

An Update on Screening for Non-AIDS-Defining Cancers

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Financial Relationships With Ineligible Companies (Formerly Described as Commercial Interests by the ACCME) Within the Last 2 Years

Dr Wilkin has received grants paid to his institution from Merck & Co, Inc., and ViiV Healthcare. He has served as a consultant to Merck & Co, Inc. (Updated 10/04/21)

Learning Objectives

After attending this presentation, learners will be able to:

- Describe overall trends in non-AIDS-defining cancers for people with HIV

- List non-AIDS-defining cancers with increased incidence in people with HIV

- Implement appropriate screening for non-AIDS-defining cancers for people with HIV

Cancer has been linked to HIV since the beginning of the epidemic in the U.S.

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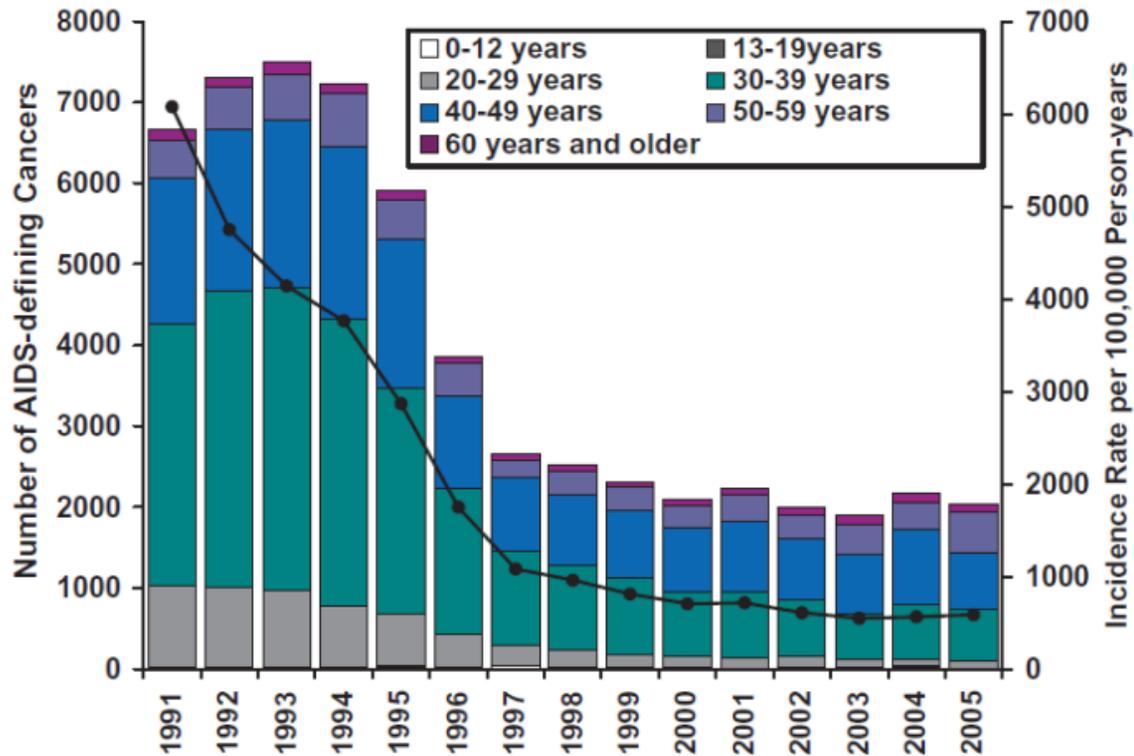
MORBIDITY AND MORTALITY WEEKLY REPORT

Epidemiologic Notes and Reports

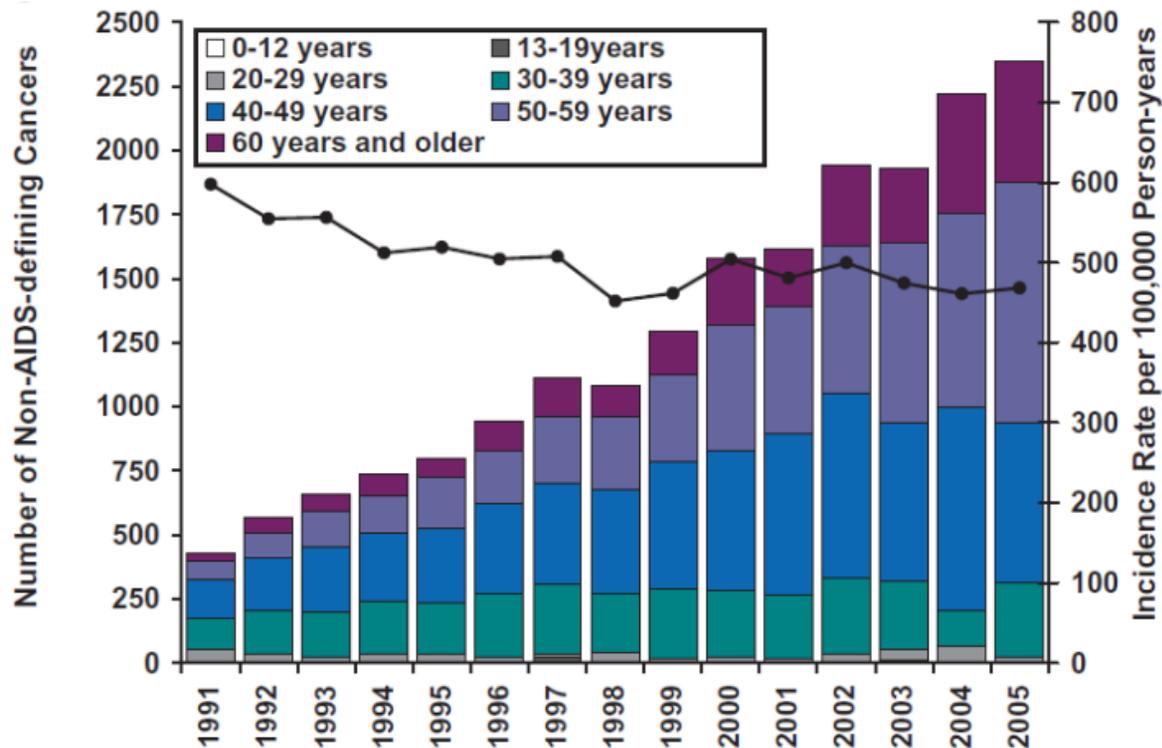
Kaposi's Sarcoma and *Pneumocystis* Pneumonia Among Homosexual Men – New York City and California

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.

