

The impact of updated guidelines and self-collection on cervical cancer screening

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Danielle brings over a decade of professional experience in reproductive health, infectious diseases, STIs, cervical cancer, and COVID-19 clinical research and patient care from rural community health clinics to academic medical institutions.



She holds a Bachelor's and Master's degree in nursing from Duke University, a certificate in Reproductive Endocrinology and Infertility from the American Society for Reproductive Medicine (ASRM), a colposcopy certification from the American Society of Colposcopy and Cervical Pathology (ASCCP), and is credentialed as an HIV Specialist with the American Academy of HIV Medicine (AAHIVM).



Disclosure: Danielle is an employee of BD.

Learning objectives



After attending this webinar, the participants should understand:



Learning Objective 1:

The **changing prevalence of HPV high-risk genotypes** due to vaccination



Learning Objective 2:

Recent changes in **ASCCP Guidelines**



Learning Objective 3:

The **importance of extended genotyping** for patient risk stratification and management



Learning Objective 4:

The impact of FDA-approved HPV tests with **self-collection** in a **healthcare setting**



Why should I care?

CxCa is a leading cause of cancer mortality, but one of the most preventable cancers with vaccination, screening & treatment

4th

most common cancer among women globally

~14K

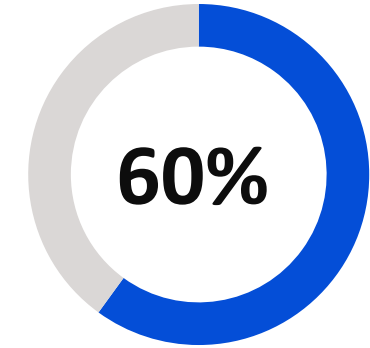
new cases are diagnosed in US each year

>4K

deaths occur in US each year

95%

of cervical cancer is due to HPV



of cervical cancer cases diagnosed in US occur in under or never screened women

Key barriers to screening:



Insufficient awareness



Subjective patient experience



Socioeconomic factors



Logistical challenges

World Health Organization: A call to action¹



In 2018, the WHO announced a global call for action to eliminate cervical cancer by 2030, focusing on three key areas.



To make this a reality the WHO has called for all stakeholders to unite behind these common goals.

Vaccination



90%

of girls fully vaccinated with the HPV vaccine by age 15

Screening



70%

of women are screened with a high-performance test by 35 and 45 years of age

Treatment



90%

of women identified with cervical disease receive treatment

Elimination has been defined as less than 4 cervical cancer cases per 100,000.

The U.S. scorecard: Where do we currently stand?

New cases per 100,000 women per year (2016-2020)



Screening rate



The elimination goals are within reach, but we need to make sure vulnerable populations are not left behind. This is a core principle of the WHO call to action.²

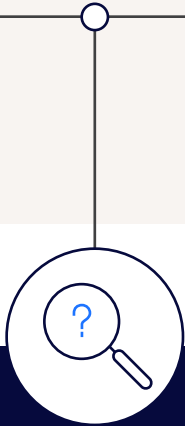
It's time to think outside the box. We need to invest in realistic solutions for improving health inequities and advocate for what is right to improve access to a healthy life for all women and people with a cervix!



HPV testing over the years and trends in cervical cancer screening rates

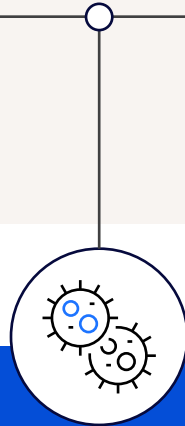
The history of HPV testing

1960 -1980's



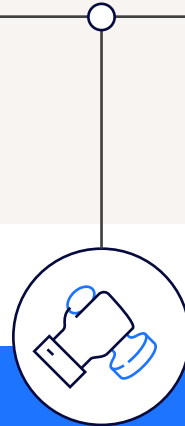
Pap smear able to detect cervical precancer & cancer, but **the cause is unknown**

1980 -1990's



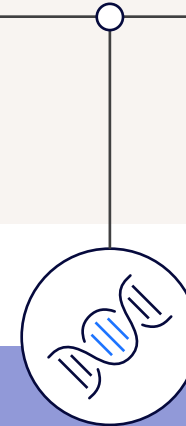
Making the connection to HPV
Introduction of LBC
HPV testing for ASCUS+

2000 -2010's



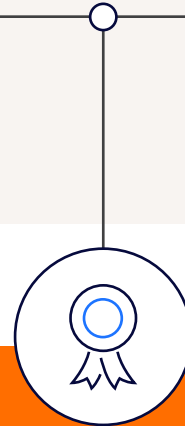
FDA approval for the HPV vaccine

2010's



Introduction to automated HPV testing
Co-testing endorsed by ACS & ACOG
HPV vaccine becomes nonavalent
Partial genotyping introduced
Extended genotyping FDA approved

2020's

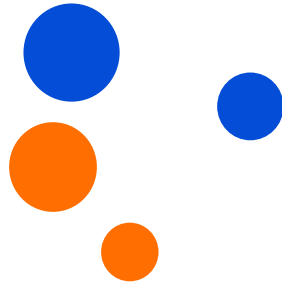


HPV primary testing endorsed by ACS

Why isn't the vaccine enough to eradicate all cervical cancer?



