved complete HSIL clearance in 34% of participants and significantly reduced disease extent in others. Long-term outcomes will be reported. RFA presents a valuable treatment option, particularly for patients with extensive HSIL or where HRA access is limited.

85. Recurrence of anal high-grade squamous intraepithelial lesions (HSIL) following treatment: a retrospective study of imiquimod, 5-fluorouracil and ablation

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Background: Early detection and treatment of anal precancer reduces incidence of anal cancer, as shown in the ANCHOR study. There are limited studies comparing topical therapy versus ablation and the recurrence rates of anal precancer. More studies evaluating HSIL recurrence rates by treatment type will help to guide dysplasia management.

Methods: A retrospective chart review to date found 34 patients with biopsy confirmed anal and/or perianal HSIL identified during initial high resolution anoscopy (HRA) between June 2021 and March 2022. Patients were either treated with imiquimod, 5-fluorouracil or ablation. We defined topical treatment as consistent use for at least 2 months. Combination therapy was topical followed by ablation. Following treatment of HSIL, surveillance HRA was performed in which any HSIL recurrence was determined.

Results: Demographics and clinical data are shown in Table 1. Two patients (5.9%) were treated topically (one imiquimod, one 5-fluorouracil), 24 (88.2%) underwent ablation, and two (5.9%) had combination therapy. Five patients were subsequently lost to follow up or moved and one still undergoing topical therapy. During HRA surveillance between 6/2021 and 1/2025 of the remaining 28 patients, 78.6% had anal HSIL recurrence, of which, 50% (1/2) after topical therapy, 79.1% (19/24) after ablation, and 100% (2/2) after combination.

Conclusions: There is a high anal HSIL recurrence rate regardless of treatment method. Studying treatment retrospectively has limitations including potential selection bias and reliance on patient report. We plan to continue the study up to the present, which will increase our numbers, and we plan to evaluate predictors of anal HSIL recurrence.

Table 1. Study cohort characteristics.

Characteristic	Overall, *N* = 34[A]	Ablation, *N* = 28[A]	Topical, *N* = 4[A]	Combo, *N* = 2[A]	*P*-value[B]
Mean age	50 (15)	51 (16)	40 (12)	62 (6)	0.2
Sex					>0.9
Female	12 (35%)	10 (36%)	1 (25%)	1 (50%)	
Male	22 (65%)	18 (64%)	3 (75%)	1 (50%)	
Men who have sex with men					>0.9
No	2 (9.1%)	2 (11%)	0 (0%)	0 (0%)	
Yes	20 (91%)	16 (89%)	3 (100%)	1 (100%)	
Unknown	12	10	1	1	
Smoking status					0.2
Current smoker	2 (5.9%)	1 (3.6%)	0 (0%)	1 (50%)	
Former smoker	6 (18%)	6 (21%)	0 (0%)	0 (0%)	
Never smoker	26 (76%)	21 (75%)	4 (100%)	1 (50%)	
HIV status					0.7
Positive	14 (41%)	12 (43%)	1 (25%)	1 (50%)	
Negative	17 (50%)	14 (50%)	2 (50%)	1 (50%)	
Untested	3 (8.8%)	2 (7.1%)	1 (25%)	0 (0%)	
Non-HIV immunosuppression	9 (26%)	6 (21%)	2 (50%)	1 (50%)	0.2
Anal HSIL location					0.5
Anal	28 (82%)	23 (82%)	4 (100%)	1 (50%)	
Anal and perianal HSIL	5 (15%)	4 (14%)	0 (0%)	1 (50%)	
Perianal HSIL	1 (2.9%)	1 (3.6%)	0 (0%)	0 (0%)	

[A]Median (IQR); *n* (%).
[B]Kruskal–Wallis rank sum test; Fisher's exact test.

86. The role of 25% of podophyllin in solid petrolatum in managing giant condyloma: a promising therapeutic approach

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Background: Giant perianal condyloma (GPC) is an uncommon condition. Traditional topical treatments are often ineffective and surgical resection has significant morbidity. 25% podophyllin in solid petrolatum (PSP) could be an useful topical therapy for external GPC. The aim of this study was to assess its effectiveness and safety.

Methods: This retrospective, single-center case series assessed the clinical outcomes of 15 patients with GPC treated with 25% PSP at a hospital in Buenos Aires between December 2015 and April 2023. Following a complete medical history and physical examination, the lesions were measured and photo-documented. Biopsies were performed to exclude malignancy; pregnancy was ruled out. 25% PSP was applied to external condyloma with patients instructed to wash it off after 4 h. Patients attended at least four weekly follow-up visits, which included an updated medical history, lesion photography, and provider-administered 25% PSP. Response rate was assessed by comparing measures and overall decrease in volume of GPC from the first and last session photos. Adverse outcomes were noted.

