CERVICAL CANCER SCREENING IN YOUNG WOMEN

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Gqqeberha SAACHS conference 2026

BACKGROUND

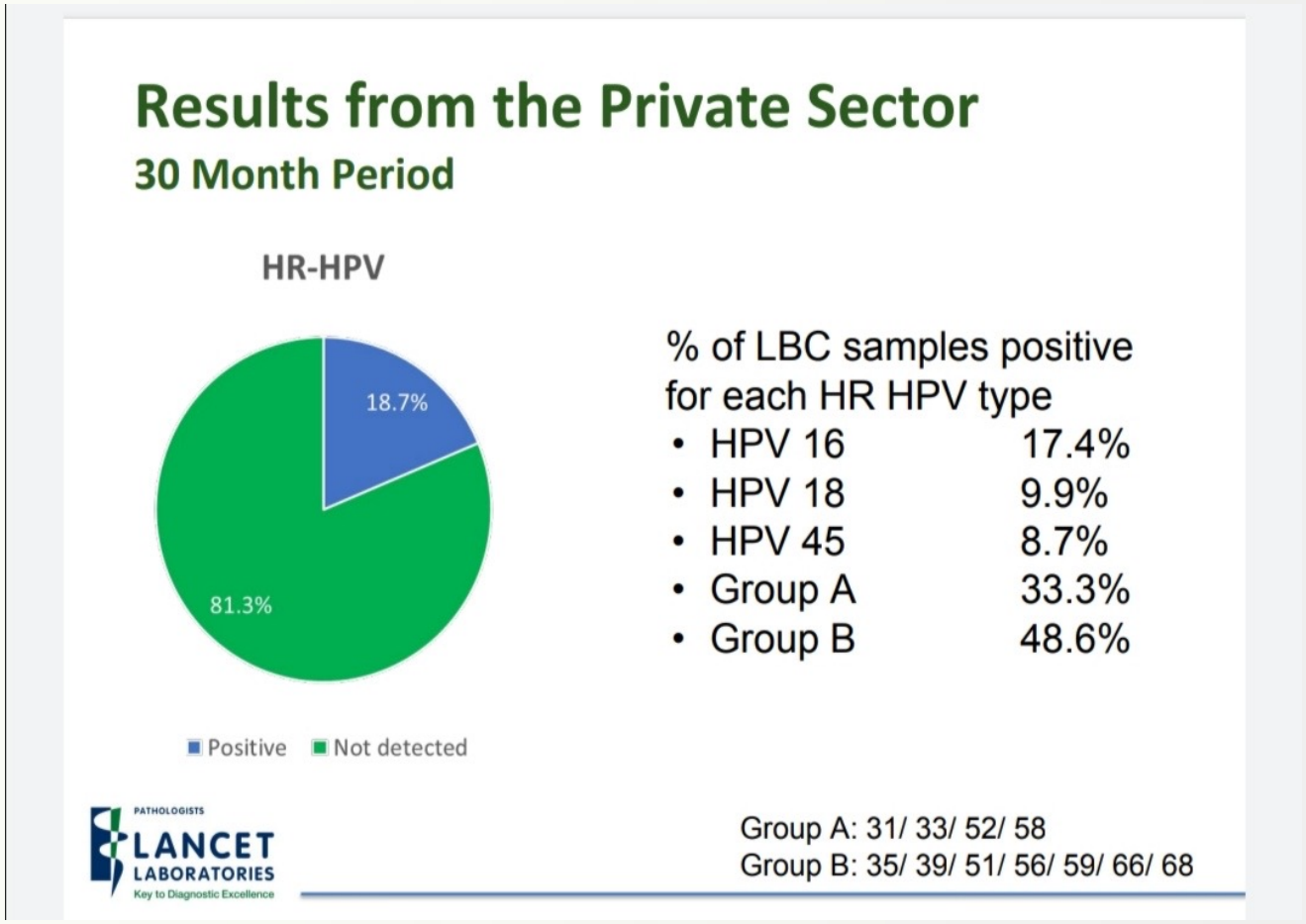
- Cervical cancer affects 1/41 women in South Africa, kills 8 women every day
- Cervical cancer is mainly caused by **high risk HPV**
- There are many HPV subtypes: low risk and **high risk** - most NB HPV 16 &18
- Other *risk factors* for cervical cancer: smoking, early age first sexual intercourse, multiple sexual partners, partner with multiple sexual partners, weakened immune system especially *HIV*
- NB: cervical cancer may present with no symptoms until very late in the disease
- Screening and early detection saves lives!

