Management of the Oncologic Patient with HIV



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Conflict of Interest

- I currently have no relationships of any kind with any company whose products or services in any way relate to the practice of medicine, medical education or research.



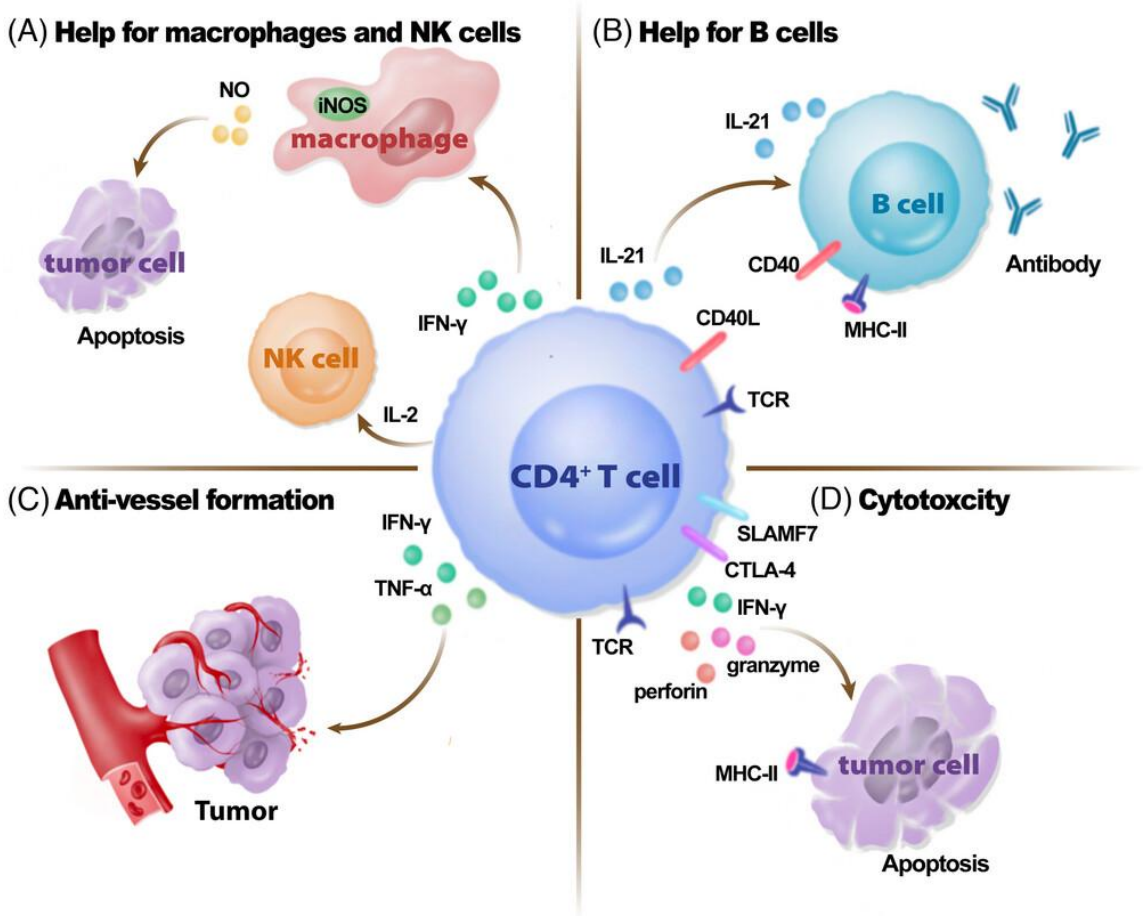
Agenda

- History of HIV
- Cancer and HIV
- The Continuum of Cancer
  - Prevention
  - Screening
  - Treatment
  - Survivorship and Toxicities
  - End of Life Care

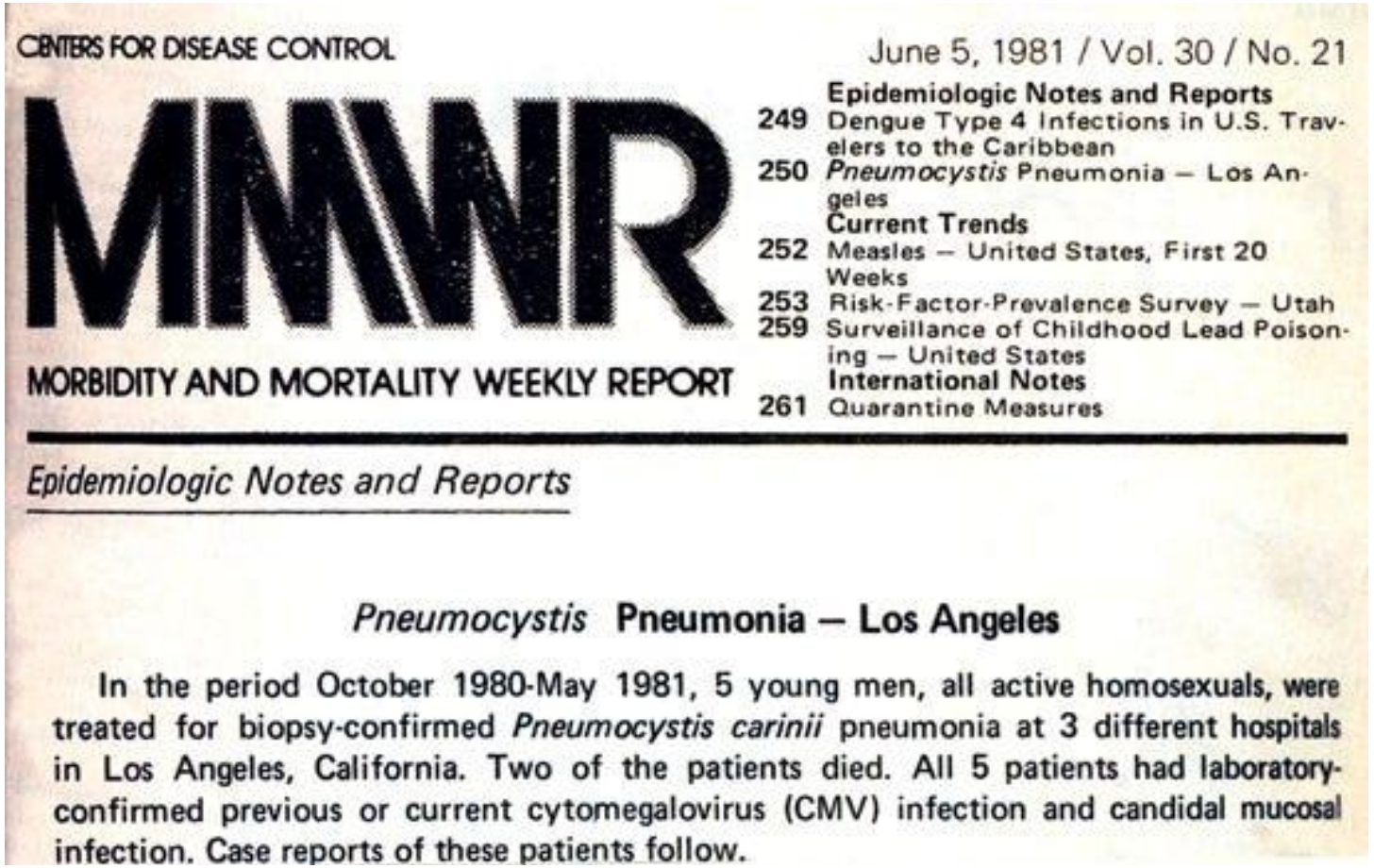


HIV (Human Immunodeficiency Virus)

- Virus that attacks and destroys the CD4 T cells.



HIV History



CENTERS FOR DISEASE CONTROL

June 5, 1981 / Vol. 30 / No. 21

MMWR

MORBIDITY AND MORTALITY WEEKLY REPORT

Epidemiologic Notes and Reports
249 Dengue Type 4 Infections in U.S. Travelers to the Caribbean
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259 Surveillance of Childhood Lead Poisoning — United States
International Notes
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Epidemiologic Notes and Reports

Pneumocystis Pneumonia — Los Angeles

In the period October 1980-May 1981, 5 young men, all active homosexuals, were treated for biopsy-confirmed *Pneumocystis carinii* pneumonia at 3 different hospitals in Los Angeles, California. Two of the patients died. All 5 patients had laboratory-confirmed previous or current cytomegalovirus (CMV) infection and candidal mucosal infection. Case reports of these patients follow.

HIV History

CENTERS FOR DISEASE CONTROL

July 3, 1981 / Vol. 30 / No. 25

MMWR

MORBIDITY AND MORTALITY WEEKLY REPORT

Epidemiologic Notes and Reports

305 Kaposi's Sarcoma and *Pneumocystis* Pneumonia Among Homosexual Men – New York City and California

308 Cutaneous Larva Migrans in American Tourists – Martinique and Mexico

314 Measles – U.S. Military

Epidemiologic Notes and Reports

Kaposi's Sarcoma and *Pneumocystis* Pneumonia Among Homosexual Men — New York City and California

During the past 30 months, Kaposi's sarcoma (KS), an uncommonly reported malignancy in the United States, has been diagnosed in 26 homosexual men (20 in New York City [NYC]; 6 in California). The 26 patients range in age from 26-51 years (mean 39 years). Eight of these patients died (7 in NYC, 1 in California)—all 8 within 24 months after KS was diagnosed. The diagnoses in all 26 cases were based on histopathological examination of skin lesions, lymph nodes, or tumor in other organs. Twenty-five of the 26 patients were white, 1 was black. Presenting complaints from 20 of these patients are shown in Table 1.