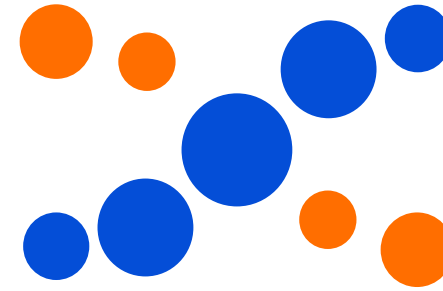
The 4-valent HPV vaccine



- Approved by the FDA in 2006 for use in women 9-26 years old
- For the prevention of cervical cancer, precancerous genital lesions and genital warts due to HPV types 6, 11, 16 and 18³
- No longer distributed in the US

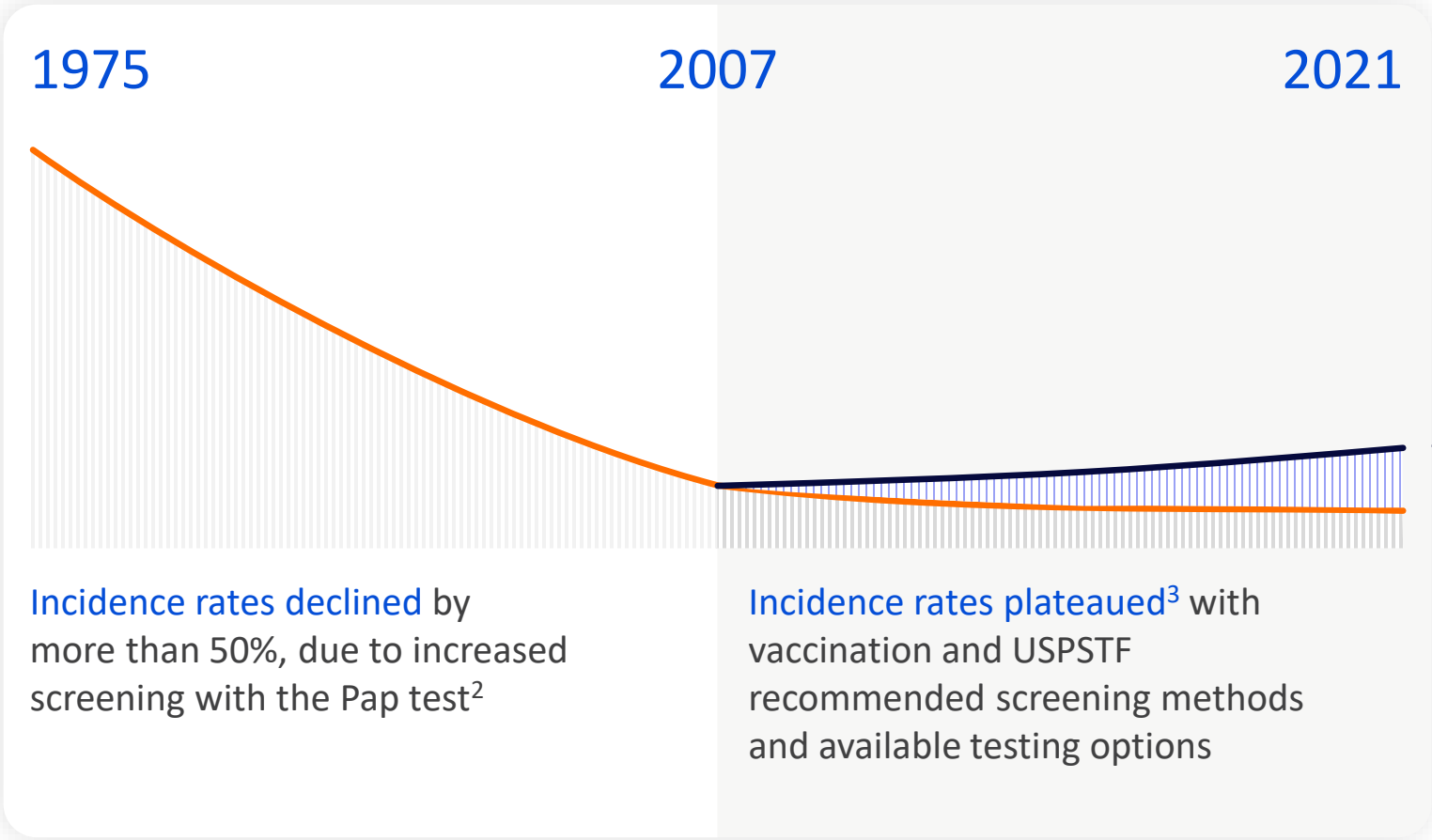



The 9-valent HPV vaccine



- Approved in 2014 for use in women 9-26 and men 9-15 years old¹
- Targets 9 HPV genotypes (6, 11, 16, 18, 31, 33, 45, 52 & 58)
- Extended to individuals up to 45 years old in 2018²