HIV therapy restoring immunity has resulted in lower rates of AIDS-defining cancers



Increased life expectancy due to HIV therapy has also impacted the cancer burden



- HIV infection *does not* increase the risk of *every* cancer type.
- **However**, if more PHIV survive to ages >50, then more PHIV are alive to develop cancer.

However, cancer risk remains elevated in people living with HIV (PLWH)

Standardized Incidence Ratios (SIRs) for cancer in PLWH (1996-2012), compared to the general U.S. population

Cancer Types	Observed Cases	SIR (95% CI)*
All cancers	21,294	1.69 (1.67-1.72)
AIDS-defining cancers	6,384	14.0 (13.6-14.3)
Kaposi sarcoma	2,269	498 (478-519)
AIDS-defining NHLs	3,687	11.5 (11.1-11.9)
Cervical cancer	428	3.24 (2.94-3.56)
Non-AIDS cancers (NADCs)	14,344	1.21 (1.19-1.23)
Non-viral NADC	10,200	0.92 (0.90-0.94)
Viral NADCs	4,144	5.39 (5.23-5.55)
HPV-related oral cavity pharynx	297	1.64 (1.46-1.84)
Anus	1,568	19.1 (18.1-20.0)
Liver	1,104	3.21 (3.02-3.41)
Merkel cell carcinoma	10	2.58 (1.24-4.74)
Vagina	25	3.55 (2.36-5.24)
Vulva	151	9.35 (7.91-11.0)
Penis	114	5.33 (4.39-6.40)
Hodgkin lymphoma	875	7.70 (7.20-8.23)

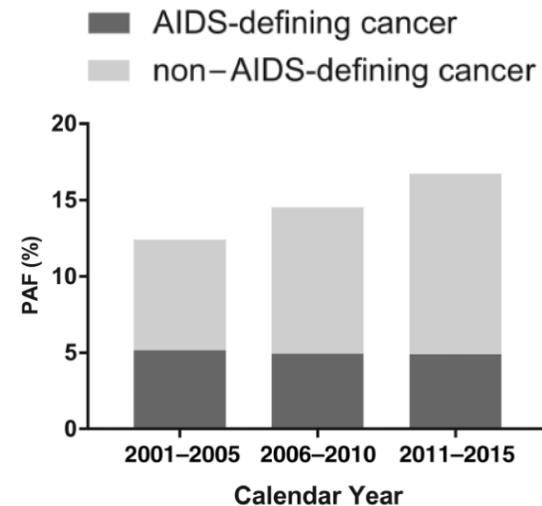
Viral NADCs are increased 5 fold in PLWH (e.g. HPV, HBV, HCV and EBV cancers)

Non-viral NADCs are not increased in HIV (e.g. breast, colorectal, prostate)

Exception: Lung cancer is increased 2 fold in PLWH

Non-AIDS cancer is now a leading cause of death in PLWH

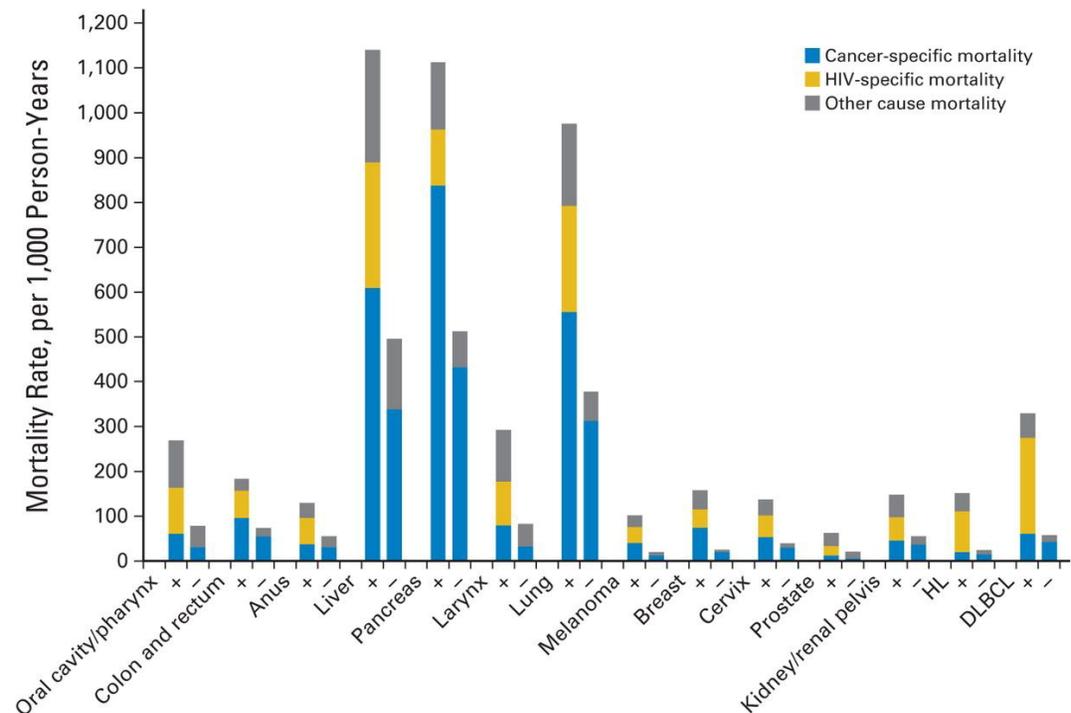
- The D:A:D study (11 HIV cohorts) reported that NADCs were the leading cause of non-AIDS death (1999-2011) @ 15% (Smith *Lancet* 2014)
- NA-ACCORD (>20 HIV cohorts) reported cancer as a leading cause of non-AIDS death (1995-2009) @ 10% (Engels *CID* 2017)
 - Approximately 7% of deaths due to NADCs
- The HIV/AIDS Cancer Match (HACM) Study reported population attributable fractions for cancer mortality (PAF%) in PHIV between 2001-2015.



- PAF% increased from 7% to 12% for NADCs.
- PAF% held steady at 5% over time for ADCs.