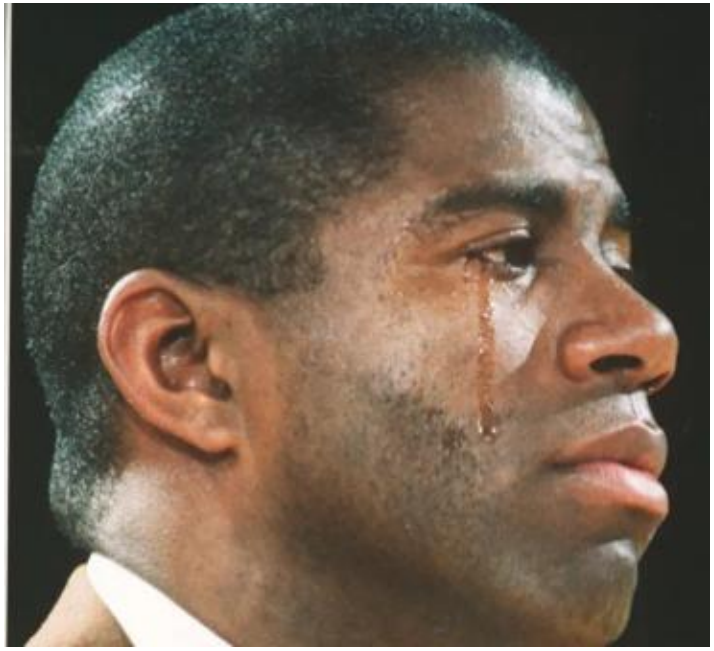
The Faces of HIV



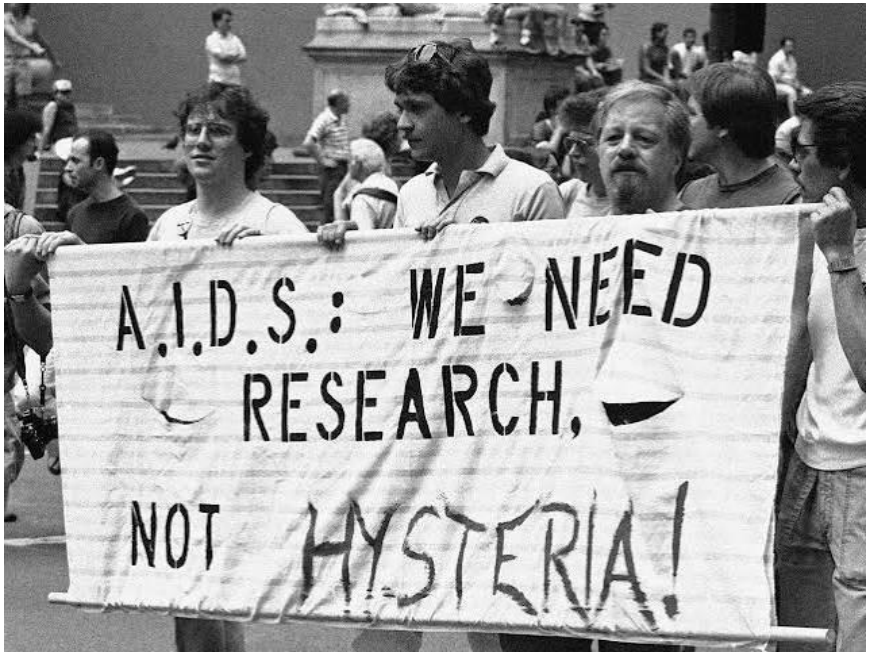
The Faces of HIV







HIV History




EL VOCERO, San Juan — Jueves 23 de Agosto de 1990

PUERTO RICO MUERE DE

SIDA

EL GOBIERNO TIENE SANGRE EN SUS MANOS

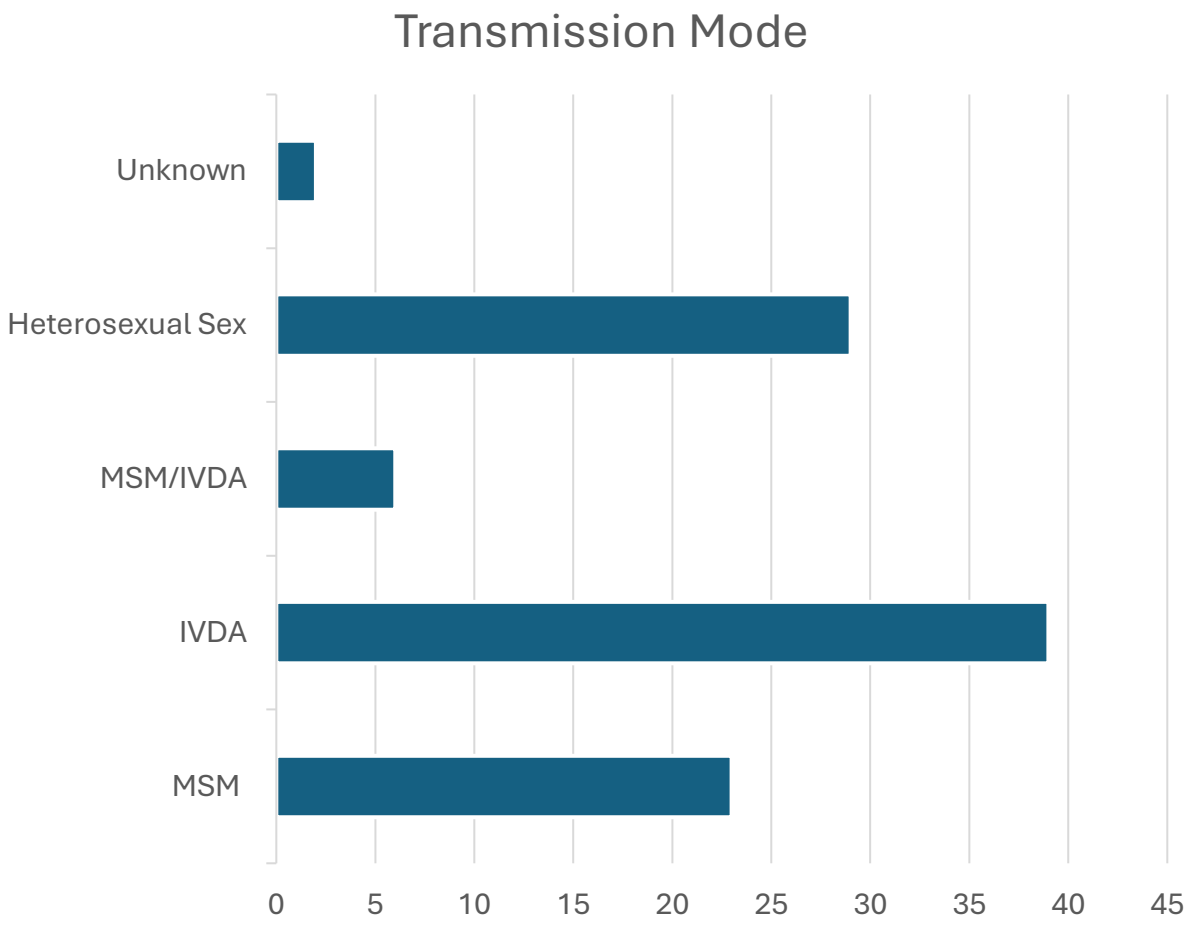
- 100,000 INFECTADOS CON EL VIRUS
- 10,000 ENFERMOS CON SIDA
- 5,000 MUERTOS

SILENCIO = MUERTE

Lucha por tu vida. Unete a la marcha de protesta. Sábado 25 de Agosto, 11:00 AM. Partiendo del Capitolio a la Fortaleza. Para mayor información llama al268-6439.

▲ ACTIVISTAS UNIDOS CONTRA EL SIDA / ACT ÚP PUERTO RICO ▲

HIV History: Puerto Rico



~16,800 PLWH

Year	New Cases
2021	452
2022	374
2023	411
2024	345
2025	355

Puerto Rico HIV/AIDS Surveillance Summary October 2026

HIV and Cancer

- Cancer remains an important cause of morbidity and mortality in people with HIV
- Most excess cancers in people with HIV are caused by co-infecting oncogenic viruses
  - About 40% of malignancies in PWH are attributable to viruses, compared with 4% in the general population.
- The type of malignancy have changed because of Anti-Retroviral Therapy (ART)
- Reports suggest disparities in age at diagnosis and decreased overall survival

Yarchoan R. et. al. *N Engl J Med* 2018; 378:1029-1041

Causes of Death in HIV patients

Cohort (Period)	AIDS	Non-AIDS Cancer	CVD	Liver Disease
ART-CC, Europe/North America (1996–2020)	↓ 49% to 16%	↑ 5% to 19%	8.30%	—
Swiss HIV Cohort (2005–2022)	↓18.5% to 3.7%	↑14.9% to 31.1%	11%	↓ 15.2% to 2.2%
Paris region (2020–2021)	10%	23%	9%	3%
D:A:D (1999–2011)	29%	15%	11%	13%

Weber MSR, Duran Ramirez JJ, Hentzien M, et al. Clin Inf Dis Jan 12;79(1):177–188
Sellier P, Alexandre-Castor G, Brun A, et al. AIDS. 2023 Nov 1;37(13):2007-2013
Smith CJ, Ryom L, Weber R, et al Lancet. Jul 19;384(9939):241-8 2014.