CERVICAL CANCER IN SOUTH AFRICA

- Cervical cancer is the second most common cancer affecting women in SA
- Highest cancer mortality
- Estimated 10702 cases diagnosed annually resulting in 5870 deaths
- Most frequent cancer in women age 15-44 years
- Annually 300 000 deaths from cervical cancer globally
- Cervical cancer is mostly preventable

HPV INCIDENCE

Image credit: Dr Allison Glass, virology



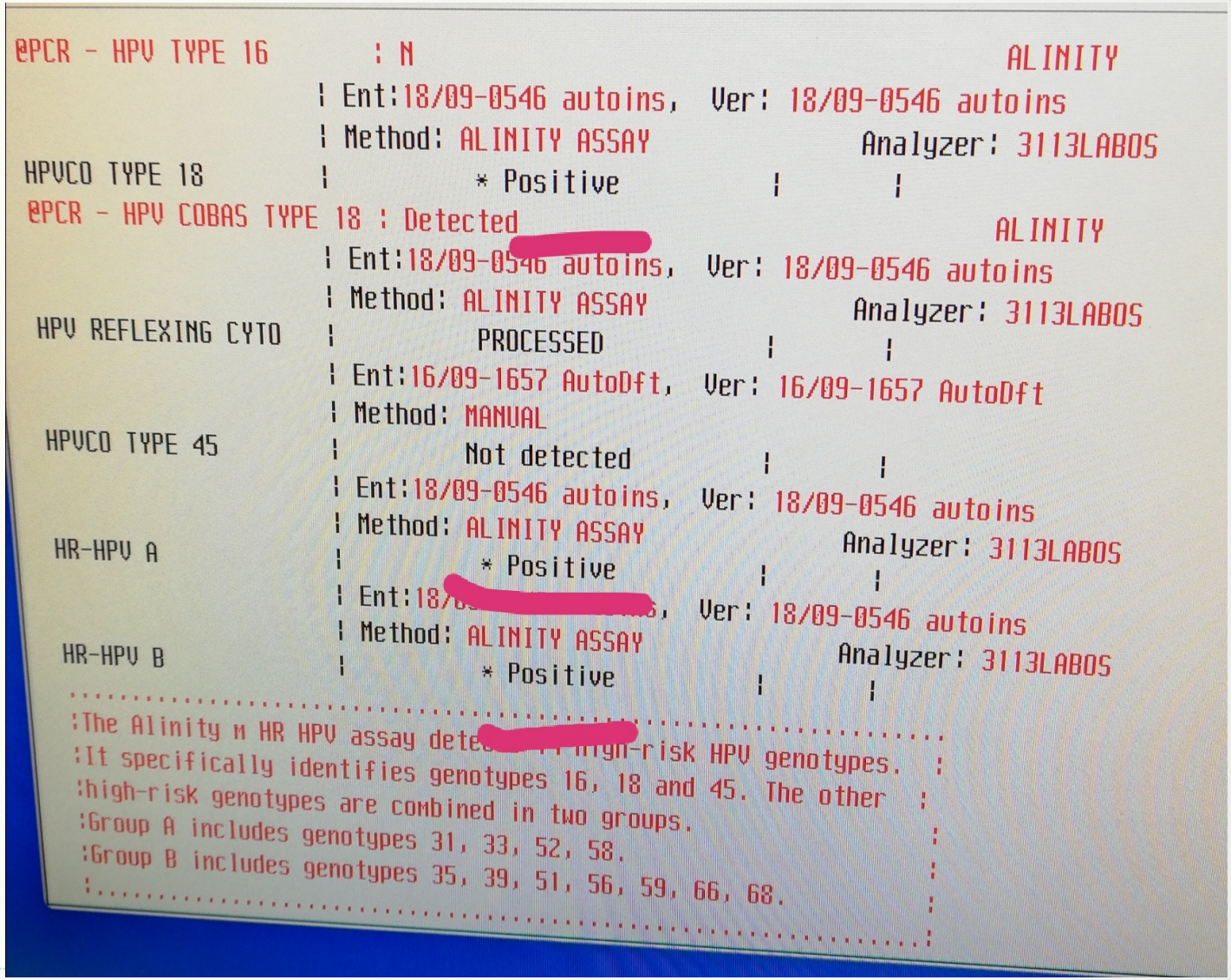
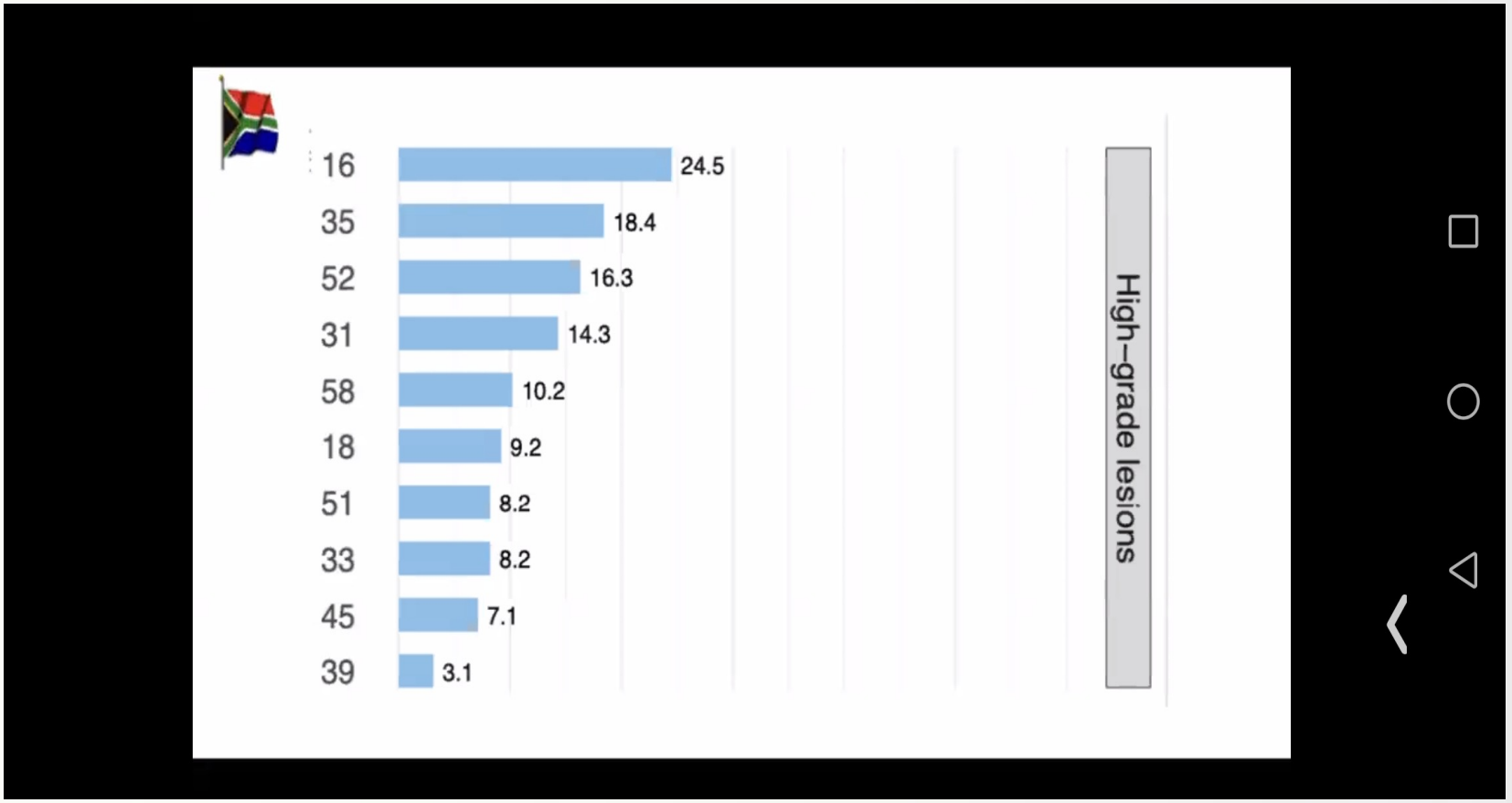