PLWH experience higher, stage-adjusted cancer-specific mortality

Diagnosis	Cancer Deaths in HIV/AIDS	Hazard Ratio	95% CI
Oropharynx	35	1.31	0.94-1.83
Colorectal	86	1.49	1.21-1.84
Breast	68	2.61	2.06-3.31
Liver	137	1.17	0.99-1.39
Pancreas	67	1.71	1.35-2.18
Larynx	22	1.62	1.06-2.47
Lung	517	1.28	1.17-1.39
Melanoma	19	1.72	1.09-2.70
Prostate	21	1.57	1.02-2.41



Summary: Evolving cancer burden in PHIV

- Rates of AIDS-defining cancers (e.g., Kaposi sarcoma) have declined with widespread effective HIV therapy in the U.S.
- Despite effective HIV therapy, PLWH remain at higher risk for many cancers, particularly infection-associated cancers.
- Non-AIDS-defining cancers not linked to infections are now more common in PLWH, reflecting the aging of the HIV population due to effective HIV therapy.
- One result of this changing cancer profile is that non-AIDS-defining cancers are now a leading cause of death in PLWH.

Screening for non-AIDS cancers

US Preventive Health Task Force recommends cancer screening for

Breast cancer (same as those without HIV)

Cervical cancer (closer follow-up)

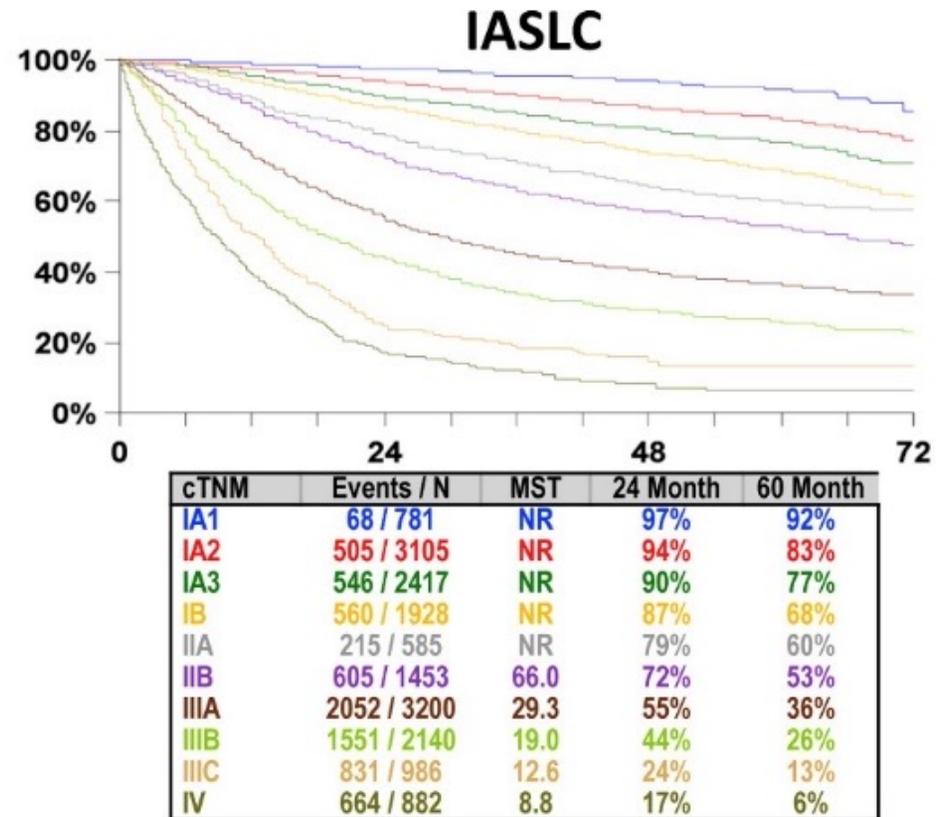
Colorectal cancer (same as those without HIV)

Lung cancer screening (same as those without HIV)

Some groups recommend prostate screening after counseling

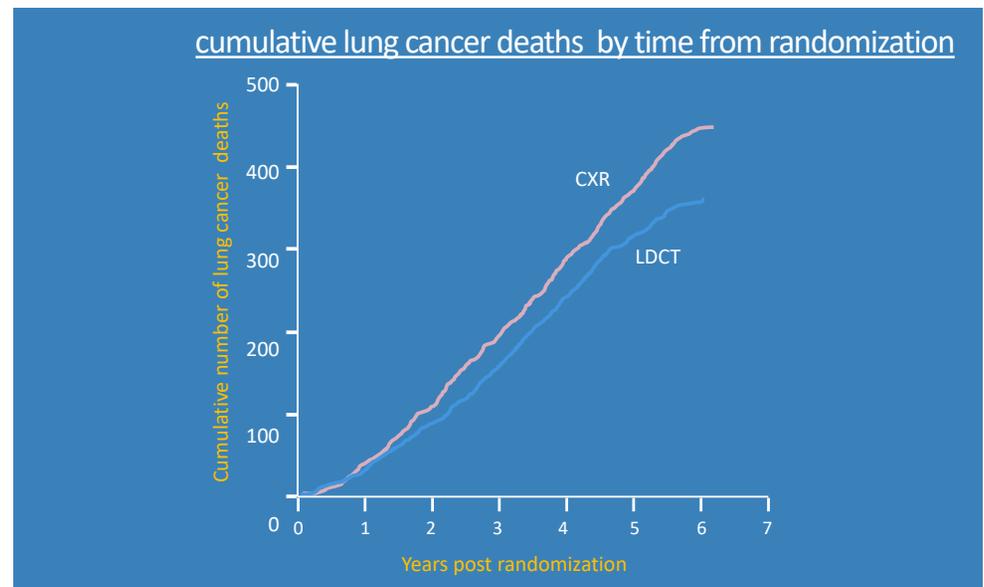
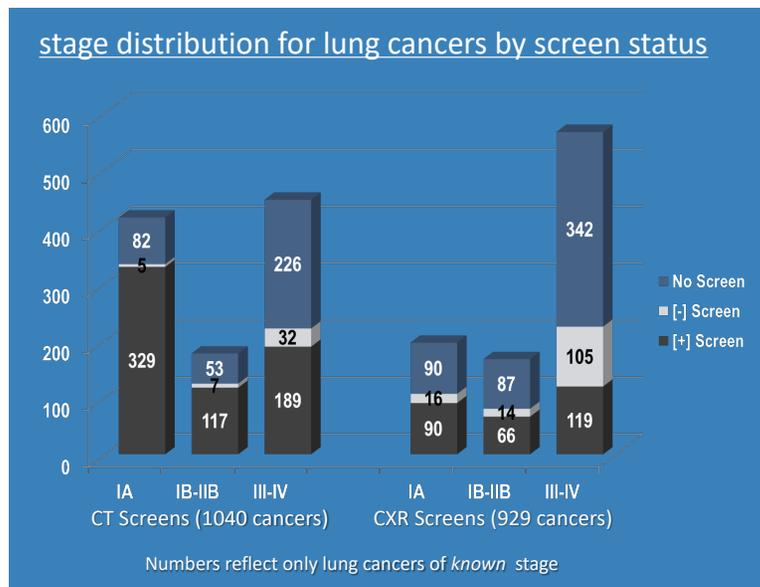
Lung cancer screening