HIV and Cancer

"AIDS Defining Cancers"

- Kaposi sarcoma
- Non-Hodgkin lymphoma
  - DLBCL
  - Burkitt lymphoma
  - Primary CNS lymphoma
  - Primary effusion lymphoma
  - Plasmablastic lymphoma
- Cervical cancer

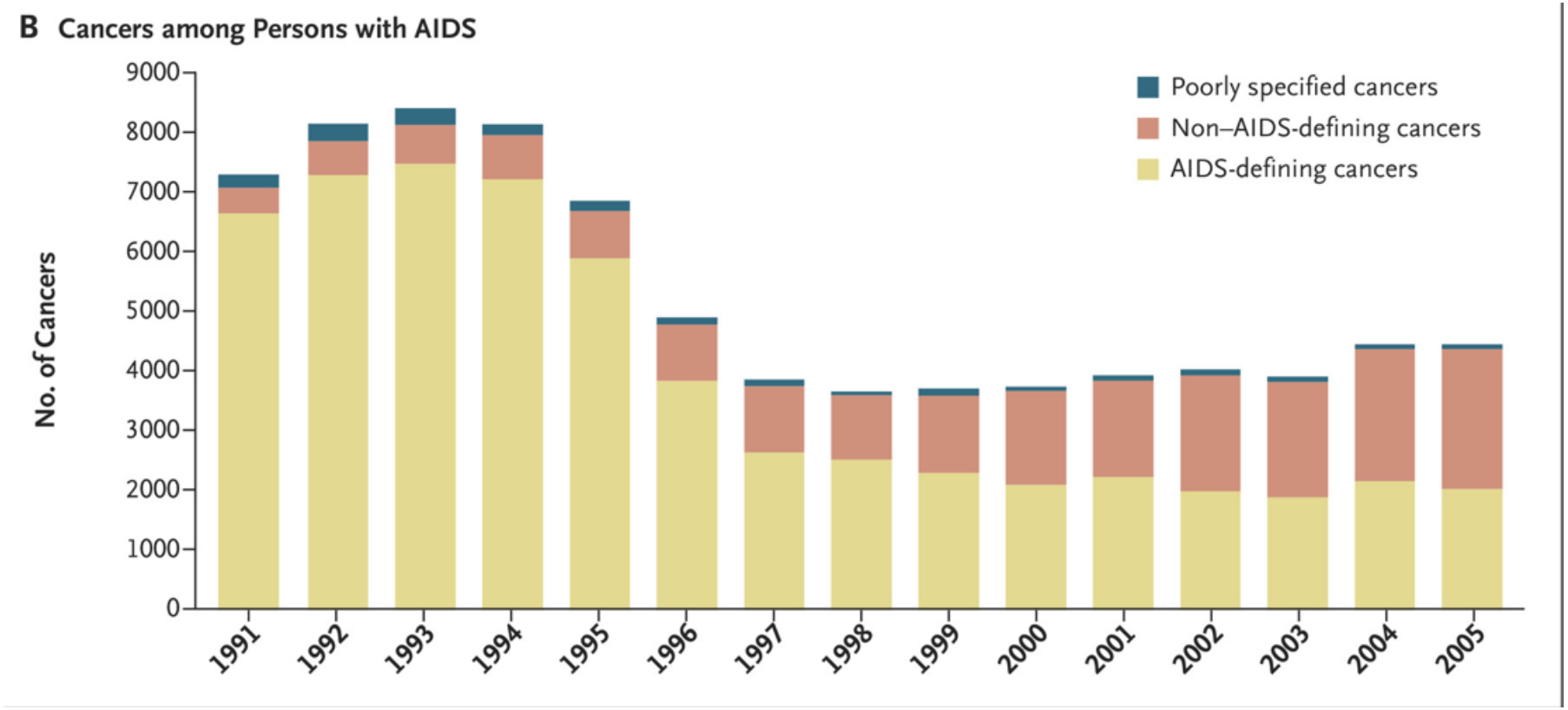
"Non-AIDS Defining Cancers"

- Anal cancer
- Lung cancer
- Liver cancer (HCC)
- Hodgkin lymphoma
- Others
  - Oral cavity/pharyngeal, laryngeal
  - Vulvar
  - Penile
  - Conjunctival cancers

HIV and Cancer

Virus	Cancers in PWH
KSHV/HHV-8	Kaposi sarcoma Primary effusion lymphoma KSHV-associated multicentric Castleman disease KSHV+ DLBCL NOS
EBV	Primary CNS lymphoma Hodgkin lymphoma Burkitt lymphoma Plasmablastic lymphoma Primary Effusion Lymphoma
High-risk HPV (16, 18, others)	Cervical, anal, oropharyngeal, vulvar, vaginal, penile; conjunctival SCC in Africa
HBV / HCV	Hepatocellular carcinoma

HIV and Cancer



Yarchoan R. et. al. *N Engl J Med* 2018; 378:1029-1041

Cancer	Observed in HIV-Infected Individuals		Observed in General Population	General Population After Weighting[a]	
	Cases	Median Age, y	Median Age, y	Median Age, y	*P* Value
Lung	644	54	68	58	<.0001
Prostate	504	58	66	59	.43
Anus	291	47	57	51	<.0001
Liver	226	54	62	54	.50
Oral cavity and pharynx	173	51	60	53	.04
Hodgkin lymphoma	171	44	39	45	.98
Colon	111	55	67	56	.55
Kidney	109	52	62	54	.0003
Larynx	86	53	63	56	.09
Melanoma (whites only)	77	49	56	51	.18
Breast	56	48	58	47	.27
Pancreas	55	53.5	67	57	.14
Myeloma	49	52	66	56	.008

Shiels MS. et. al. *Clin Infect Dis*. 2017 Feb 15; 64(4): 468–475.

Cancer and HIV in Puerto Rico

Tabla 1. Principales tipos de cáncer en la **población general** de Puerto Rico, 1987-2012

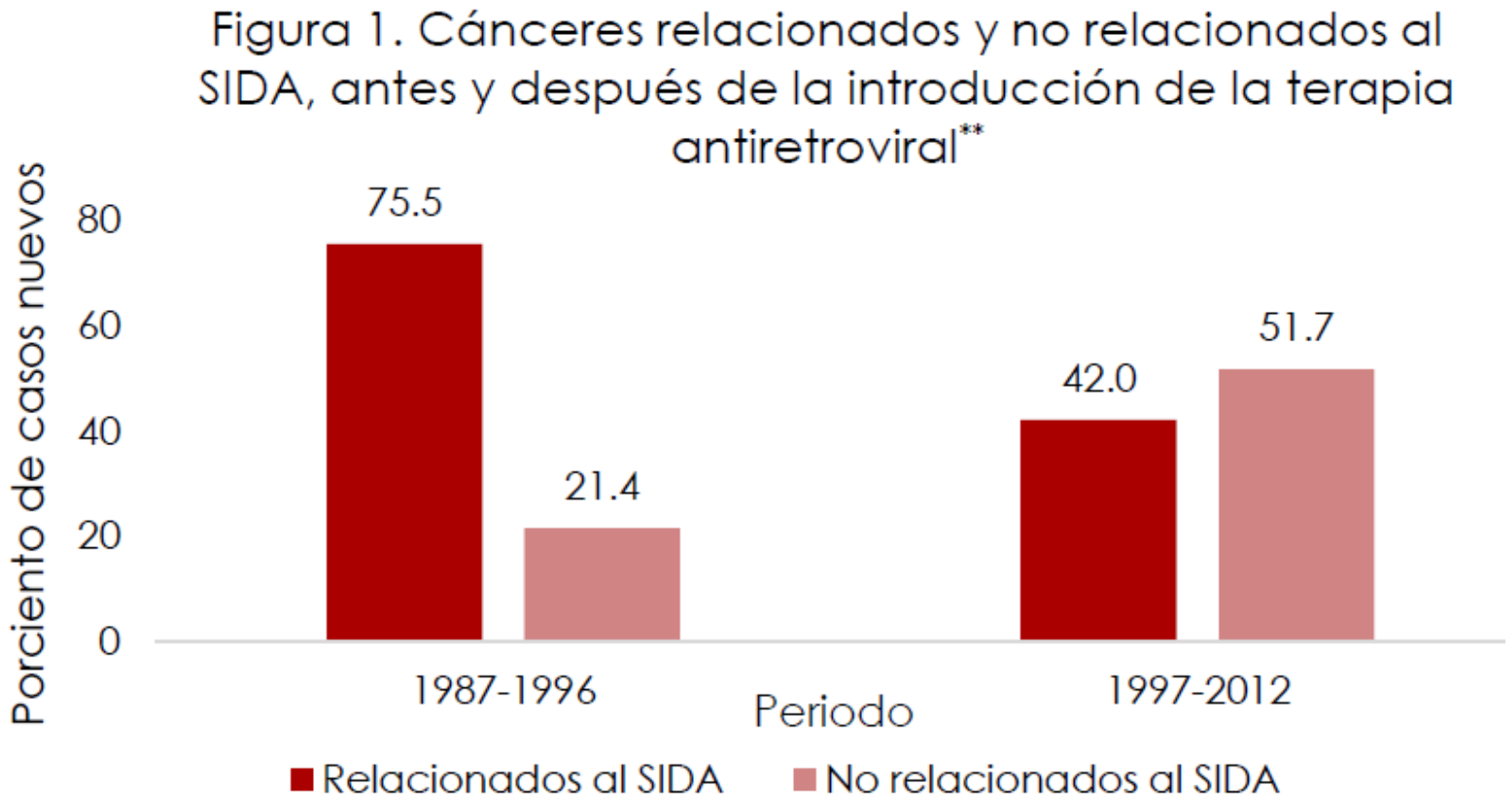
(N= 156,666)	%	(N=124,498)	%
Próstata	36.9	Mama	29.9
Colon y recto	12.0	Colon y recto	12.9
Pulmón y bronquios	7.0	Cuerpo del útero, NOS	6.6
Cavidad oral y faringe	5.1	Tiroides	5.3
Vejiga urinaria	4.2	Pulmón y bronquios	4.4
Estómago	4.1	Cérvix	4.4
Linfoma no - Hodgkin	3.4	Linfoma no - Hodgkin	3.8
Hígado y ducto biliar	2.7	Estómago	3.2
Leucemia	2.6	Ovario	2.9
Esófago	2.4	Leucemia	2.5
Otros sitios	19.6	Otros sitios	24.1

Tabla 2. Principales tipos de cáncer en las **personas con VIH/SIDA** en Puerto Rico, 1987-2012*