We've come a long way, but it's time to shake the screening status quo



 **Incidence rates increasing in critical populations**

<p>4.4%</p> <p>annual increase in distant stage cancer in low-income women since 2007⁴</p>	<p>1.7%</p> <p>annual increase from 2012 – 2019 in women aged 30 to 44⁵</p>
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 **Incidence in the US will decline more rapidly by increasing screening rates than by increasing vaccination rates⁶**

Siegel RL, et al. Cancer statistics, 2020. CA: a cancer journal for clinicians. 2020;70(1):7-30. 2. American Cancer Society. Cancer Facts & Figures 2020. Atlanta: American Cancer Society; 2020. 3. National Cancer Institute. Cancer of the Cervix Uteri - Cancer Stat Facts. SEER. Published 2018. <https://seer.cancer.gov/statfacts/html/cervix.html> 4. Amboree TL, et al. Recent trends in cervical cancer incidence, stage at diagnosis, and mortality according to county-level income in the United States, 2000–2019. International Journal of Cancer. Published online January 25, 2024. 5. Cervical Cancer Statistics | Key Facts About Cervical Cancer. www.cancer.org. <https://www.cancer.org/cancer/types/cervical-cancer/about/key-statistics.html#:~:text=for%20cervical%20cancer,-> 6. Burger EA, et al. Projected time to elimination of cervical cancer in the USA: a comparative modelling study. The Lancet Public Health. 2020;5(4):e213–e222.



HPV assays available in the United States

Competitive overview of FDA-approved HPV assays

	Abbott Alinity m HR HPV assay	BD Onclarity™ HPV Assay	Hologic® Aptima® HPV 16, 18/45 Genotype Assay	Roche cobas® HPV test
HPV extended genotyping	✓ Individual results: 16, 18, 45 Pooled results: 2	✓ <i>Individual results: 16, 18, 31, 45, 51, 52</i> <i>Pooled results: 3</i>	X Individual results: 16 Pooled results: 2	X Individual results: 16, 18 Pooled results: 1
FDA-Approved for self-collection*	X	✓	X	✓
FDA-Approved for HPV primary screening	✓	✓	X	✓
Cellularity control	✓	✓	X	✓
DNA-based assay	✓	✓	X mRNA-based assay	✓
E6/E7 target region	X Target region: L1	✓	✓	X Target region: L1

HPV genotyping: partial & extended



Individual identification of high-risk genotypes is essential to reveal the true risk of CIN3+ disease¹

Partial genotyping:

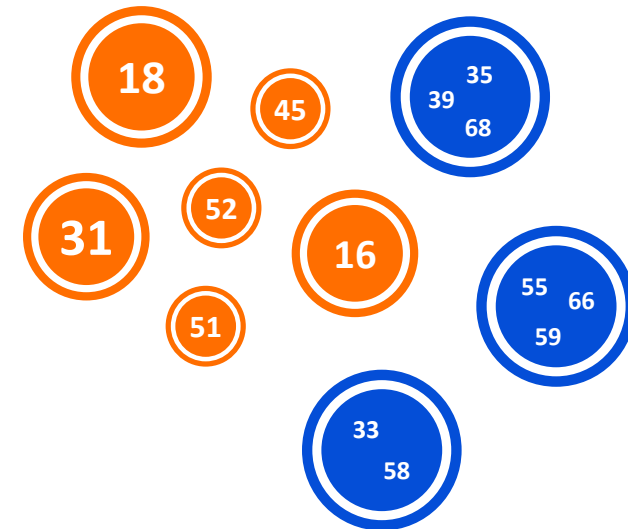
Only 2 high-risk HPV types individually identified



● Individual results ● Pooled results

Extended genotyping with BD Onclarity™ HPV Assay:

6 high-risk HPV types individually identified



● Individual results ● Pooled results

Why does HPV extended genotyping matter?

HPV extended genotyping can dramatically improve the patient experience



Enhances clinical management:
Connecting patients with the right treatment for them



Delivers more detail than other HPV tests:
Helping determine a patient's precancer and cancer risk



Supports personalized medicine:
Helping manage individual patient risk



Provides next-generation screening:
Supporting patients as high-risk HPV prevalence is changing

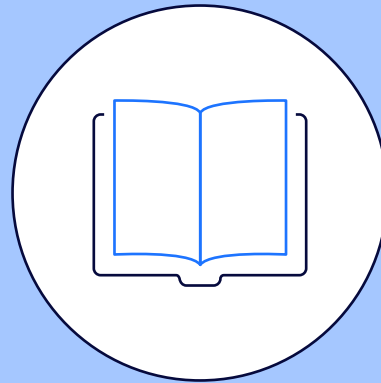
ASCCP - Enduring Consensus Cervical Cancer Screening and Management Guidelines

Enduring Guidelines aim to integrate new technologies and approaches that were not included in the 2019 guidelines process to:

-  Improve cancer prevention for high-risk individuals
-  Decrease unnecessary procedures in lower-risk individuals

Extended genotyping

Obesity



Dual stain

Self-collection

Vaccination

Recommendation #1

All extended genotyping assays



HPV extended genotyping is acceptable to guide clinical management in the setting of a positive HPV test result.