- Active screening diagnoses lung cancer at earlier stages
- Earlier stages have better survival
- Who should be screened?
 - 50 to 80 years**
 - Current or former smoker (within 15 years of quitting)
 - 20 pack year history**
 - No signs of lungs cancer



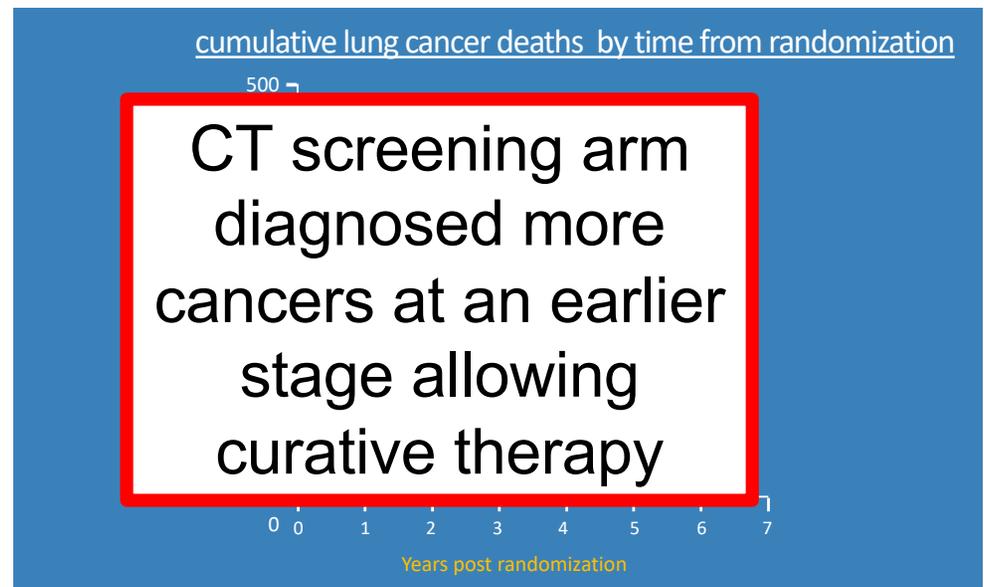
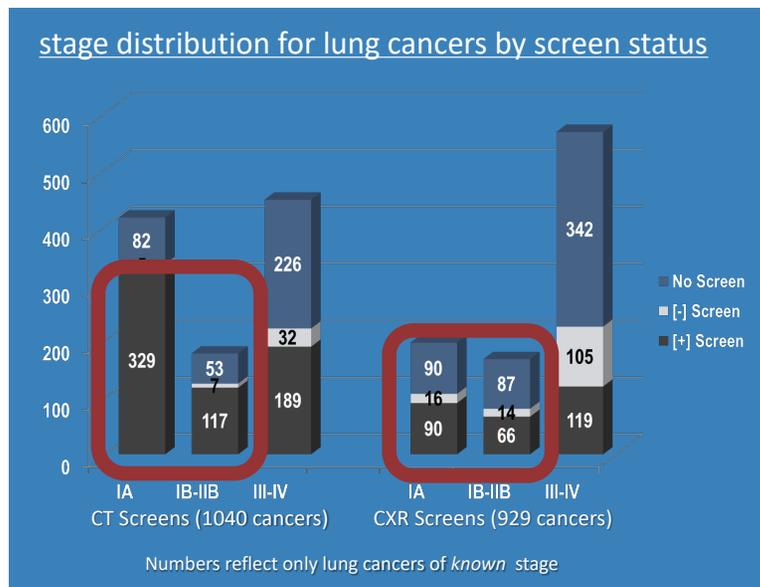
National Lung Cancer Screening Trial

- Randomized 50K pts to 3 yearly low-dose CT scans vs. CXRs
- Abnormalities concerning for possible cancer evaluated further
- Most abnormalities (>95%) were not cancer



National Lung Cancer Screening Trial

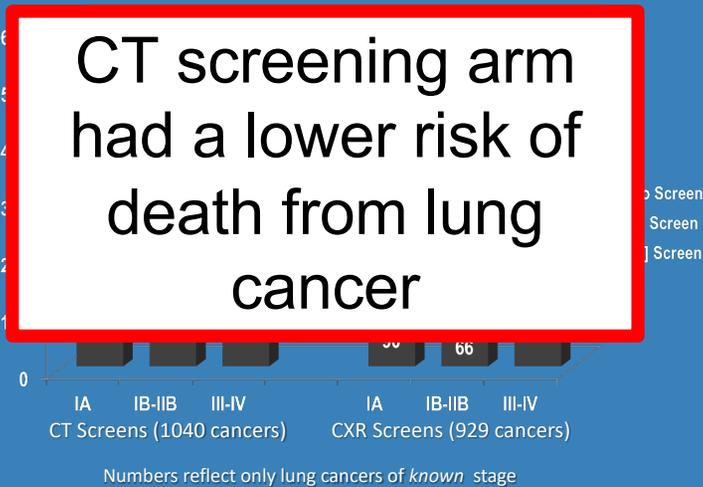
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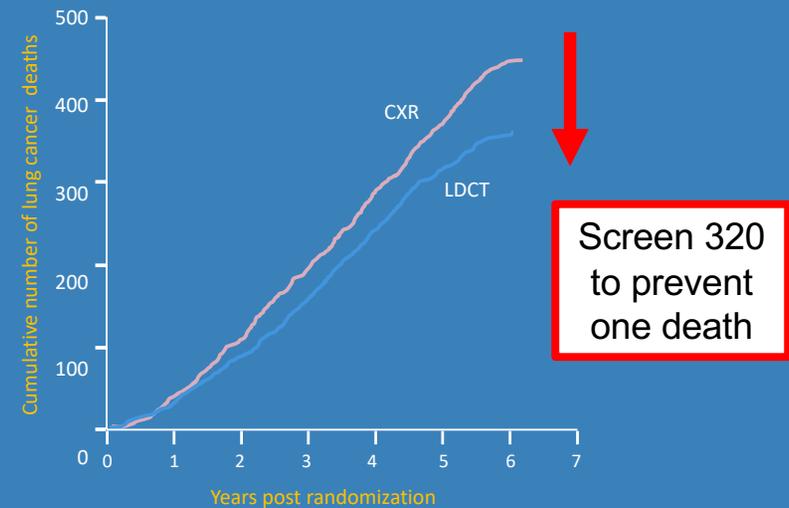
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stage distribution for lung cancers by screen status