(N=2,068)	%	(N=551)	%
Sarcoma de Kaposi	31.5	Linfoma no - Hodgkin	25.6
Linfoma no - Hodgkin	23.3	Cérvix	21.2
Próstata	5.9	Mama	11.8
Pulmón y bronquios	4.5	Sarcoma de Kaposi	6.9
Colon y recto	3.7	Colon y recto	2.9
Hígado y ducto biliar	3.4	Pulmón y bronquios	2.7
Cavidad oral y faringe	3.2	Linfoma Hodgkin	2.4
Linfoma Hodgkin	3.2	Cuerpo del útero, NOS	2.2
Ano	2.7	Cerebro y sistema nervioso central	1.8
Mieloma	1.4	Cavidad oral y faringe	1.5
Otros sitios	17.2	Otros sitios	21.0

Zayas-Martínez LM et. al. (2017) Cáncer en Personas con VIH: Puerto Rico, 1987-2012

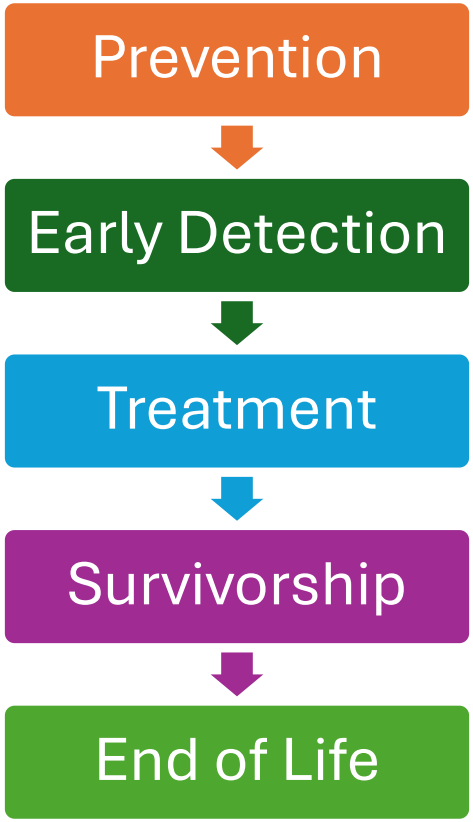
Cancer and HIV in Puerto Rico



Zayas-Martínez LM et. al. (2017) Cáncer en Personas con VIH: Puerto Rico, 1987-2012

Cancer Care Continuum

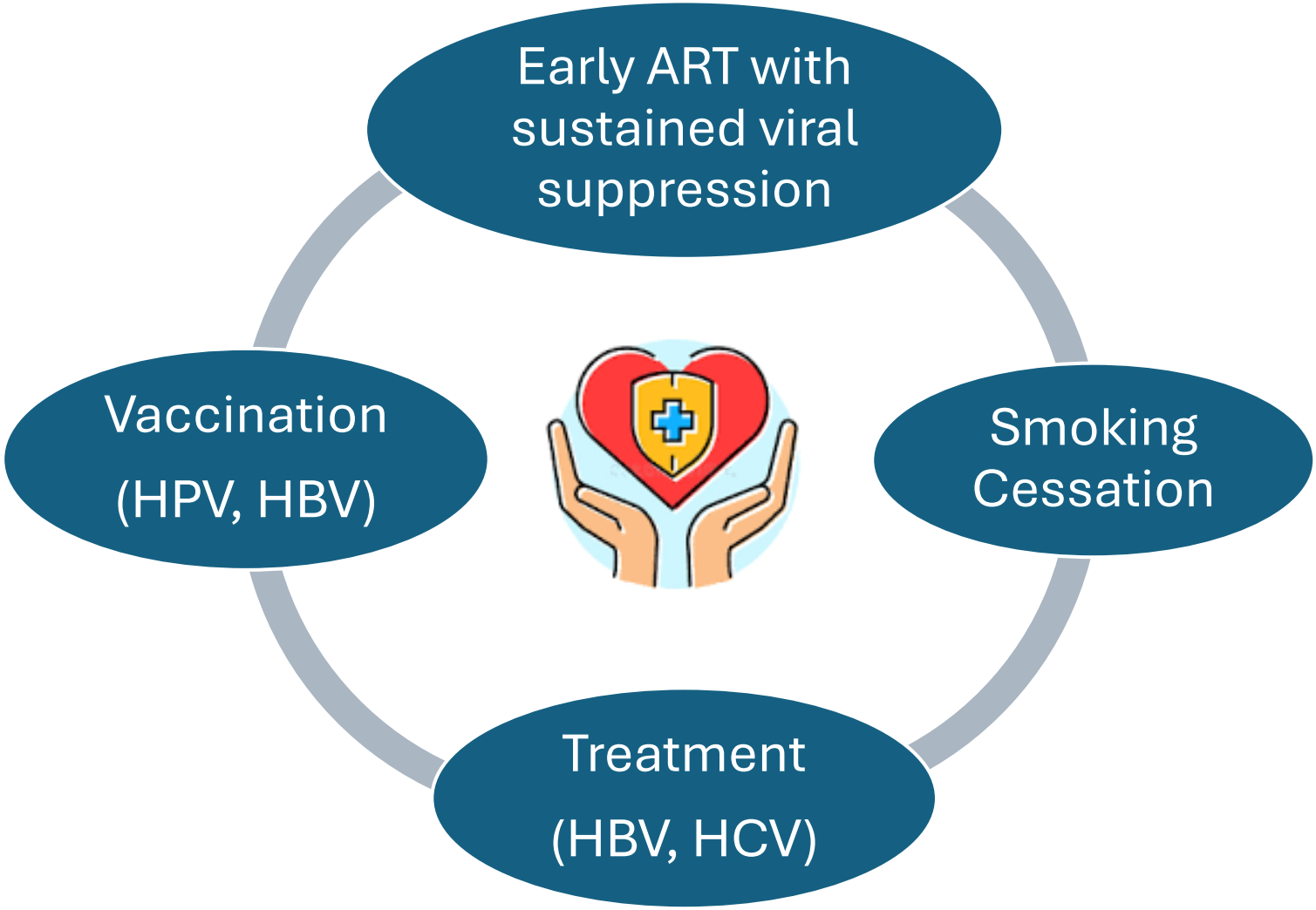
- Framework that describes the full lifecycle of cancer-related health and medical activities.



Cancer Prevention in HIV



Cancer Prevention in HIV



Cancer Prevention in HIV

- ART and viral suppression
  - Most HIV-associated cancers are driven by viruses and immune suppression.
  - Early diagnosis and ART are the most important preventive steps!
- Smoking cessation
  - Lung cancer risk is 2–5 times higher in PWH
  - Ask about tobacco use at every visit !
  - Treatment
    - Behavioral Support
    - Pharmacotherapy
      - Nicotine Replacement Therapy
      - Varenicline (Chantix)
      - Bupropion (Wellbutrin)
      - Nortriptyline (Pamelor)

HPV Vaccines

	Cervarix (Bivalent)	Gardasil (Quadrivalent)	Gardasil-9 (Nonavalent)
High Risk HPV	16, 18	16, 18	16, 18, 31, 33, 45, 52, 58
Low Risk HPV		6, 11	6, 11







Cancer Prevention in HIV

- HPV vaccination
  - 3-dose series (0, 1–2, 6 months) for all PWH
  - Catch-up vaccination for ages 13–26 years
  - Shared decision-making for ages 27–45 years
    - Younger patients
    - Those not in a long-term mutually monogamous relationship
    - Those with new or multiple partners
    - Those with recently diagnosed sexually transmitted diseases

Cancer Prevention in HIV

- HPV vaccination
  - Consider re-vaccination with the 9-valent vaccine after a bivalent or quadrivalent
  - Timing of Vaccination
    - Seroconversion is lower with CD4 ≤200/uL



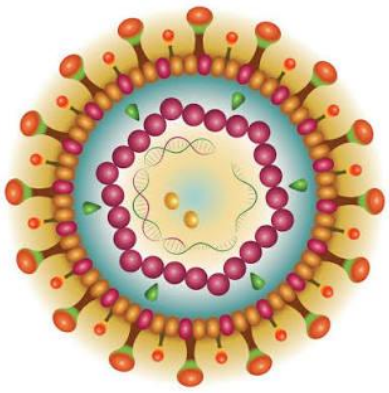
Cancer Prevention in HIV

- Test for HBV!

	No immunity & no infection	Immune to hepatitis B (vaccinated)	Immune to hepatitis B (resolved prior infection)	Current hepatitis B infection
HBsAg	-	-	-	+
anti-HBc	-	-	+	+
anti-HBs	-	+	+	-

Cancer Prevention in HIV

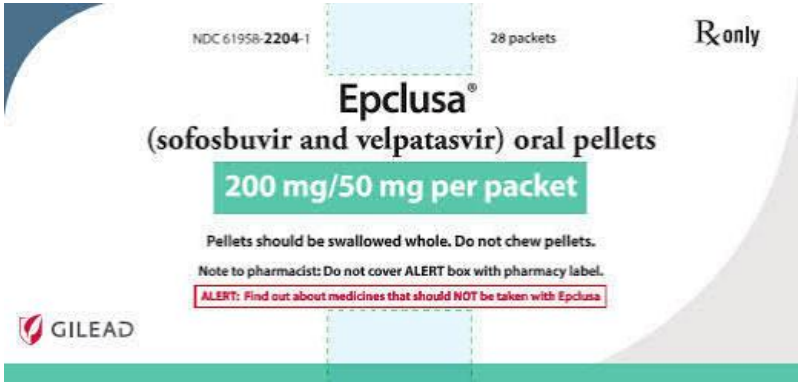
- HBV Vaccination
  - Engerix-B or Recombivax HBE
    - 3 doses (0, 1-2, 6 months)
- HBV Treatment
  - Tenofovir plus Emtricitabine or Lamivudine
  - Entecavir



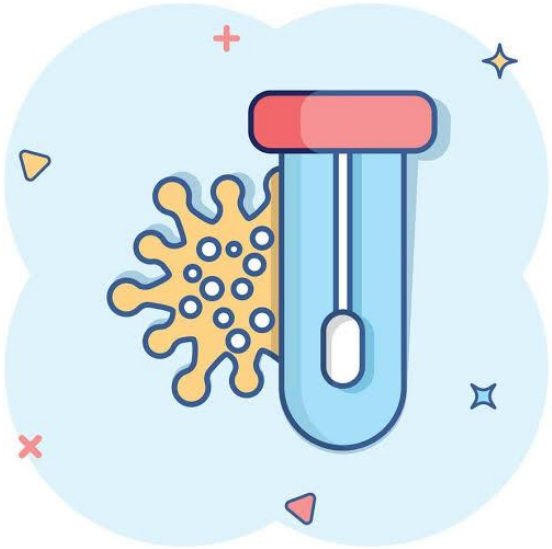
Cancer Prevention in HIV

- Hepatitis C
  - There is no vaccine against Hepatitis C
  - Test for Treatment
    - Glecaprevir/Pibrentasvir
    - Sofosbuvir/Velpatasvir
    - ART should never be interrupted….but must watch for interactions!