Recommendation #2

All extended genotyping assays

When multiple types are reported, management according to the type with highest cancer risk is recommended following the hierarchy **16, 18, 45, 33, 31, 52, 58, 35, 39, 51, 59, 56, 68, 66**.

Carcinogenic HPV type	% of cervical cancers	9-year risk of progression to CIN3+ of incident HPV infection	Risk group
16	60.3	6.3	16
18	10.5	3.0	18/45
45	6.1	2.2	18/45
33	3.7	4.5	16-related
31	3.6	2.2	16-related
52	2.7	2.2	16-related
58	2.2	1.9	16-related
35	2.0	2.8	16-related
39	1.6	1.1	Lower risk
51	1.2	1.1	Lower risk
59	1.1	0.9	Lower risk
56	0.9	0.8	Lower risk
68	0.6	1.0	Lower risk



Decreasing risk

Recommendation #3

BD Onclarity™ HPV Assay

In a screening setting using **primary HPV testing**, for patients who test positive for HPV types **56/59/66** and no other carcinogenic types:



One-year repeat testing recommended. (All)



Colposcopy recommended if **HPV-positive for any HPV type** at the one-year follow-up.

Recommendation #4

BD Onclarity™ HPV Assay

In a screening setting using **co-testing**, for patients who test positive for HPV types **56/59/66** and no other carcinogenic types:

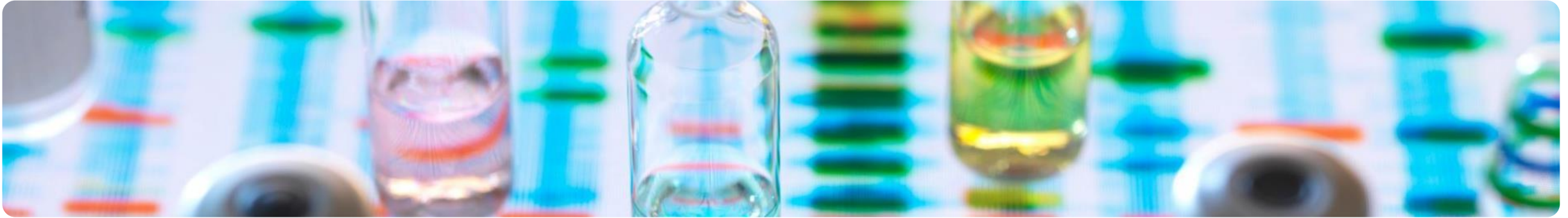


One-year repeat testing recommended for **NILM, ASC-US, and LSIL**.



Colposcopy recommended for **ASC-H, AGC, HSIL, or carcinoma**.

Recommendation #5 – BD Onclarity™ HPV Assay



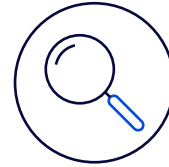
Triage with DS or cytology recommended:

In a screening setting using **primary HPV or co-testing**, for patients who test positive for **HPV 45,33/58, 31, 52/35/39/68, 51** or combinations thereof, but **negative for HPV16 and HPV18**.



One-year repeat testing recommended:

If **DS-negative or NILM cytology**.



Colposcopy recommended:

If **DS-positive or cytology ASC-US, LSIL, ASC-H, AGC, HSIL, or carcinoma**. (All)