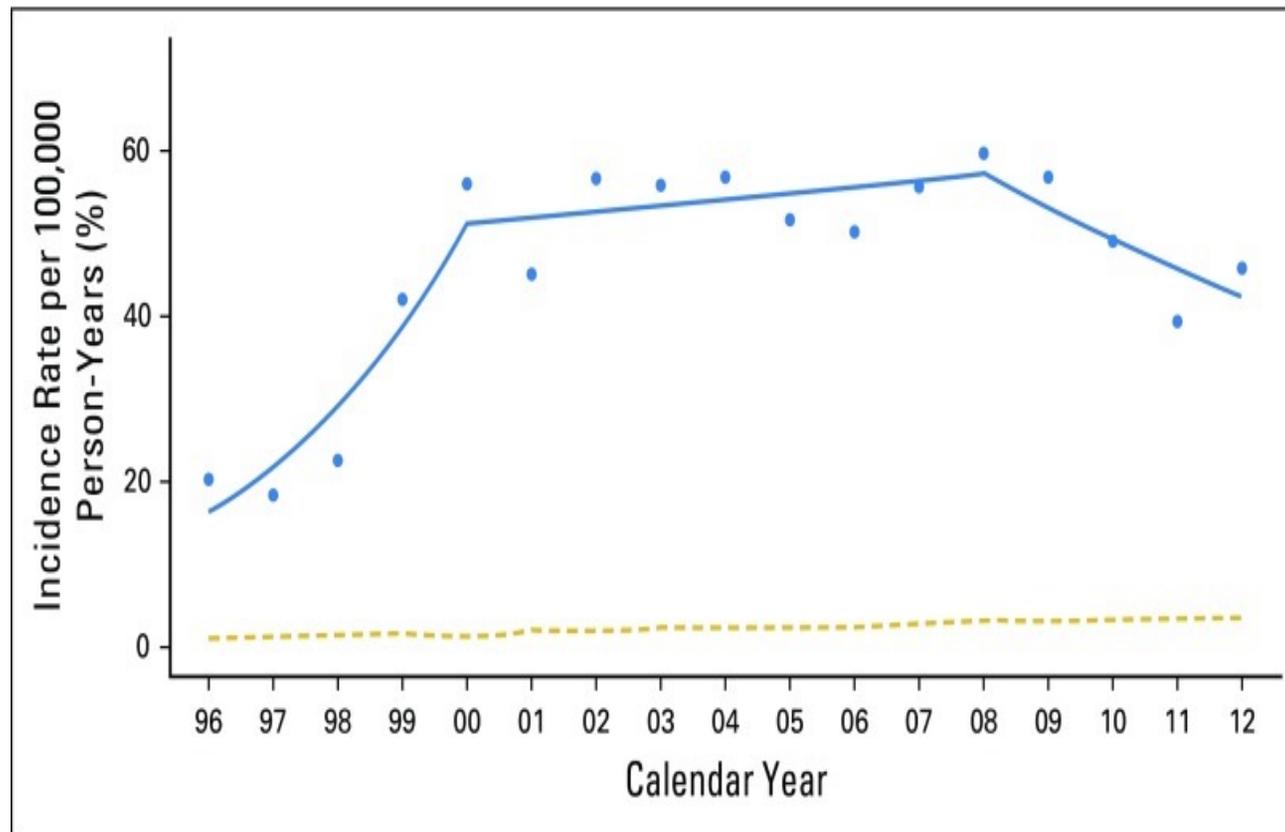
cumulative lung cancer deaths by time from randomization



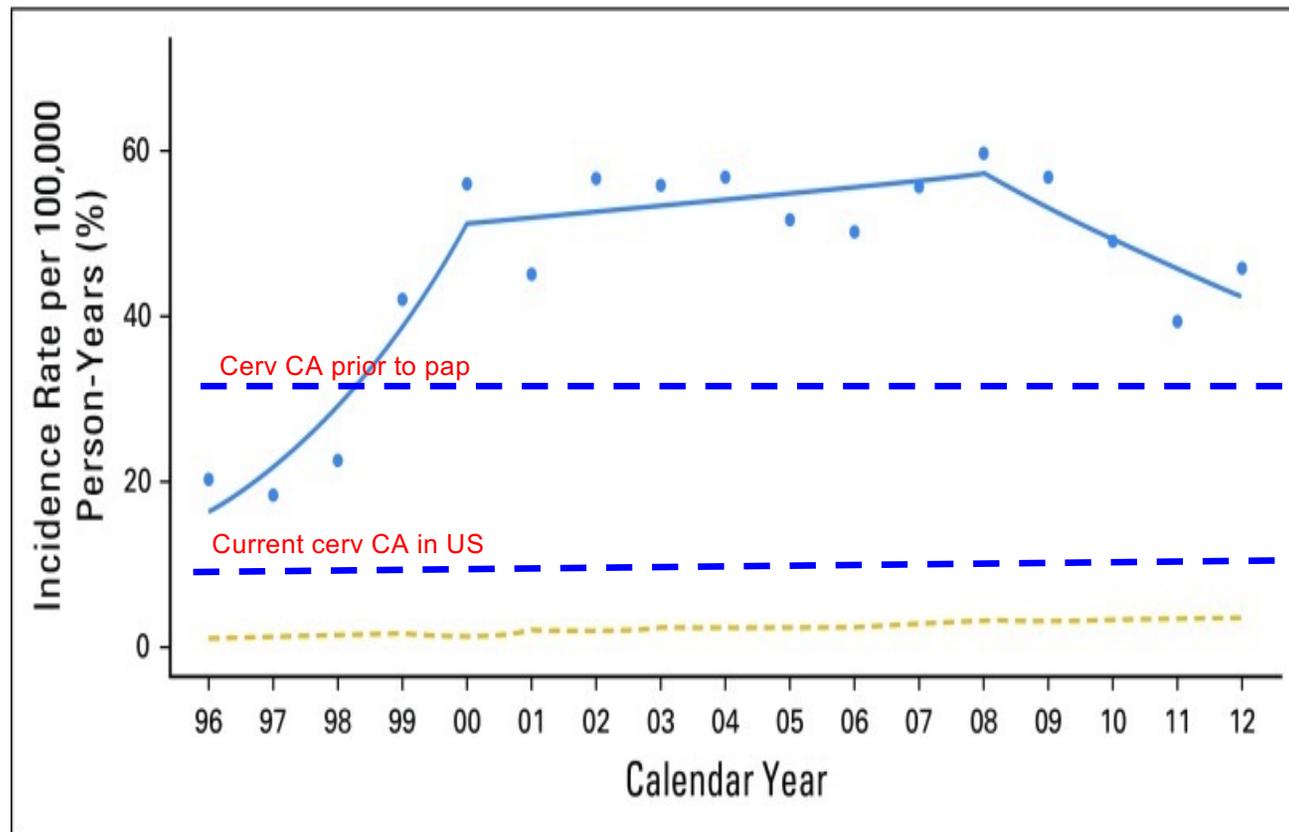
Other cancer prevention activities per USPTH/ACIP