Cancer Screening in HIV



Cancer Screening in HIV

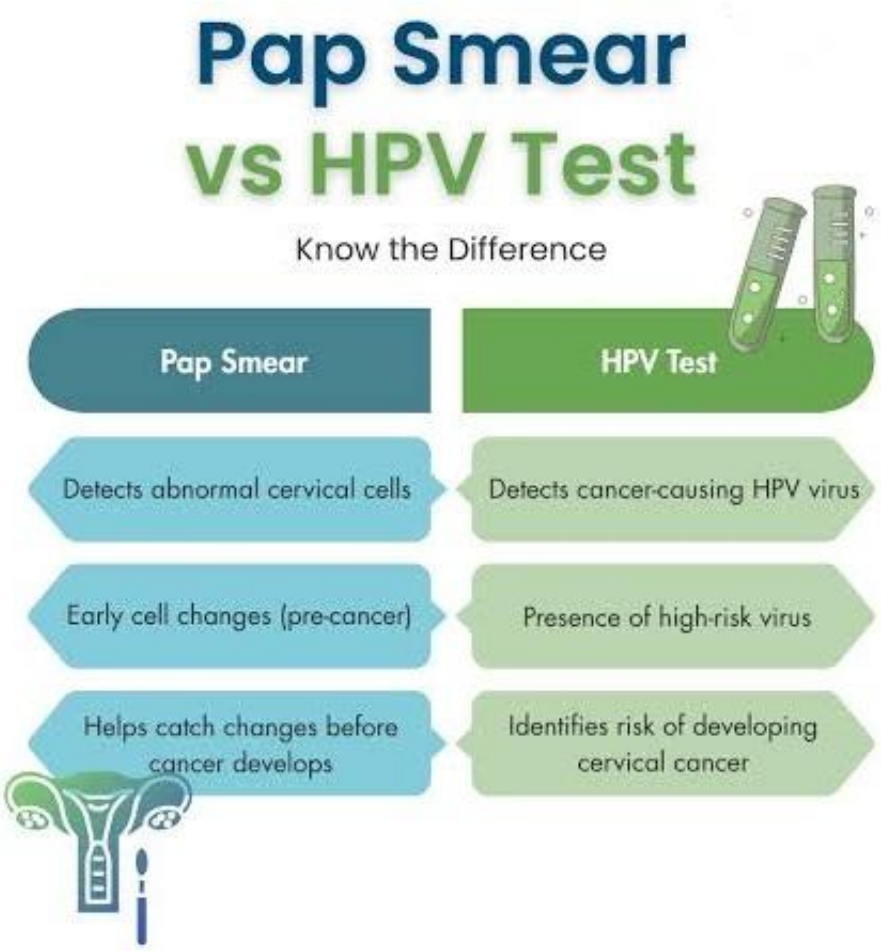
- Cancer screening in PWH differs from the general population in cervical and anal cancer
  - Cervical cancer screening schema is different for PWH patients
  - Anal cancer is not routinely screen in general population
- Screening for hepatocellular carcinoma, breast, colon, prostate, and lung cancer follows the same criteria used for everyone else.

Cancer Screening

Cancer	Who/When to Screen	Modality/Interval
Liver	Cirrhosis Chronic HBV/HCV F3/F4 fibrosis per Fibroscan	Ultrasound ± AFP every 6 months
Lung	Age 50–80, ≥20 pack-year, current or former smoker that quit <15 yr	Annual low-dose chest CT scan
Breast	Female at 40 yrs Hereditary Cancer Syndromes at 25 yrs	Mammography Breast Profile
Colon	Age 45–75 average risk	Stool-based Colonoscopy
Prostate	Shared decision-making, age 50–69	PSA ± DRE

Cervical Cancer Screening

- Tools for Cervical Cancer Screening



Cervical Cancer Screening

Age	HIV Negative	HIV Positive
21-29 yrs	• Pap Smear every 3 years	• Annual Pap smear x 3 years; if negative can continue every 3 years
30-65 yrs	• Pap Smear every 5 years • Cotesting every 5 years • HPV Testing every 5 years	• Annual Pap smear x 3 years; if negative can continue every 3 years • Cotesting every 3 years
> 65 yrs	• Stop Screening	• Continue Screening

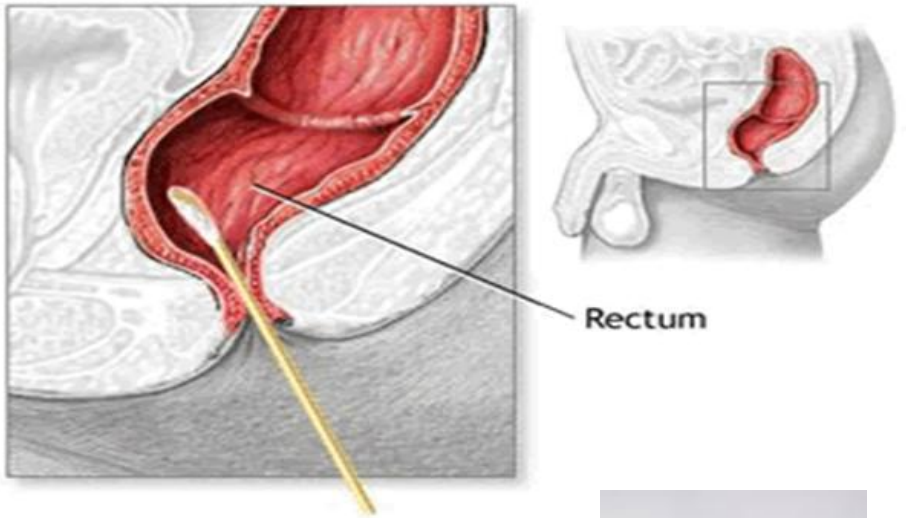


Anal Cancer Screening

- Screening Tools
  - Cytology +/- HPV testing
  - DRE (Digital Rectal Examination)
  - HRA (High Resolution Anoscopy +/- biopsy)
- Who to screen?
  - MSM & transgender women with HIV ≥35 years
  - All other PWH ≥45 years

Anal Cytology and HPV Testing

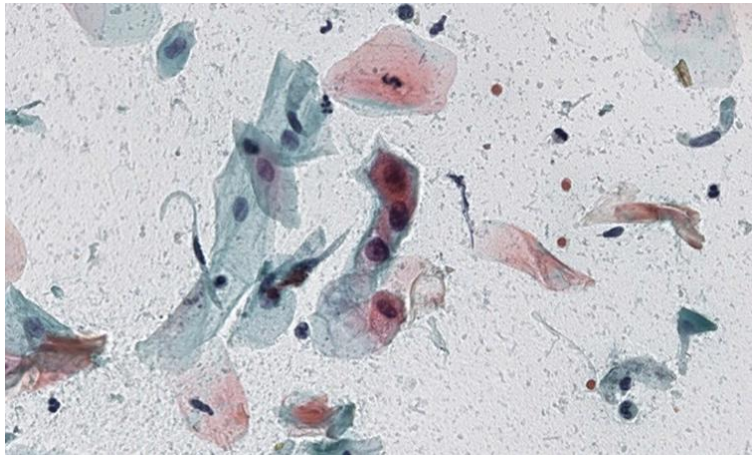








Anal Cytology



ASCUS
Atypical squamous cells of undetermined significance

LGSIL

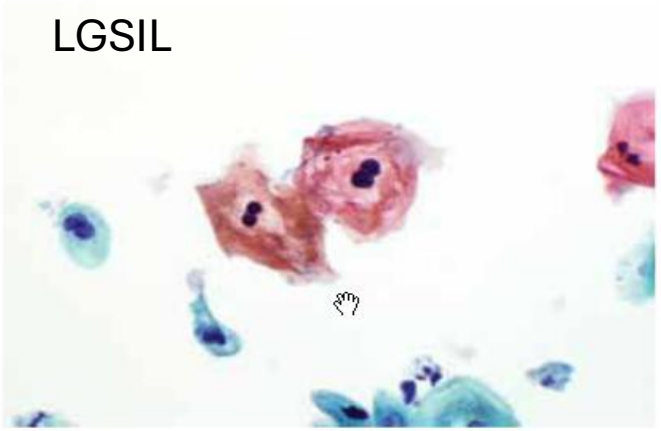


FIGURE 17.7. LSIL on anal cytology. Binucleate squamous cells with HPV-cytopathic effect or koilocytosis are present (Anal ThinPrep®, high magnification).