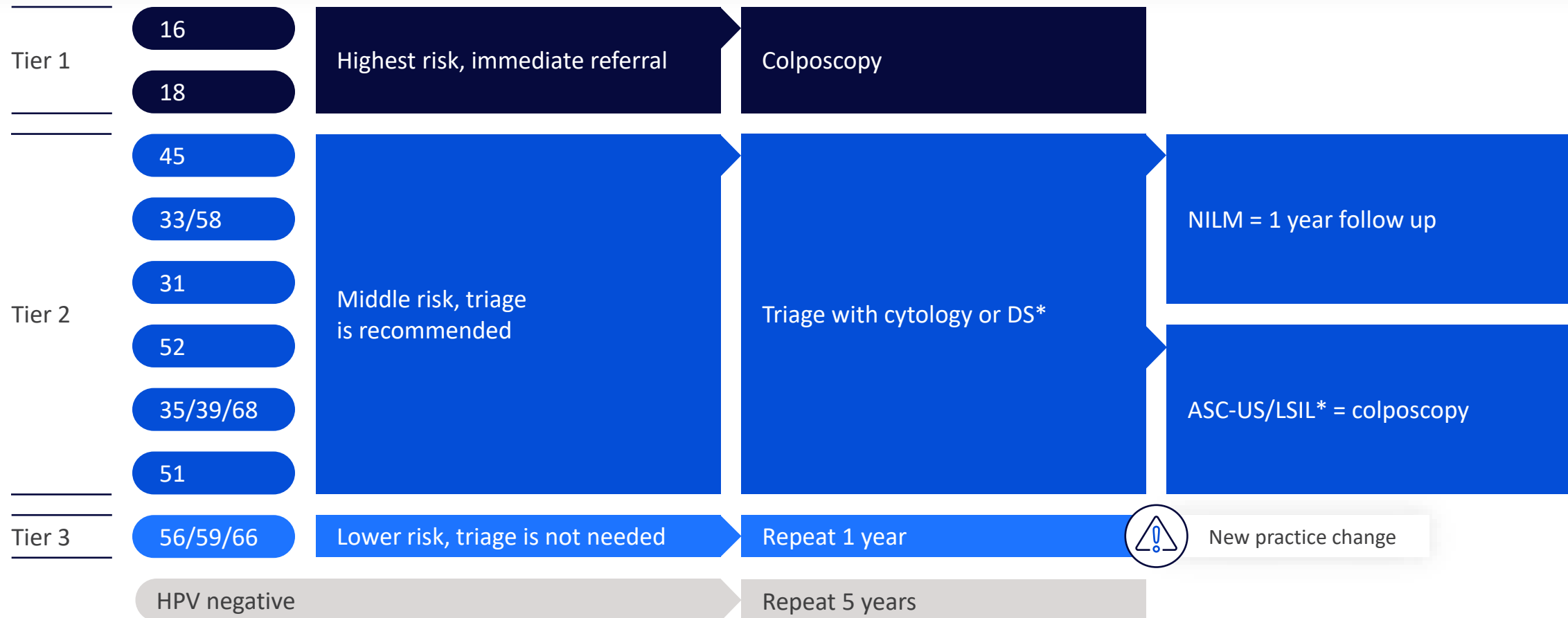


Colposcopy recommended:

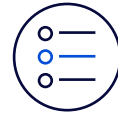
For patients with initial results of **Dual Stain negative or NILM cytology** who undergo repeat HPV testing or co-testing at one year, if the repeat test is **HPV-positive for any type**.

ASCCP has separated the BD Onclarity™ HPV Assay channels into three different risk-based tiers, which inform new clinical recommendations

Patient management with BD Onclarity™ HPV Assay (Co-Testing / Primary HPV)



The impact of extended genotyping on clinical practice



Extended genotyping is acceptable to guide clinical management of a positive HPV test result.



Extended genotyping results provide additional risk stratification beyond a pooled HR result.



HPV same type persistence is associated with a much higher risk of cervical precancer compared to a single time point detection.



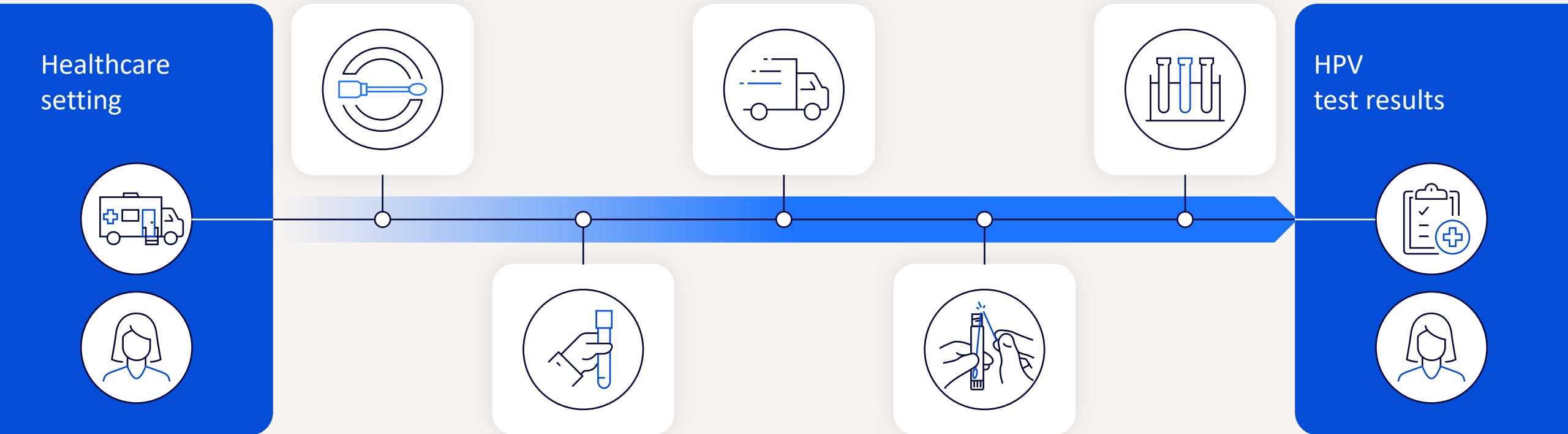
Lower risk associated with HPV 56, 59, 66 with recommend different patient management.



Regional public health surveillance of patient populations and their HPV prevalence & disease outcomes.

HPV extended genotyping with BD Onclarity™ HPV Assay is appropriate for HPV primary screening and is also **approved for HPV self-collection in a healthcare setting!**

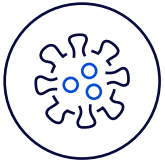
HPV self-collection in a healthcare setting



What is HPV self-collection?