@PCR - HPV TYPE 16 : N
ALINITY
Ent:18/09-0546 autoins, Ver: 18/09-0546 autoins
Method: ALINITY ASSAY
Analyzer: 3113LABOS
HPVCO TYPE 18 * Positive
@PCR - HPV COBAS TYPE 18 : Detected
ALINITY
Ent:18/09-0546 autoins, Ver: 18/09-0546 autoins
Method: ALINITY ASSAY
Analyzer: 3113LABOS
HPV REFLEXING CYTO PROCESSED
Ent:16/09-1657 AutoDft, Ver: 16/09-1657 AutoDft
Method: MANUAL
HPVCO TYPE 45 Not detected
Ent:18/09-0546 autoins, Ver: 18/09-0546 autoins
Method: ALINITY ASSAY
Analyzer: 3113LABOS
HR-HPV A * Positive
Ver: 18/09-0546 autoins
Analyzer: 3113LABOS
HR-HPV B * Positive
:The Alinity m HR HPV assay dete high-risk HPV genotypes.
:It specifically identifies genotypes 16, 18 and 45. The other
:high-risk genotypes are combined in two groups.
:Group A includes genotypes 31, 33, 52, 58.
:Group B includes genotypes 35, 39, 51, 56, 59, 66, 68.

Image credit: Prof T. Smith



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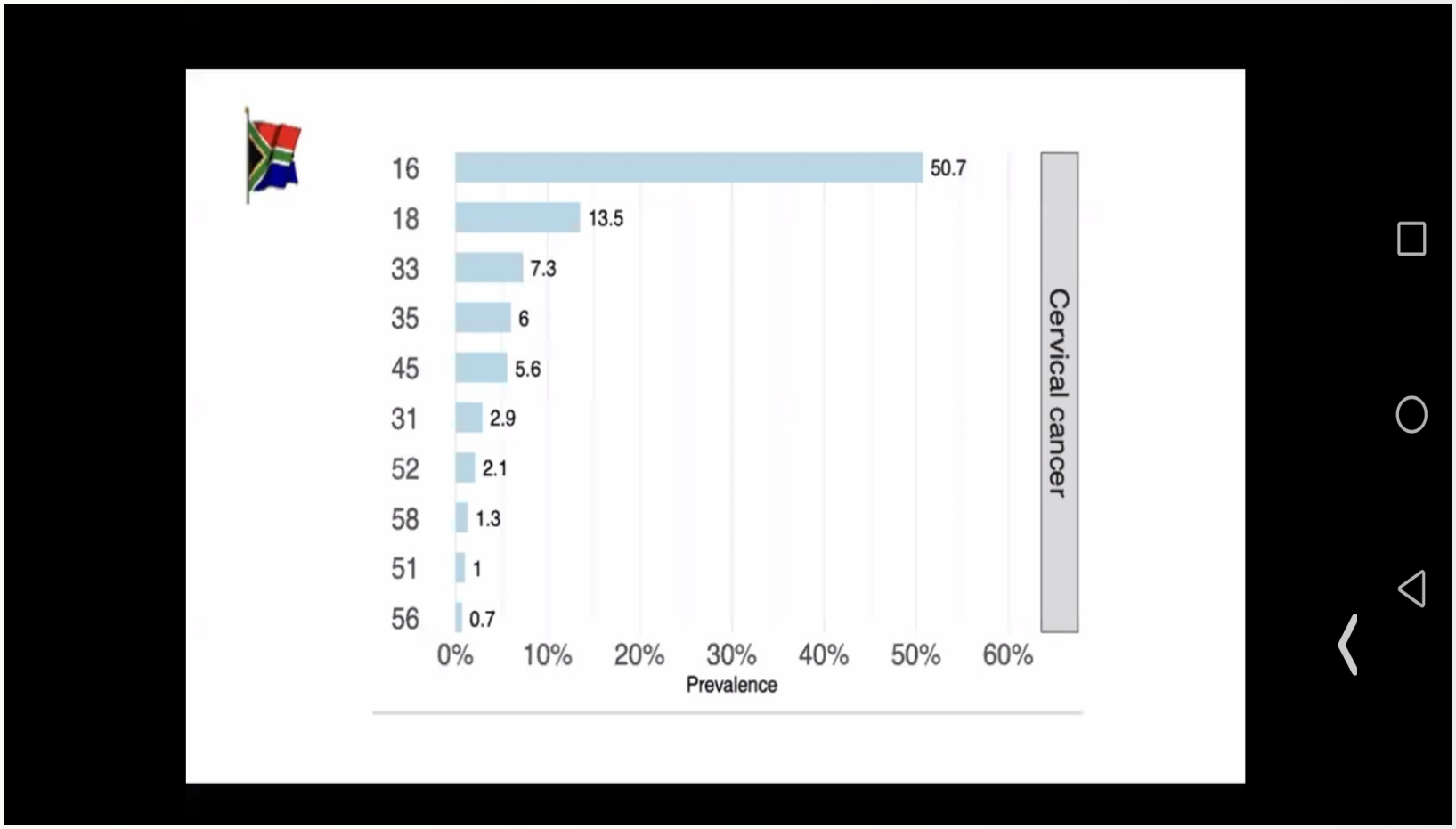