HGSIL

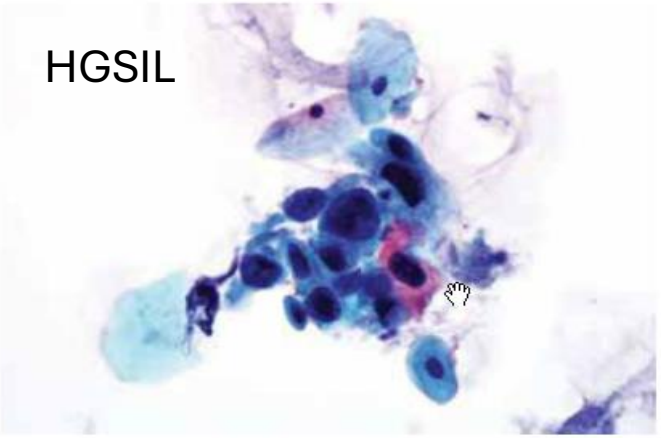
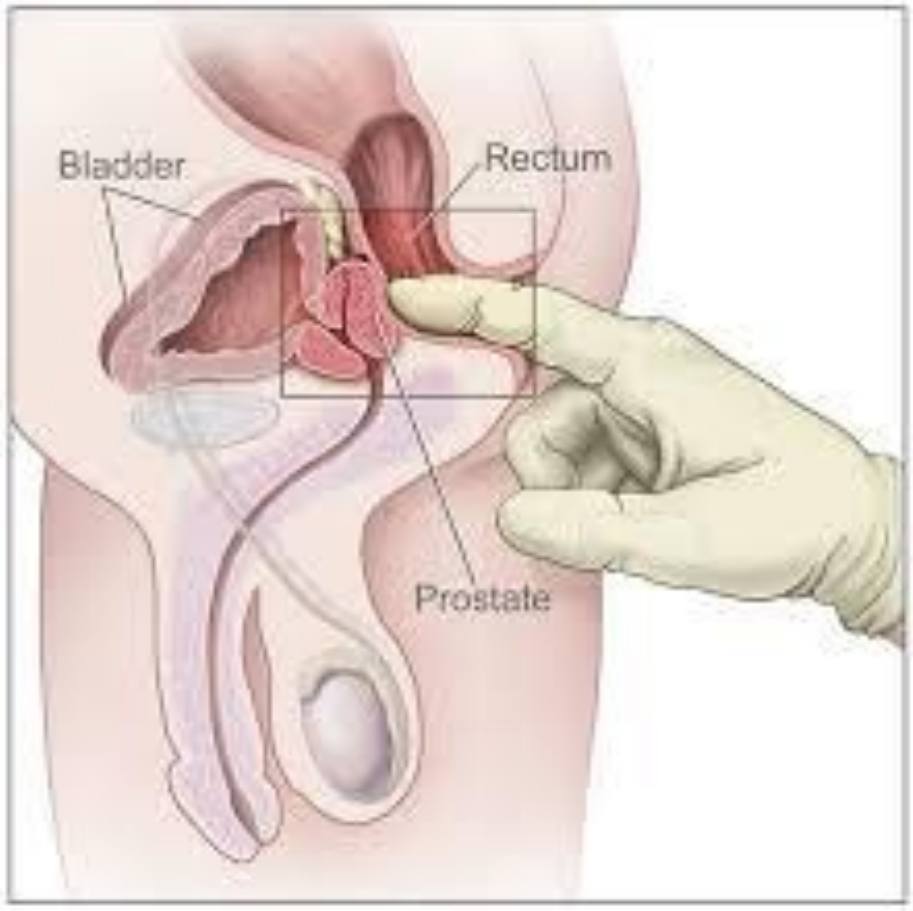


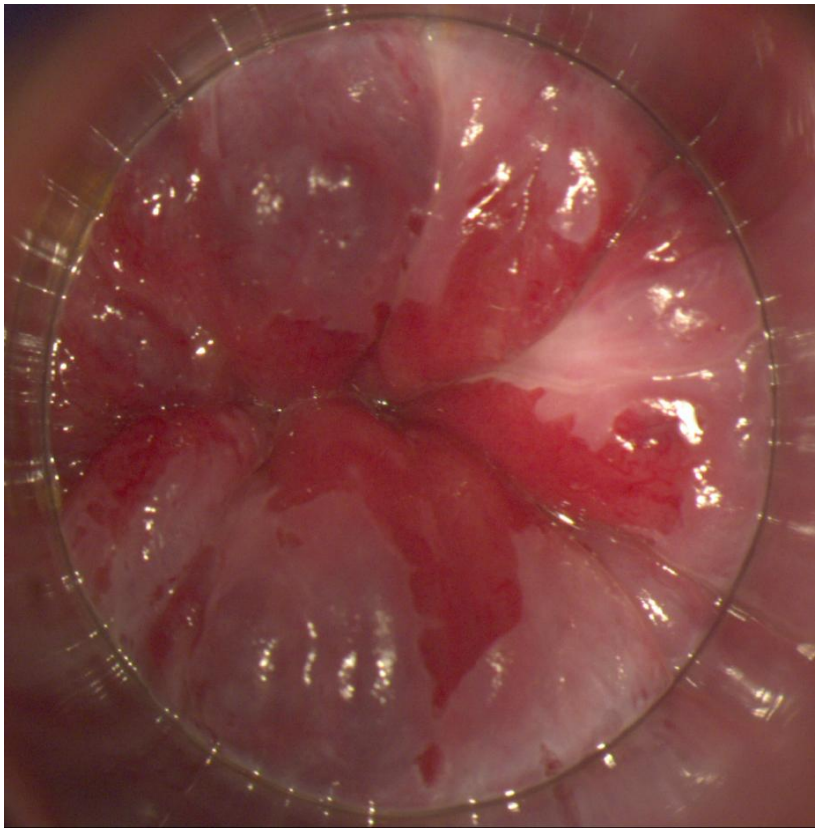
FIGURE 17.8. HSIL on anal cytology. Note the cells with enlarged, hyperchromatic nuclei and scant, dense cytoplasm characteristic of HSIL arising in immature squamous metaplasia of the AnTZ (Anal ThinPrep®, high magnification).

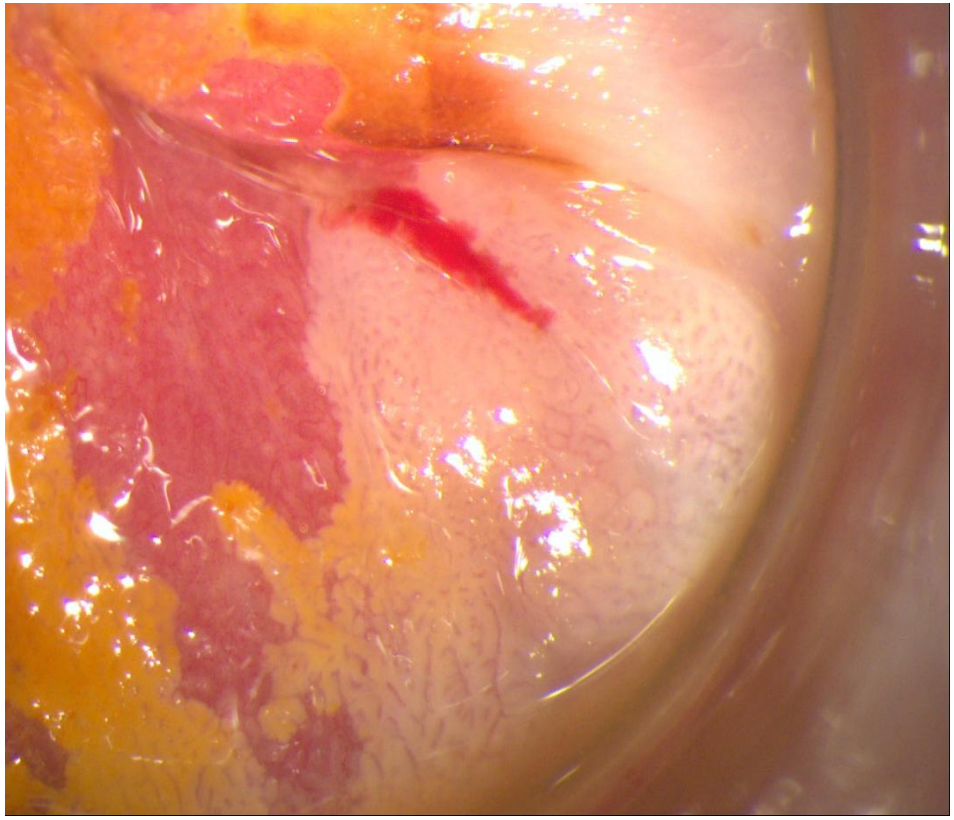
Reproduced from TM Darragh, JM Berry, N Jay, JM Palefsky. "The Anal Canal and Perianus: HPV-Related Disease". Modern Colposcopy, 3rd Ed. Lippincott Williams and Wilkins. 2012. ASCCP.