Clinician ordered test in a healthcare setting



HPV primary screening



Vaginal specimen self-collected
by the patient



Additional tool in the toolkit to reach under
and never screened



HPV testing barriers and inequities

Barriers and inequities in access today include:



Cultural concerns



Insufficient awareness



Uncomfortable with pelvic exam



Sexual trauma



Fear and embarrassment



Socioeconomic factors

HPV testing barriers and inequities

Barriers and inequities in access today include:



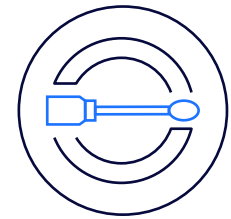
Cultural concerns



Insufficient awareness



Uncomfortable with pelvic exam



Self-collection offers a less invasive testing option that expands screening access.



Sexual trauma



Fear and embarrassment



Socioeconomic factors

Self collection can improve screening participation



Self collection is demonstrated to **increase screening participation and disease detection** in eligible populations

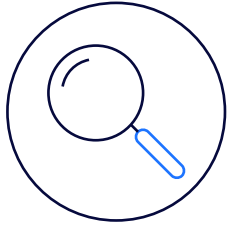


Self collection is accepted by many clinicians, with one study finding over 80% of respondents were supportive of HPV self-collection in under or never screened individuals



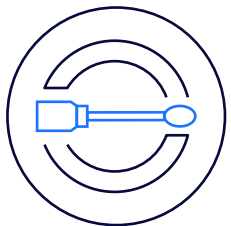
79% of women would be comfortable self-collecting their own vaginal sample for cervical cancer screening²

Self-collection method



This specimen type tests for HPV only because the specimen is from the vagina, not the cervix.

It can only be used with **HPV primary screening**.



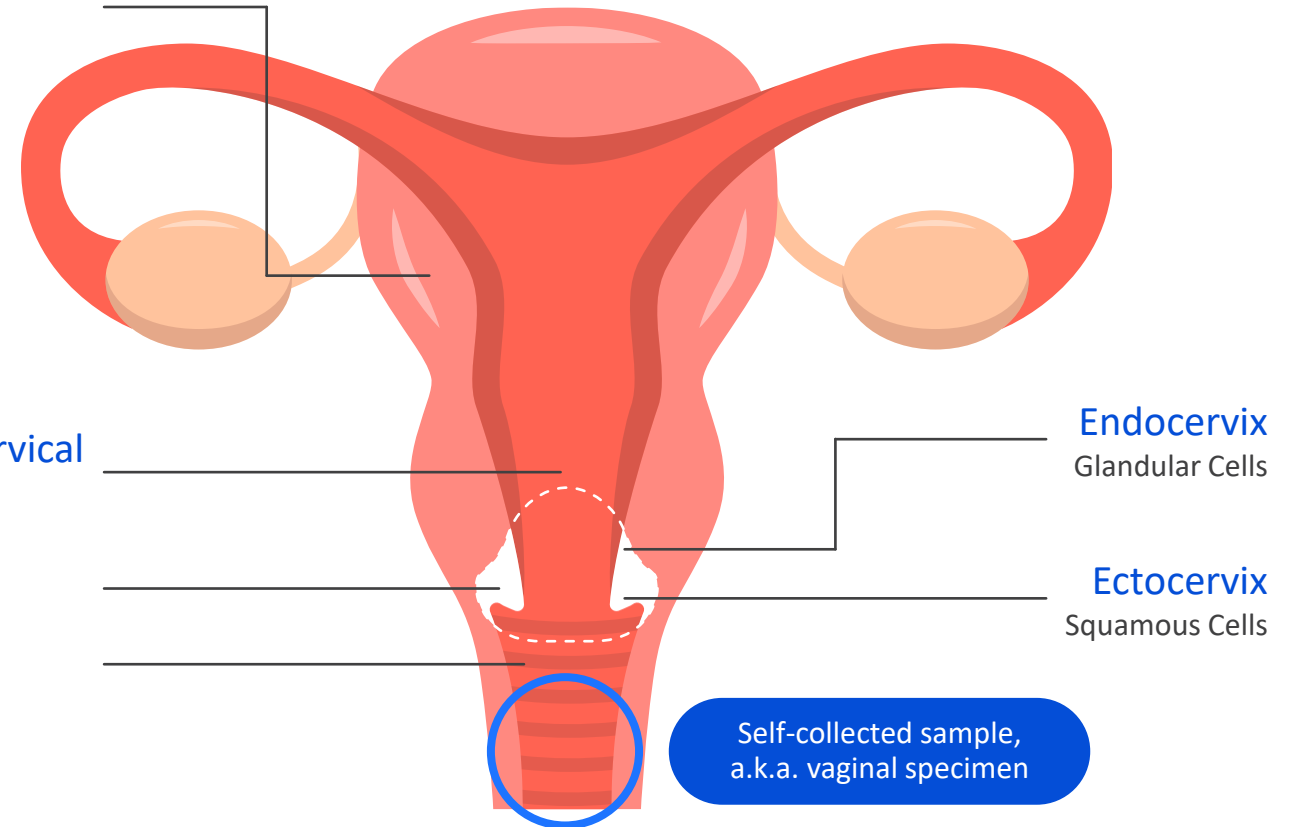
Self-collected vaginal specimens are collected with a swab or brush depending on the assay manufacturer. It does not require a pelvic exam.