Results: Eleven men, three women and one transgender woman with GPC unresponsive to prior treatments were included. Mean age was 35.2 (16–68) years. Twelve were immunosuppressed. All perianal lesions were circumferential LSIL, ranging from 8 to 20 cm. Eight had concomitant genital and perianal condylomas. No systemic toxicity was observed. Eight patients developed dermatitis during treatment. A 73% reduction in lesion size of ≥75% was noted, with complete resolution in three cases.

Conclusions: 25% PSP offers an effective, well-tolerated option for GPC management.

87. Topical trichloroacetic acid vs electrocautery for the treatment of anal intraepithelial neoplasia in patients living with HIV: a multicentre randomized non-inferiority trial (TECAIN-study)

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Background: Screening for and treatment of anal intraepithelial neoplasia (AIN) are recommended for prevention of anal cancer in People living with HIV (PWH). Options for AIN treatment have rarely been evaluated in prospective randomized trials.

Methods: The TECAIN-study was a prospective, randomized, non-inferiority trial investigating the efficacy and safety of topical trichloroacetic acid (TCA, 85%) vs electrocautery (ECA) for the treatment of AIN in seven German centers. PWH with histologically confirmed AIN were recruited between 2015 and 2020. The primary endpoint (PE) was therapeutic success defined as a combination of complete clinical response evaluated by high-resolution anoscopy and histological resolution/regression of AIN 4 weeks after the end of treatment (4WFU). Secondary endpoints comprised therapeutic success 24 weeks after the end of treatment (24WFU), adverse events (AE), and Human papillomavirus (HPV) parameters at 4WFU and 24WFU.

Results: 257 PWH with AIN were enrolled and randomized: 118 patients were finally treated with TCA, 115 with ECA (intention-to-treat population). The PE was reached in 52.5% of the TCA-group and in 61.7% of the ECA-group. Histological resolution/regression was documented in 66.9% (TCA-group) and 67.0% (ECA-group) at 4WFU. While non-inferiority of TCA could not be shown at 4WFU, TCA was non-inferior to ECA at 24WFU (50.8% vs 48.7% therapeutic success). Treatment-related AEs were reported in 64.4% of the TCA- and in 65.2% of the ECA- group until 4WFU, without persistent conditions. HPV-parameters did not differ significantly between treatment groups.

Conclusions: TCA is a well-tolerated, inexpensive and simple to use treatment option for AIN in PWH.

88. Unusual biopsy findings following radiofrequency ablation for HSIL

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Background: Radiofrequency ablation (RFA) can be used to treat high-grade squamous intraepithelial lesions (HSIL) of the anal canal. When reporting post-RFA anal biopsies, we observed some displaying a subpopulation within persistent/recurrent HSIL, of large, pleomorphic squamous cells with multinucleation and bizarre shapes. Such changes, termed 'Pleomorphic HSIL', have been reported rarely in cervical biopsies.[1] This unusual morphology has not been previously described in anal biopsies or in association with RFA.

Methods: Eighty-two post-RFA biopsy episodes exhibiting persistent/recurrent HSIL were re-examined by two expert anal histopathologists for the presence or absence of features of pleomorphic HSIL, using criteria previously described in cervical literature[1].

Results: Of the 82 biopsy episodes, 9 (11%) showed multiple features of pleomorphic HSIL. All showed enlarged nuclei, multinucleation, bizarre nuclear shapes and degenerative chromatin changes. Six showed prominent nucleoli, four had mitotic activity, (including some atypical forms) and four showed apoptosis. The changes were focal (3/9) or multifocal (6/9) and localised to the superficial epithelium, involving basal (3/9), suprabasal (8/9), and superficial (2/9) layers. Although the observed nuclear characteristics were reminiscent of malignancy, the affected cells were all intraepithelial. However, in two cases there were features of possible early invasion elsewhere in the biopsy.

Conclusions: Pleomorphic HSIL has not been previously reported in the anal canal nor linked to RFA. Its presence in more than 10% of biopsies with persistent/recurrent HSIL is noteworthy and may be due to degenerative changes, or DNA damage resulting in polyploidy/aneuploidy, possibly representing premalignant change. Its prognostic significance is currently uncertain, and further investigation is necessary.

Reference

1 Stewart CJR. High-grade squamous intraepithelial lesion (HSIL) of the cervix with bizarre cytological appearances ('pleomorphic HSIL'): a review of 19 cases. *Pathology* 2017: 49(5): 465–470. doi:10.1016/j.pathol.2017.05.002