Digital Rectal Examination

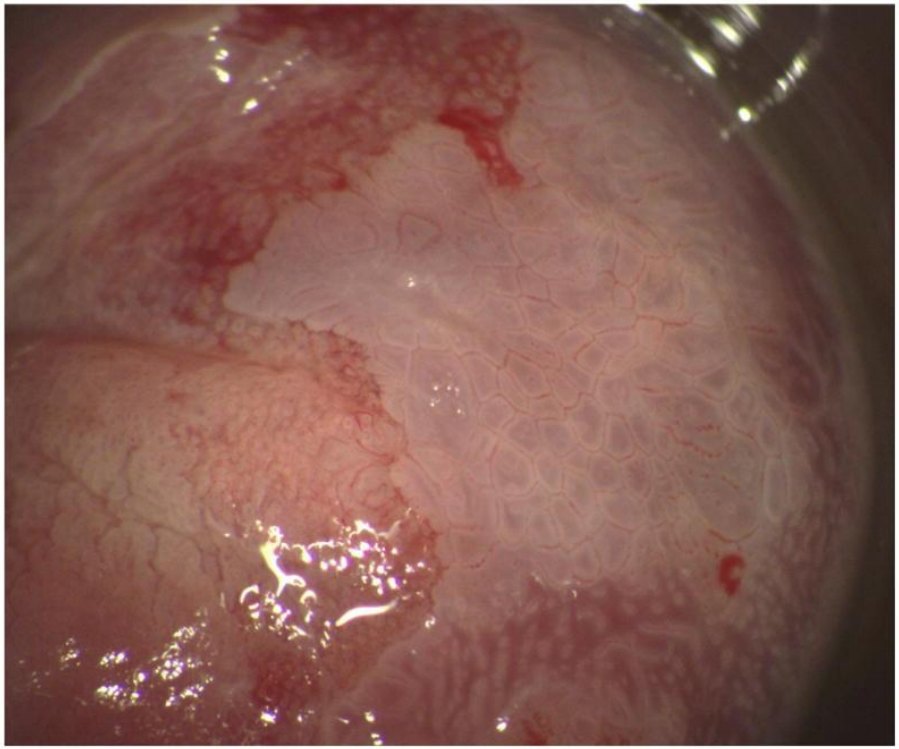


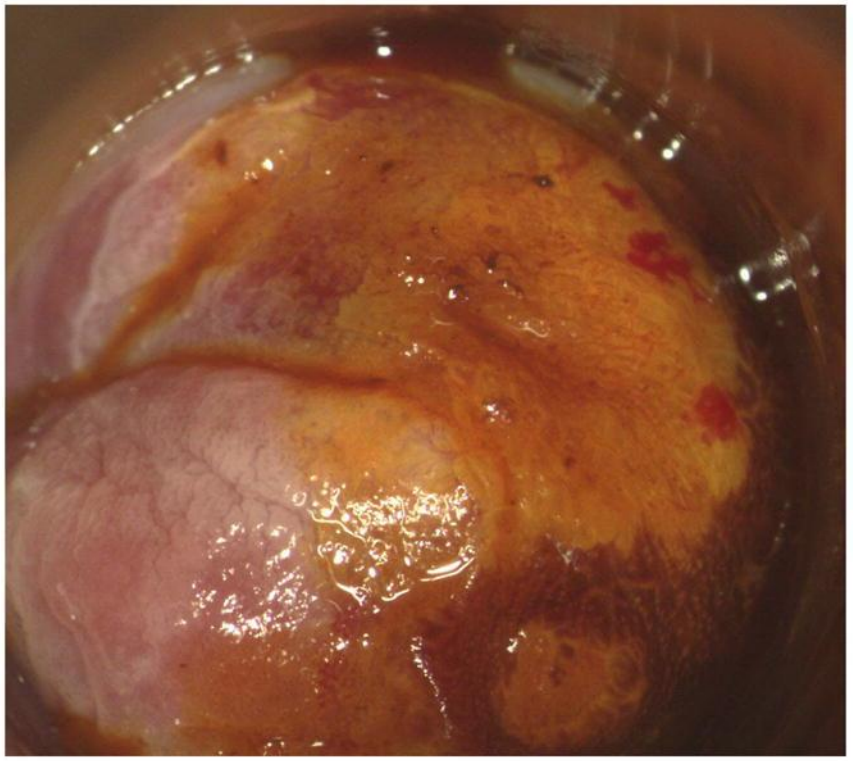
High Resolution Anoscopy: Acetic Acid



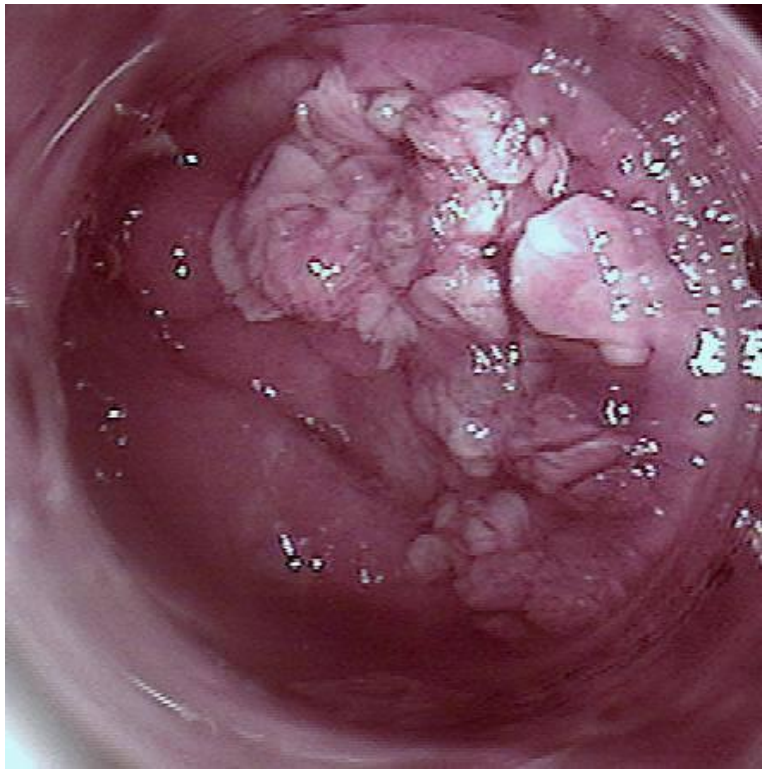


High Resolution Anoscopy
Lugol Staining





Anal Condyloma

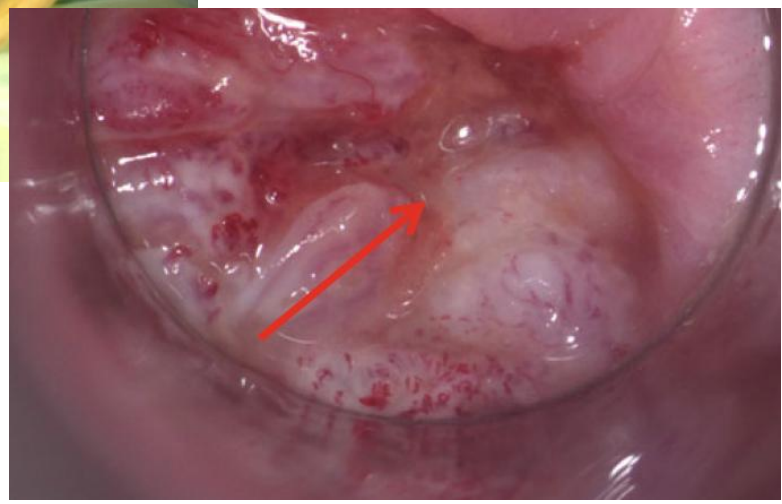




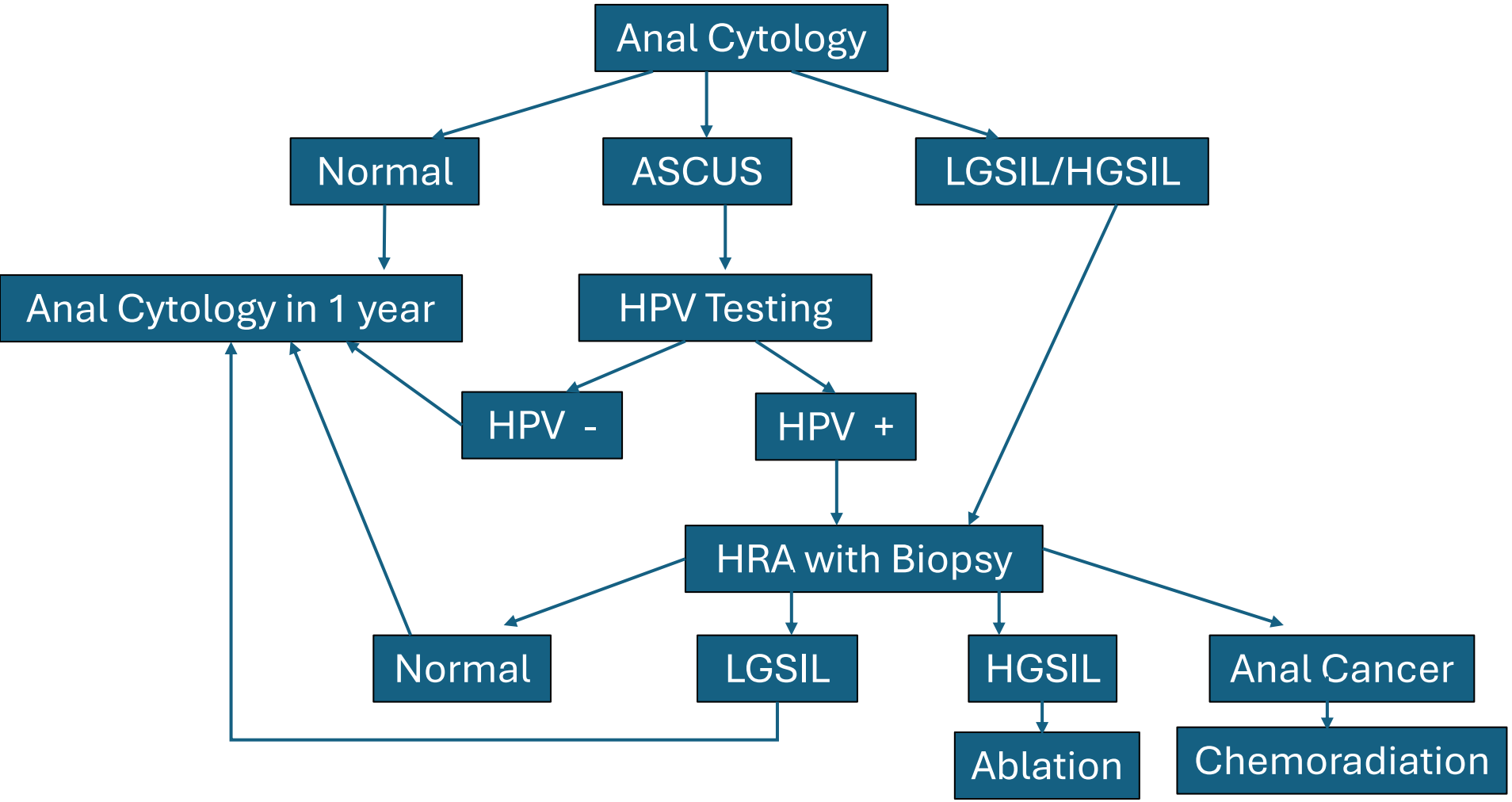
Anal Cancer







Anal Cancer Screening



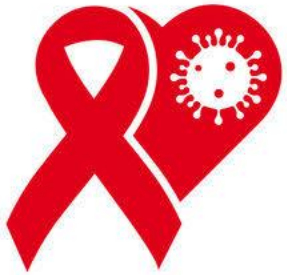
Vohra, P et. al. Journal Amer Soc Cytopath: Vol 13 (2)122-140 (2024)

Cancer Treatment in HIV



Treatment of Cancer in PWH

- People with HIV (PWH) should receive the same standard, full-dose cancer treatment as the general population, with concurrent antiretroviral therapy (ART) continued throughout, co-managed by an oncologist and HIV specialist.