Uterus

Endocervical Canal

Cervix

Vagina

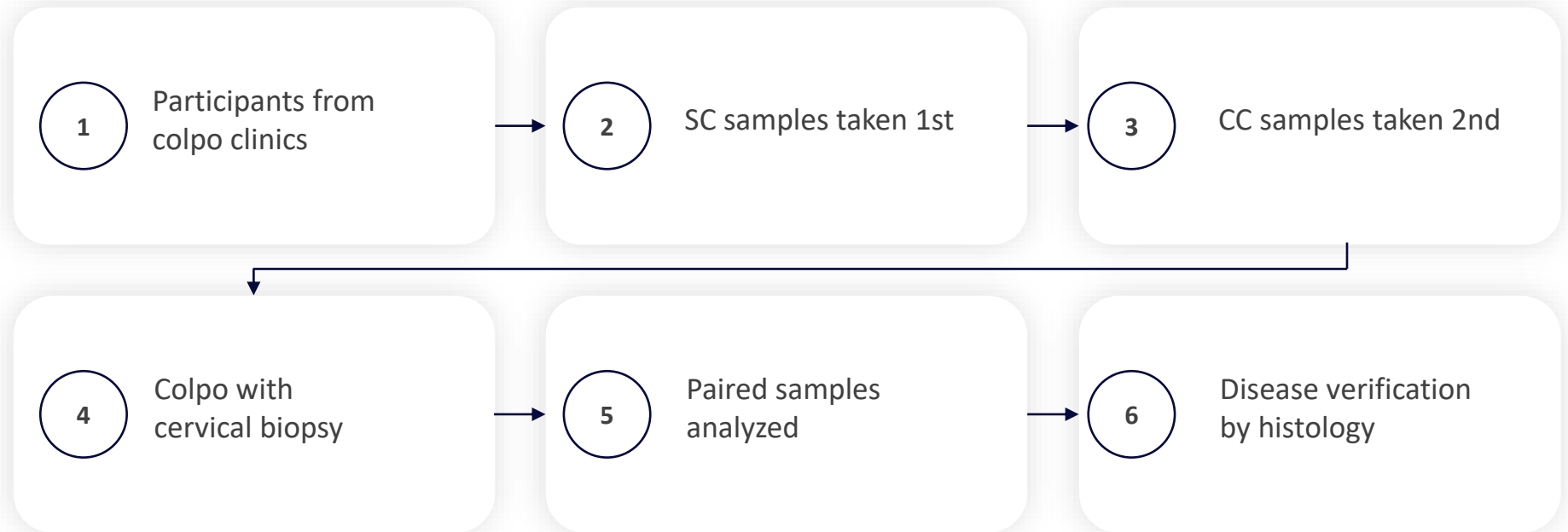


The VALHUDES protocol

VALidation of HUman papillomavirus assays and collection DEvices for HPV testing on Self-samples¹




Designed as a diagnostic test accuracy study that aims to compare the clinical sensitivity and specificity of particular hrHPV assay(s) on vaginal self-samples collected with hrHPV testing on matched clinician-taken samples.¹

VALHUDES study design:



The VALHUDES framework is an internationally accepted protocol for validation of HPV assay/self sample device combinations for primary screening

PMA study comparison: a bird's eye view

	BD	Roche	Roche
	FLOQSwabs ^{®1}	FLOQSwabs ^{®2,3}	Evalyn [®] Brush ^{2,3}
Paired self & clinician specimens compared	✓	✓	✓
VALHUDES protocol used	✓	X	X
Study group from Colposcopy clinic	✓	X	X
CIN2+ detection measured (sensitivity & specificity)	✓	X Agreements measured	X Agreements measured
Sample size	286	487	532
HR HPV positivity rate	 71% N=203	 26% N=127	 30% N=160
*Vaginal invalid rate	1.0%	4.3%	4.3%
Cervical invalid rate	0.3%	0.0%	0.4%

Workflow comparison

	BD	Roche
Vaginal collection	✓	✓
FLOQSwabs® device	✓	✓ & Evalyn® Brush
Patient collection method Rotate collection device in lower vagina for 10-30 sec	✓	✓
Dry transport to lab Collection device recapped and sent to lab	✓	X Transported in ThinPrep® LBC Vial
Specimen resuspended at lab	✓	X At collection site by HCP
Specimen directly transferred Swab broken off into diluent tube	✓	X Swirl & Toss Collection Device
Resuspended in lytic buffer	✓	X Resuspended in ThinPrep®
3ml resuspension volume	✓	X 20ml of ThinPrep® Aliquot sample into cobas HPV Tube

ASCCP 2024 Proposed Recommendations for self-collection



Draft Recommendation #1

Self-collected vaginal HPV testing is acceptable for cervical screening.

Draft Recommendation #2

When self collected (vaginal) HPV test results are negative in the screening setting, repeat testing in 3 years is recommended.