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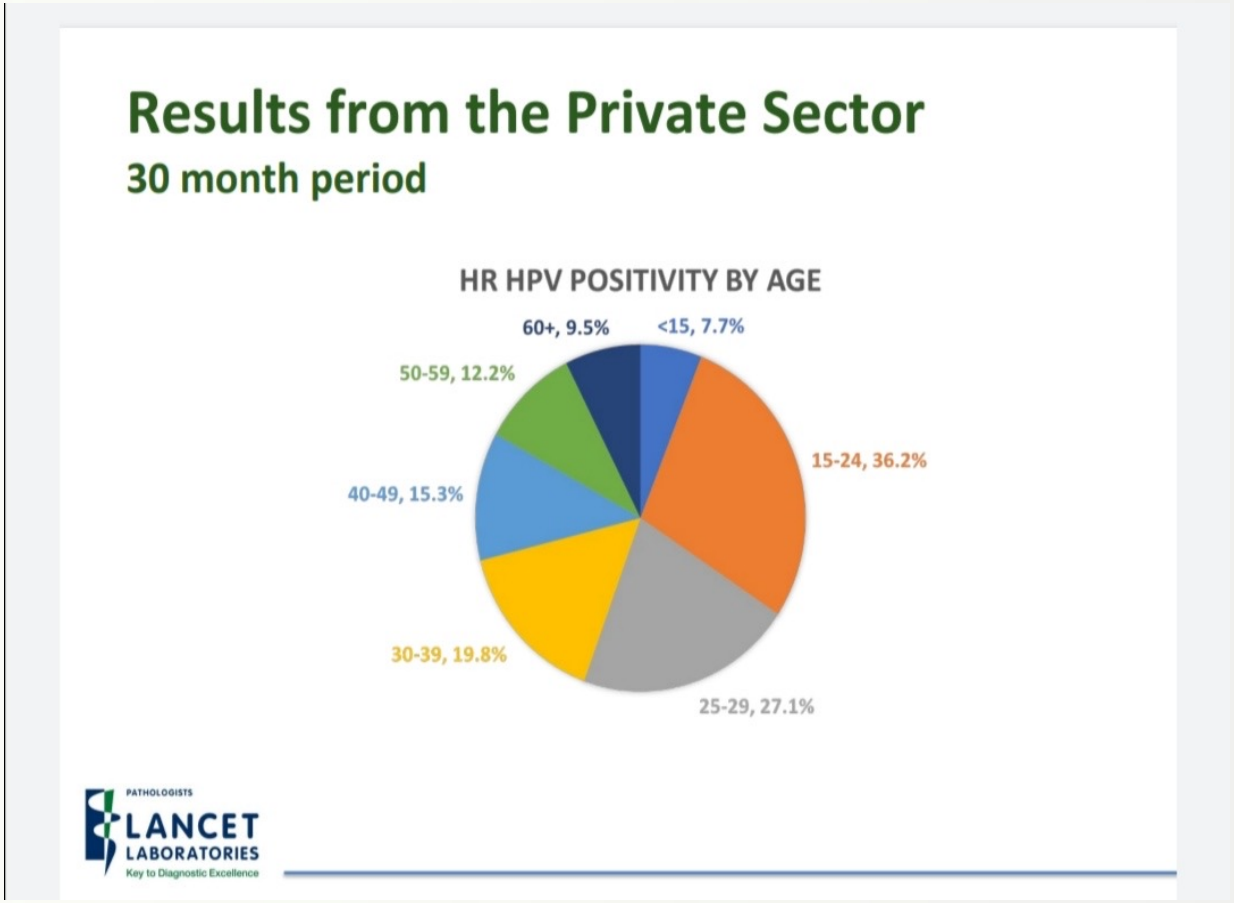
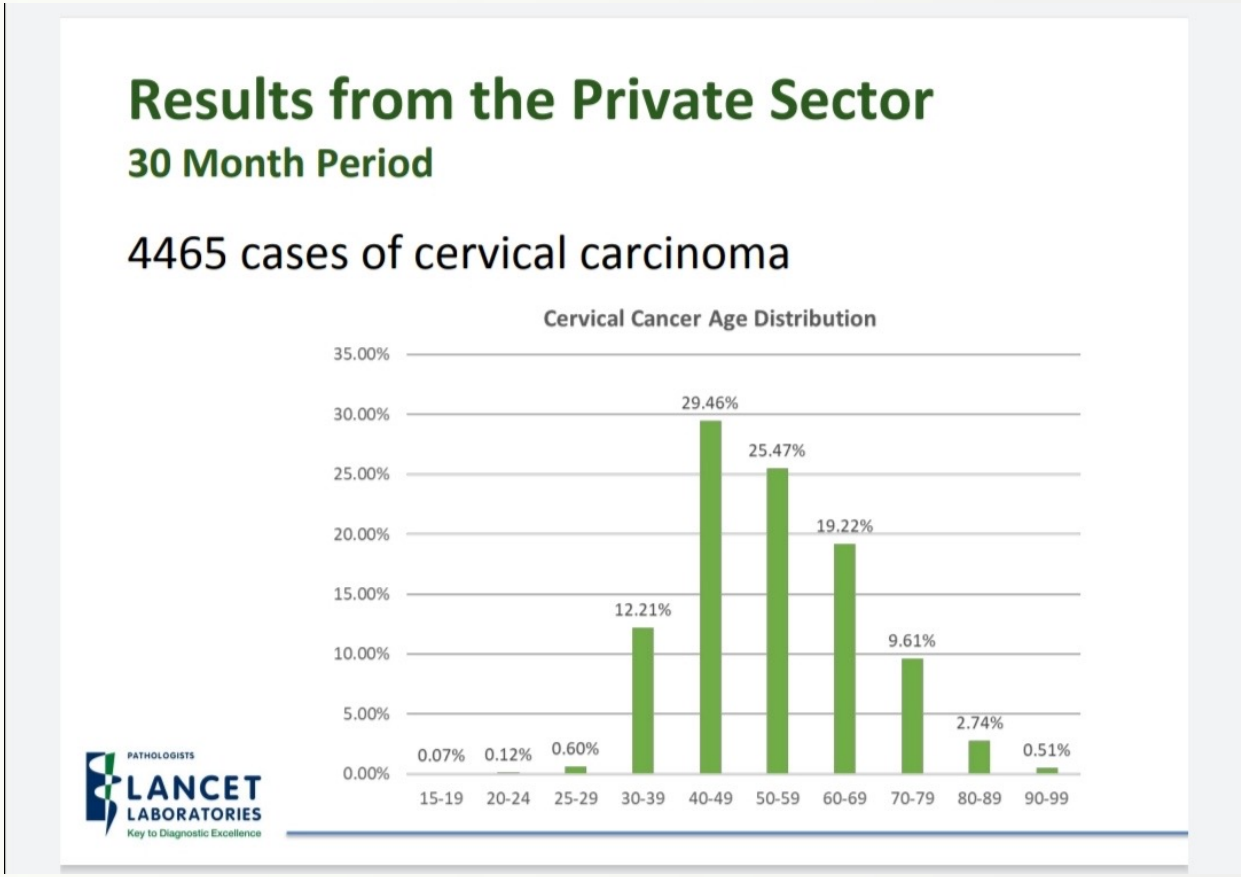