NCCN Cancer in People with HIV, v1.2027

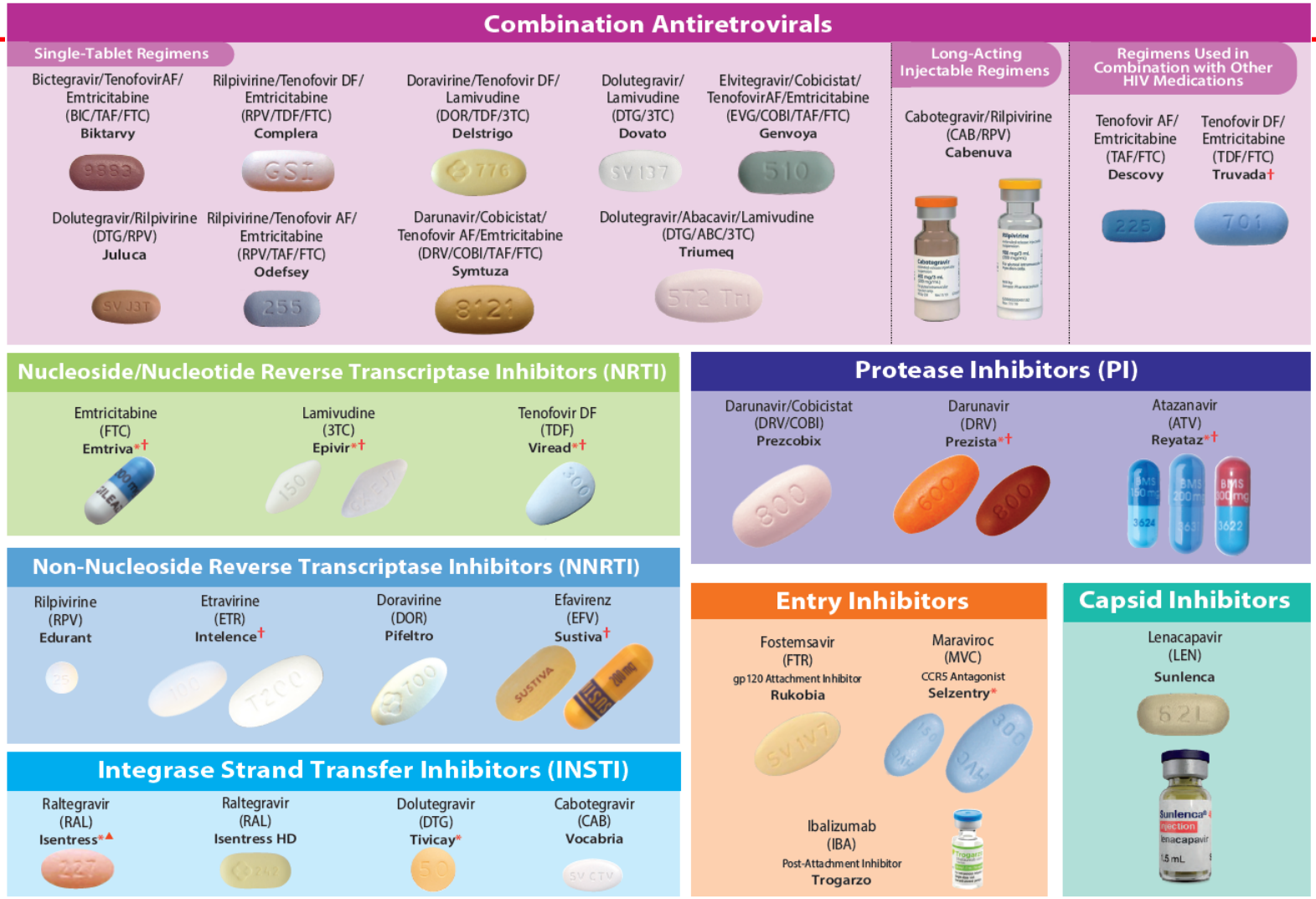
Treatment of Cancer in PWH

- Start or continue ART, and don't interrupt it!
- Don't delay cancer treatment for HIV workup, ART initiation, incomplete viral suppression, or CD4 recovery.
  - Infectious prophylaxis
  - Consider use of G-CSF
- Test for hepatitis B
  - HBV co-infection needs treatment, ideally with a tenofovir-containing ART regimen

Treatment of Cancer in PWH

- Watch for lookalikes!
  - PET-avid nodes, lung nodules, and brain lesions may be infectious (TB, fungal infection, toxoplasmosis) or a second cancer such as lymphoma.
  - Biopsy suspicious nodes, and culture lung biopsies for bacteria, fungi, and mycobacteria
- Assess poor performance status carefully
  - It may come from HIV rather than the cancer, and ART may improve it.

Treatment of Cancer in PWH



Treatment of Cancer in PWH: Drug Interactions

- Combination ART that includes Ritonavir of Cobicistat
  - Increase toxicity of vincristine, taxanes, etoposide, alkylating agents (Cyclophosphamide), TKIs, Ibrutinib, mTOR inhibitors (Everolimus), proteasome inhibitors (Bortezomib) and DOAC (Eliquis)
- Combination ART that includes Efavirenz, Nevirapine or Etravirine can lower the efficacy of chemotherapy and targeted agents.
- Overlapping toxicities:
  - Zidovudine is contraindicated with myelosuppressive therapy.
  - Tenofovir disoproxil fumarate adds nephrotoxicity with platinum agents and ifosfamide
  - Atazanavir and rilpivirine add QT prolongation with TKIs, ADT and anthracyclines

Treatment of Cancer in PWH: Drug Interactions

- Medication to treat/prevent opportunistic infections
  - Rifamycins, Clarithromycin, azoles, and TMP-SMX with methotrexate
- What to do if a DDI exists?
  - Switch the antiretroviral
  - Choose a different cancer regimen
- Mucositis/Dysphagia
  - Use liquid, crushable, or injectable ART

Treatment of Cancer in PWH: Immunotherapy

- Immune checkpoint inhibitors (ICI) are generally safe and effective in PWH
  - Nivolumab has been found to be safe with CD4 counts as low as 100/μL on ART with suppressed viral load.
- Patients with KSHV infection
  - ICI may trigger KICS (Kaposi sarcoma herpes virus–associated inflammatory cytokine syndrome) or multicentric Castleman disease.
- TB and mycobacterial flare
  - Evaluate for opportunistic infections before starting a checkpoint inhibitor.

Survivorship Care in PWH and Cancer



Survivorship Care in PWH and Cancer

- HIV control
  - Continue ART indefinitely and keep viral load suppressed.
  - Re-optimize ART after treatment ends.
- Survivorship Care Plan
  - Treatment summary, late-effect risks, and the surveillance schedule.

Survivorship Care in PWH and Cancer

- Immune recovery and prophylaxis
  - CD4 recovery after cancer is slow and varies by cancer type.

CD4 < 200/uL (%)			
Time Point	6 m	12 m	18 m
NHL	40		
Anal	30		
Lung		17	
Prostate			7

- OI Prophylaxis
  - Continue three months after CD4 > 200/uL

Survivorship Care in PWH and Cancer

- Resume screening of breast, colon, prostate, lung, cervix and anal cancer per guidelines.
- Risk Reduction
  - Smoking cessation
  - Limit alcohol intake
  - HPV and HBV vaccination



Survivorship Care in PWH and Cancer

- Cardiovascular health
  - Statins for PWH aged ≥40, regardless of lipids or calculated risk, unless contraindicated
  - Choose statins with ART interactions in mind
- Cardio-Oncology Evaluation
  - Survivors who had anthracyclines, chest or mediastinal radiation (e.g., Hodgkin lymphoma) or trastuzumab
- Polypharmacy in aging survivors can prolong the QT interval
  - Review ART, antiemetics, psychotropics, and TKIs together.

Survivorship Care in PWH and Cancer

- Bone health
  - DEXA for postmenopausal women and men aged ≥50
  - Consider DEXA earlier in survivors exposed to ADT, aromatase inhibitors, long-term steroids, early menopause from chemotherapy, or transplant.
    - HIV itself increases fracture risk 1.5–2.0-fold.
- Kidney
  - Monitor eGFR and urine protein in patients who had platinum, ifosfamide, or nephrectomy.

Survivorship Care in PWH and Cancer

- Neurocognitive
  - HIV-associated neurocognitive disorder can overlap with chemotherapy- or radiation-related cognitive impairment.
- Psychosocial
  - Screen at least yearly for depression, anxiety and substance use.
  - Ask about fertility and sexual health and refer as needed.

End of Life Care in PWH with Cancer



End of Life Care in PWH: Goals of Care

- Medications
  - Continue ART and or OI prophylaxis?
    - Can the patient swallow?
    - Does ART impair quality of life?
    - Avoid ART interactions with opioids and sedatives
- Advance directives and surrogates
  - Living wills/Power of attorney
  - Advance directives
  - Long-term care planning
- Disclosure and confidentiality
  - Concealing HIV status from family is a major issue at the end of life

Key Points

- Health care providers must be knowledgeable in the treatment of two diseases and its complications.
- Psychological support is needed to support through cancer therapy and through stigma.
- It takes a village!
  - Management of HIV patients with cancer is a teamwork!





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