- Hepatocellular carcinoma
 - Vaccination against hepatitis B and other prevention practices
 - Treatment of hepatitis B and C
 - Screening for hepatocellular carcinoma
- Human papillomavirus-related cancers
 - 9-valent HPV vaccination for prevention of anal, cervical, oropharyngeal, penile, vaginal and vulvar cancers
- Smoking cessation
- Aspirin use for prevention of colorectal cancer in those with >10% ASCVD risk for MI
- Breast CA medication, BRCA screening in selected groups

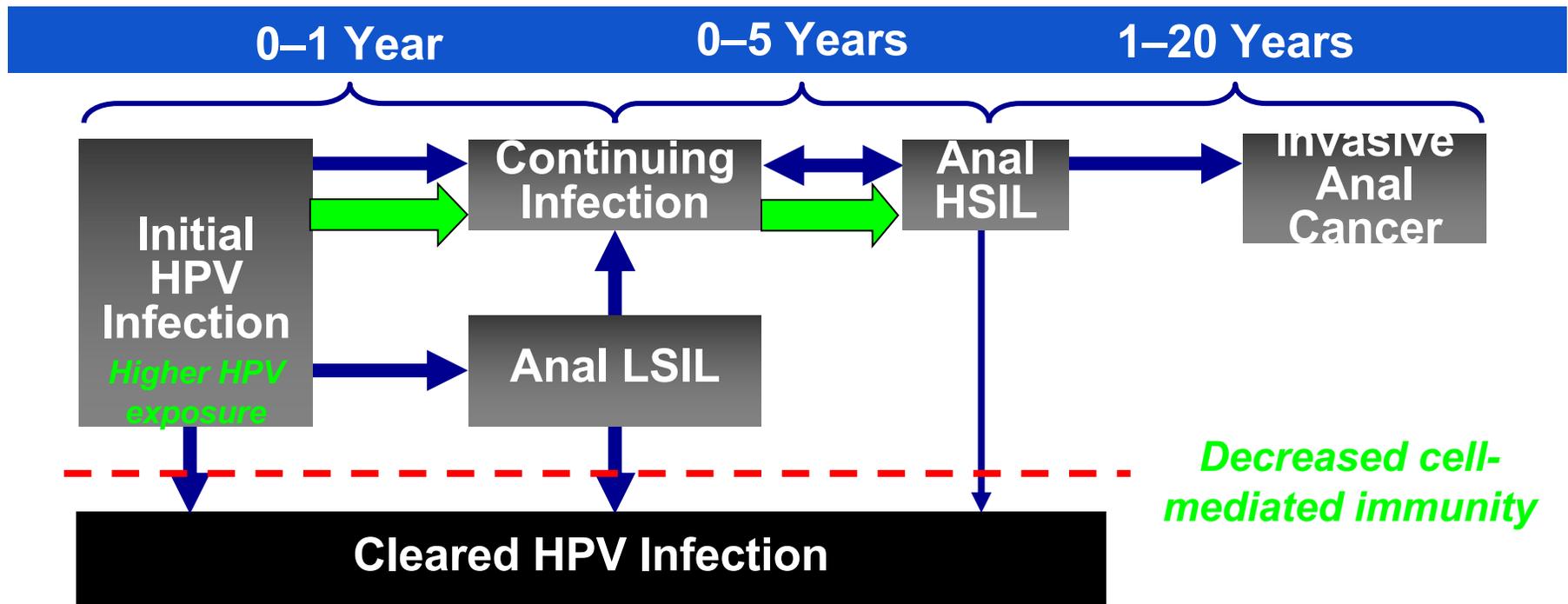
Anal Cancer is common among PLWH



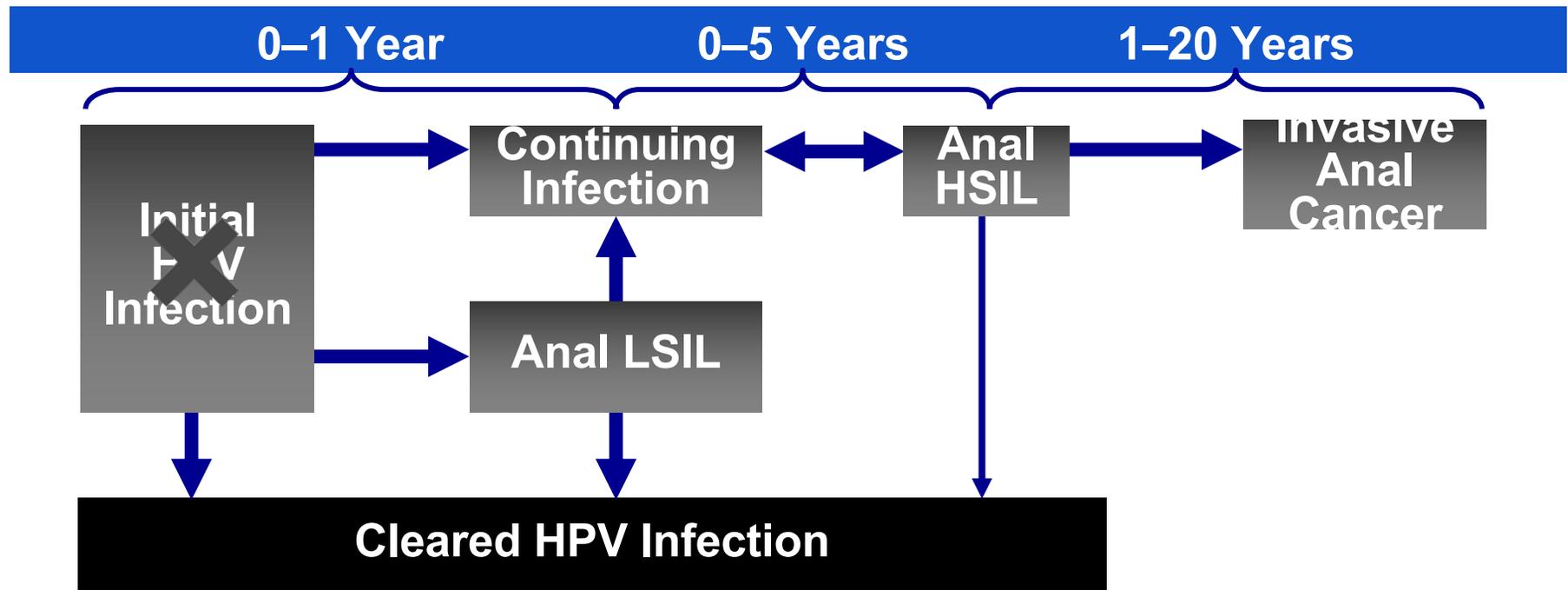
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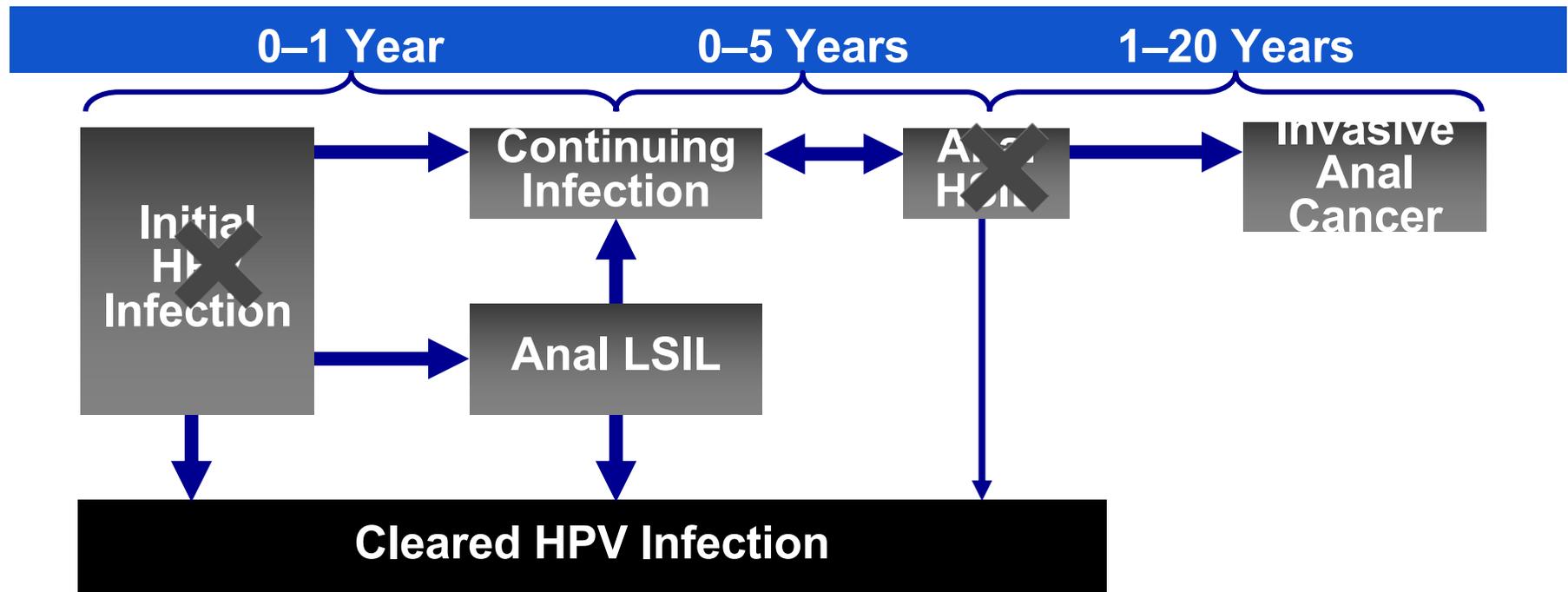
HPV Infection and Progression to Anal Cancer



Prevention of Anal Cancer



Prevention of Anal Cancer

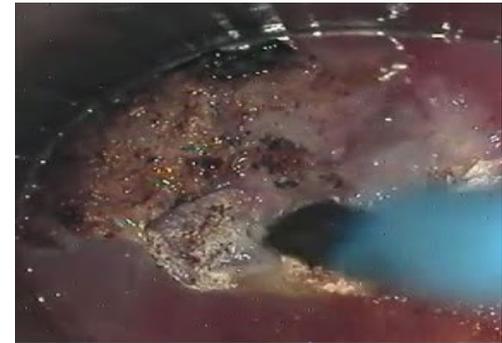
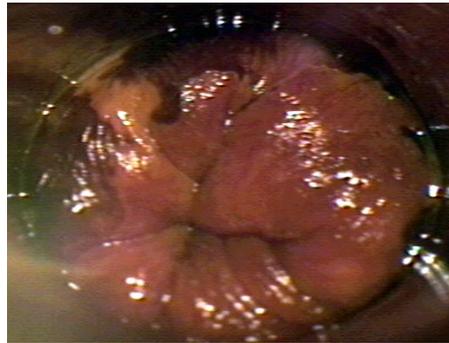
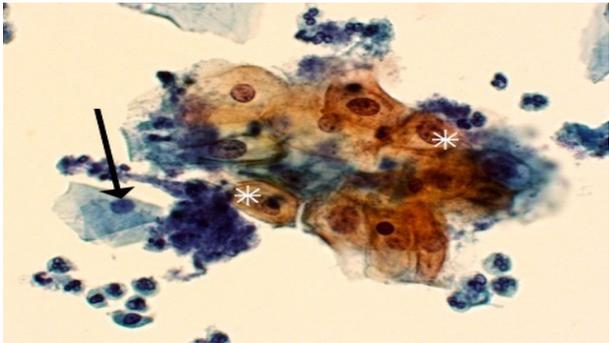