Image credit: Dr Allison Glass



CERVICAL SCREENING &
CERVICAL CANCER PREVENTION

BACKGROUND

- Cervical screening was established in the 1940s by renowned Greek physician George Papanicolaou in collaboration with gynaecologic pathologist Herbert Traut
- Their book “Diagnosis of uterine cancer by the vaginal smear was published in 1943
- 1954 “Atlas of exfoliative cytology” published by Papanicolaou
- This led to routine screening of the cervix which contributed to the significant decline of cervical cancer incidence.
- Traditional pap smear screening alone can reduce cervical incidence by up to 80% in well-run programmes with a dedicated screening programme, resources and sufficient political will

ATLAS OF
Exfoliative Cytology

BY GEORGE N. PAPANICOLAOU, M.D., Ph.D.
CLINICAL PROFESSOR OF ANATOMY EMERITUS, CORNELL UNIVERSITY MEDICAL COLLEGE

Published for The Commonwealth Fund by Harvard University Press, Cambridge, Mass.
1963

What constitutes a good screening programme/test:

- accurately and efficiently identify people at risk for a disease process
- test must be least invasive and most cost-effective/cheap
- ideally test should be simple to administer and safe
- ability to roll it out to include at risk population while maximising benefit to the greater public

- test must be accessible

- there must be effective treatment facilities to treat premalignant and malignant disease and resources for follow up

- screening test must ideally have high sensitivity, accuracy and specificity

- must be acceptable to the general public

- political will to fund, implement and sustain screening programme

- eg of success *Chile*

- Pap smear has until recently been the primary mode of cervical screening
- Screening of premalignant (atypia/dysplasia) and malignant lesions
- Cervical screening main purpose = diagnosis of ectocervical lesions
- Glandular lesions involving endometrium, endocervix, metastatic malignancies can also be diagnosed - epithelial, lymphoproliferative disorders can also be diagnosed using pap smear
- Pap smear reporting systems have evolved over time

- Until 2024: National guideline = 3 pap smears per lifetime at 10-year intervals starting at age 30
- HIV positive women go for cervical screening yearly

Who should have a pap smear?

- all women who have been sexually active should start screening at 18-20 years
- all women should have pap smear at least every 3 years
- anal smears in MSM gaining traction

- Recent terminology: Cervical intraepithelial neoplasia (CIN) – ASCUS, CIN I, II, III
- CIN reporting system may have poor reproducibility in biopsy samples
- more recently ---> **ASCUS** (atypical cell of undetermined significance), **LSIL** (low grade squamous intraepithelial lesion), **HSIL** (high grade squamous intraepithelial lesion) classification
- Histology: CIN classification which is more objective as tissue is examined
- Cytology report conclusion = ASCUS, LSIL, HSIL, infections, other findings eg inflammation, IUCD changes
- Reports are standardised with management recommendation
- HPV results are added in laboratories that offer HPV testing