Draft Recommendation #3

When self collected (vaginal) HPV test results are negative in the surveillance setting, repeat testing is recommended per 2019 guidelines for negative primary HPV testing results (i.e., 1 or 3 years depending on risk).

Draft Recommendation #4

When self collected (vaginal) HPV test results are positive for HPV 16/18, referral for colposcopy is recommended.

Draft Recommendation #5

When self collected (vaginal) HPV test results are positive for HPV HR12/other (not 16/18) or untyped, management as for 2019 guidelines is recommended.

Draft Recommendation #6

When extended genotyping results for self collected (vaginal) HPV test results are available, management as for the extended genotyping guidelines is recommended.



Health equity & cervical cancer

Partnering with the NCI to advance health equity

We are working to make comprehensive HPV testing accessible to all women

BD is an active stakeholder in the National Cancer Institute's (NCI) *Last Mile Initiative*. Participants in this public-private partnership include the NCI, the National Institutes of Health (NIH), the Food and Drug Administration (FDA), and industry stakeholders, such as BD.^{1,2} The initiative aims to¹:

- Facilitate discussions to secure FDA approval of self-collection HPV tests, which can be done at home or in a healthcare setting and sent for analysis
- Raise awareness about self-collection to change and inform clinical practice
- Support a study of HPV self-collection tests called the *Self-sampling for HPV Testing to Improve Cervical Cancer Prevention Trial* or *SHIP Trial*

The SHIP Trial will also evaluate strategies to implement self-collection approaches that reach women in underserved and high-burden populations who are not screened or are inadequately screened for CxCa.¹



Working towards health equity

Few diseases reflect health inequities as much as cervical cancer



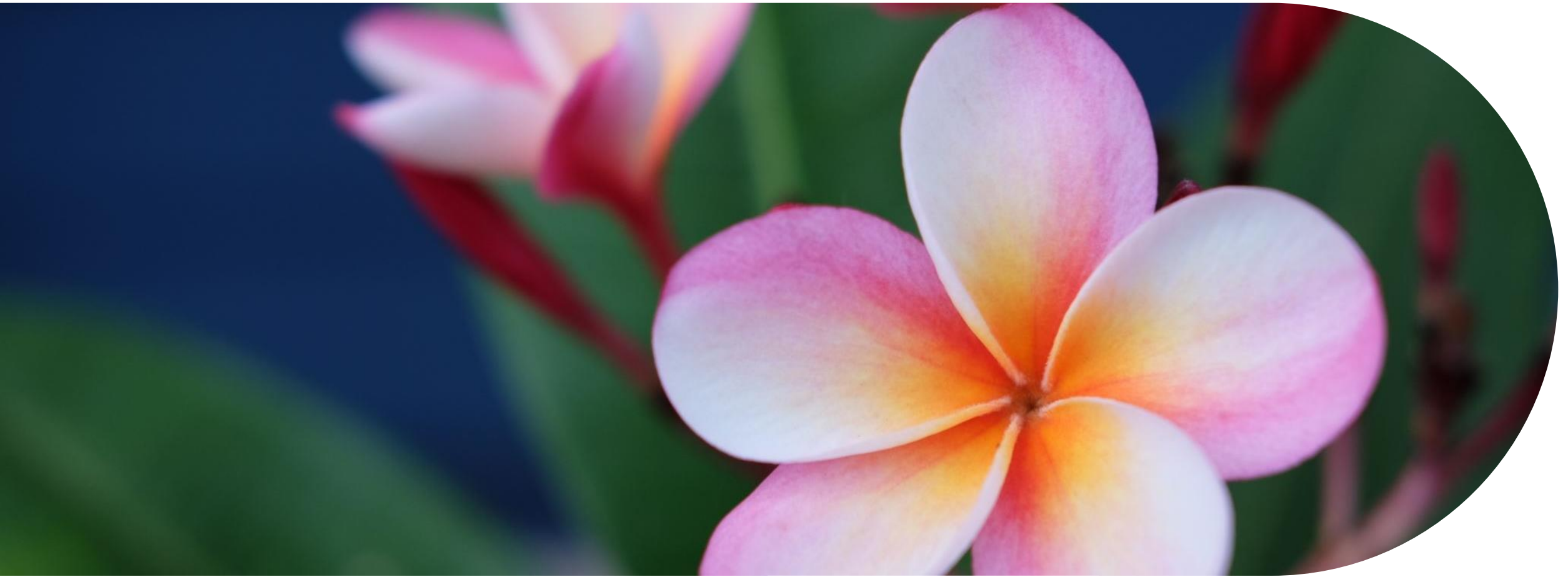
>95% of those affected are young, undereducated women who live in the world's poorest communities.



HPV is a human virus and a global public health concern.



Access to simple, primary preventative services is about gender equity.



“This is a moment of significance because it represents a commitment to centering the needs of women and girls and valuing their bodies and their lives, and it is a necessary step toward a brighter future for all people.”

Prof Senait Fisseha, Co-Chair of the WHO Director-General’s Expert Group on Cervical Cancer Elimination