Anal cancer prevention

Goal is to identify pre-cancerous areas of the anus that can be removed to prevent invasive cancer

- **SCREEN** with cytology or HPV testing
- **DIAGNOSE** with High Resolution Anoscopy
- **TREAT** HSIL with ablation or topical therapy

Anal cancer is treated with combined chemotherapy and radiation



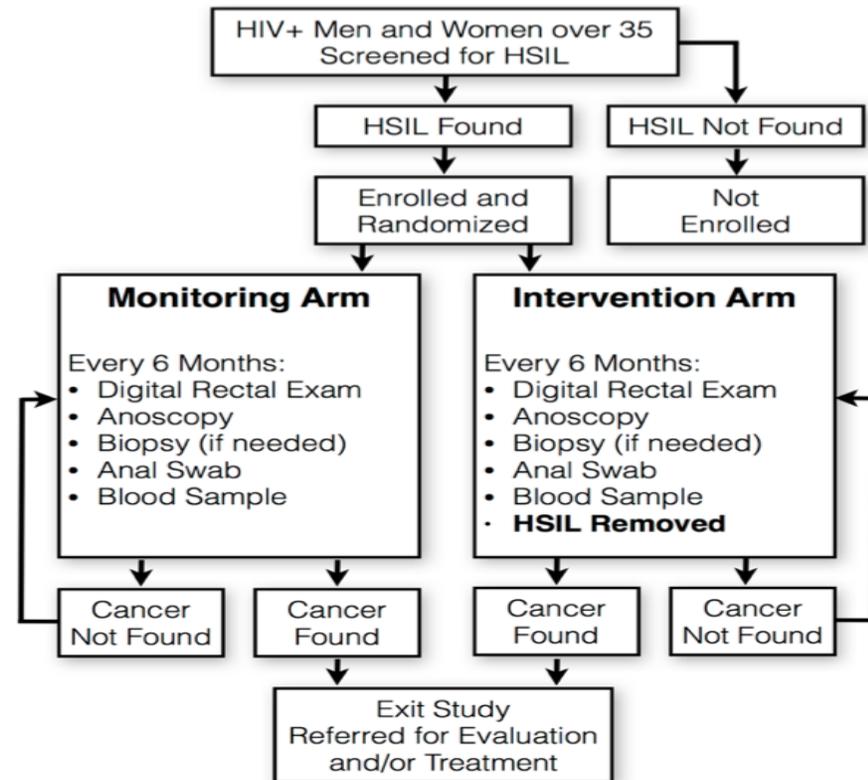
ANCHOR Trial

Screen > 17,385

Enroll 5,058

Retain for 5-8 years

Estimated < 50
develop cancer



the
ANCHOR
study



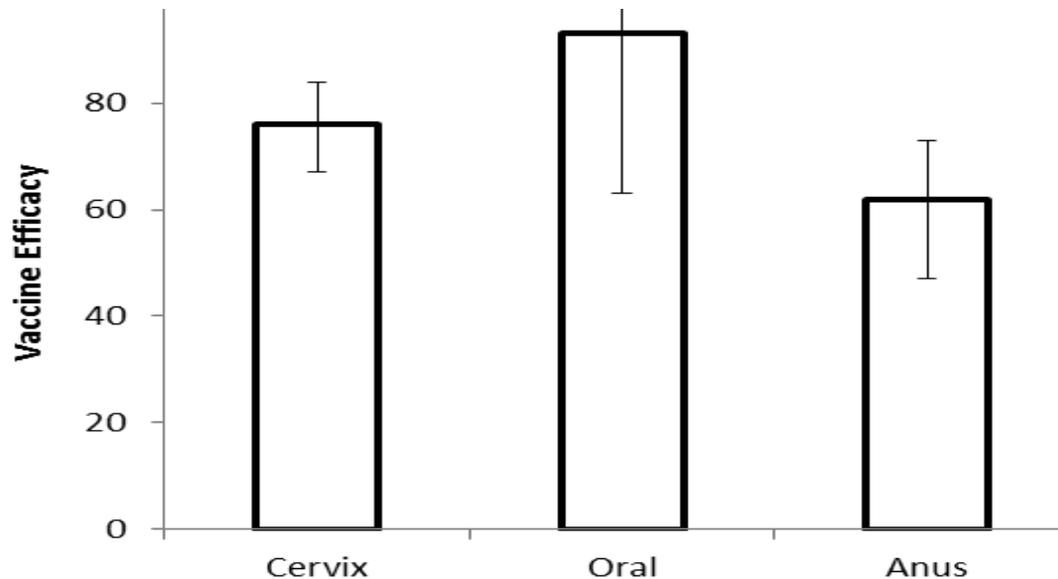
ACIP HPV Vaccine Recommendations

- **Children and adults age 9-26**
Routine vaccination of 11-12 girls
Catch-up vaccination up to age 26
- **Adults age 27-45**
Shared decision making

HPV vaccine efficacy for oropharynx

Costa Rica Vaccine Trial

One-time detection of HPV16/18 infection 4 yrs. after vaccination



¹Herrero R *et al.* PLOS ONE 2013; ²Kreimer AR *et al* Lancet Oncology 2011

Slide 26 of 27

Slide courtesy of A Kreimer

Summary: Reducing NADC in PLWH

- Implement screening for NADC
 - Breast, cervical, colorectal, lung
 - Lung cancer screening identifies cancer at earlier stages where treatment is curative
- Evolving data on screening for anal cancer will say whether this should be standard of care.
- HPV vaccination for prevention of HPV-associated cancers
 - Prevents anal, cervical, penile, vaginal, vulvar cancers
 - Existing data suggests preventions against HPV-associated oropharyngeal cancer

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Question-and-Answer Session

 **2021** Ryan White
HIV/AIDS Program
CLINICAL CONFERENCE