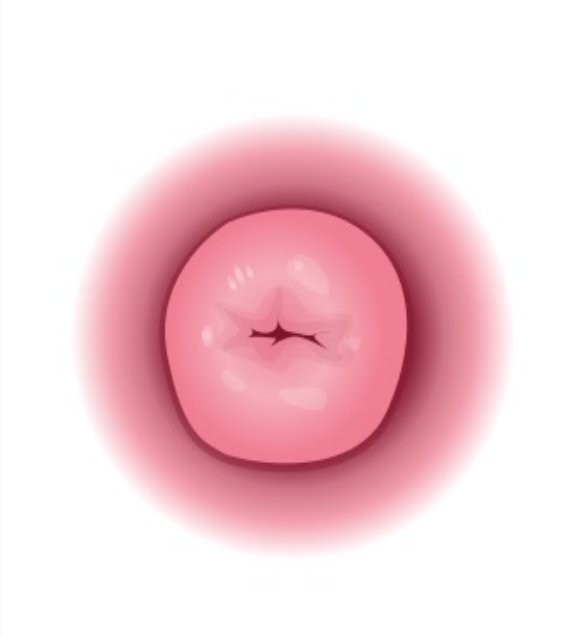
CYTOLOGY REPORT

- Statement of adequacy. Presence of endocervical cells: endocervix, metaplastic cells
- **Diagnosis:** Atypical cells of undetermined significance (ASCUS), low grade squamous intraepithelial lesion (LSIL), high grade squamous intraepithelial lesion (HSIL), malignancy – squamous carcinoma, glandular malignancies viz endocervical carcinoma, endometrial carcinoma, metastatic carcinoma.
- Other changes: reactive, reparative, pregnancy-induced, atrophy, metaplasia, keratosis, radiation changes in previously treated patients
- **HISTORY** while time-consuming for the clinician is NB for the cytologist examining pap smear
- Infections: candida (mostly albicans), shift in flora - bacterial vaginosis (Gardnerella vaginalis), Trichomonas vaginalis, viral cytopathy associated with Herpes simplex
- If any component of report is unclear, clinician should always contact the cytologist for clarity

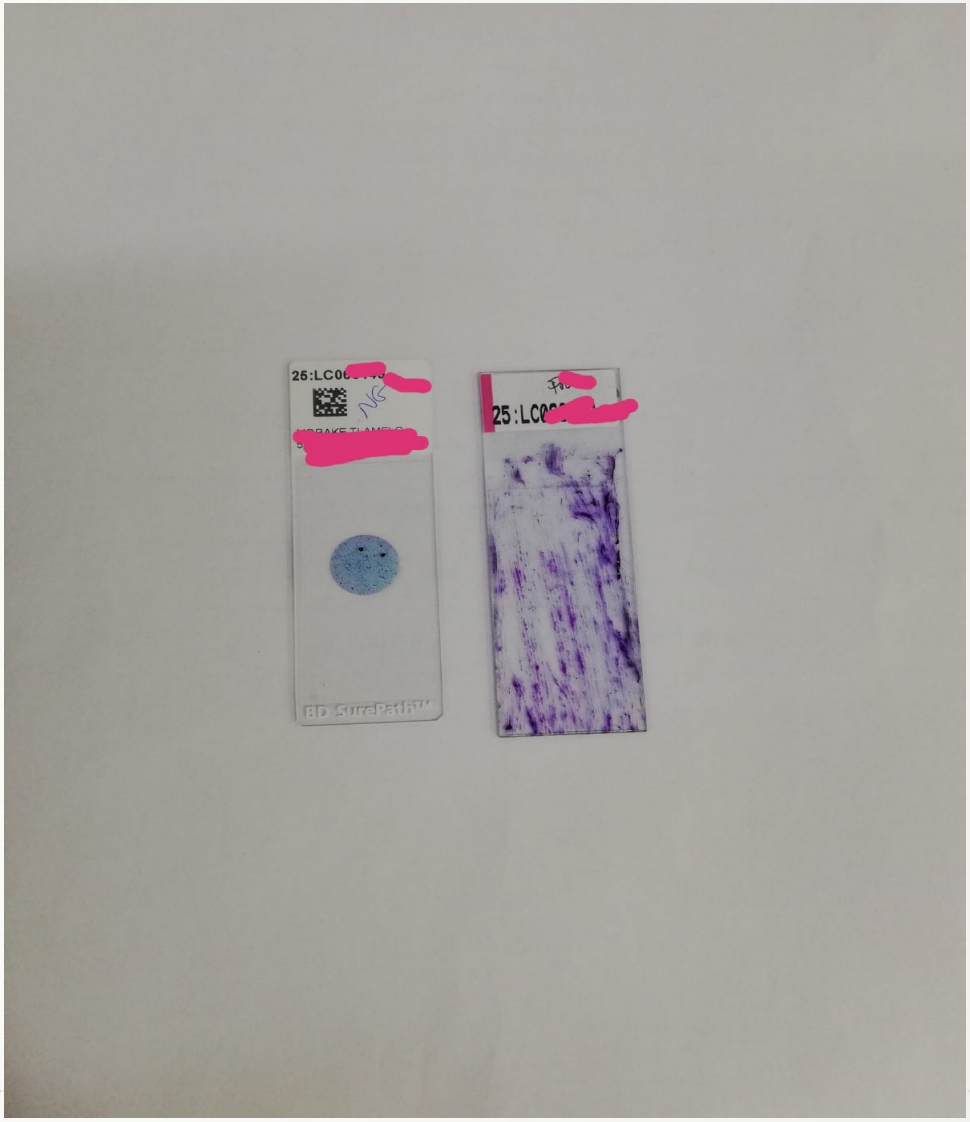
HOW TO PERFORM A GOOD PAP SMEAR

- Ensure that you have a good light source
- NB: visualise the cervix
- Note gross condition of cervix: normal, inflamed, ulcerated, mass lesions, contact bleeding
- If unable to access cervix adequately, please note details on request form so lab takes this information into consideration when assessing smears
- Cervix brush: longer bristles sample endocervix/transformation zone for a well-representative smear; shorter bristles sample ectocervix
- Gentle 360° motion rotating several times
- Avoid excessively pushing brush into endocervical canal, may result in lower uterine segment sample which can lead to inadequate smears due to insufficient sampling of ectocervix and false positive diagnosis

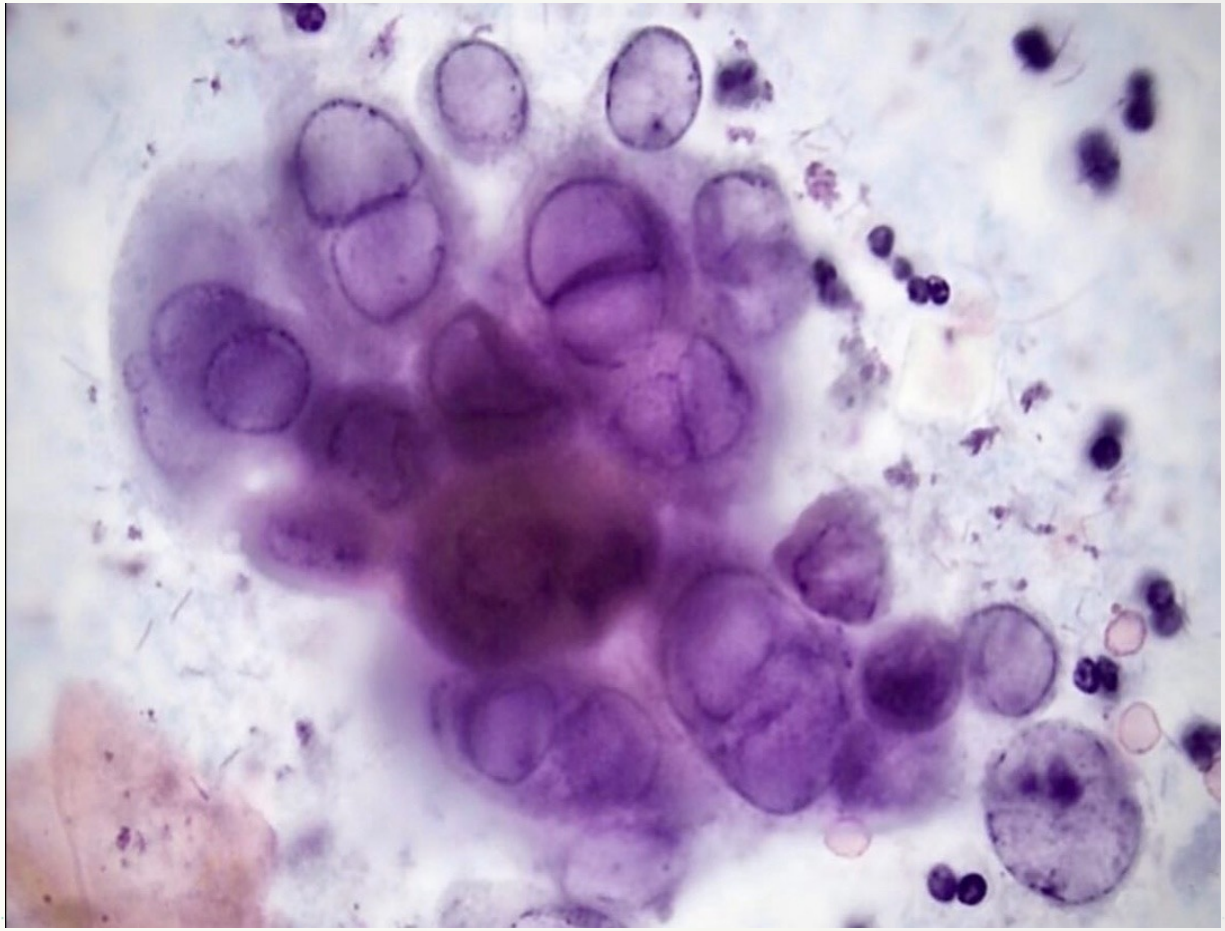
- Dislodge brush into **LBC** medium (SurePath®). ThinPrep® requires vigorous brush rinse in fluid medium. Always check lab protocol
- **Conventional** smears: smear material onto glass slide, use alcohol-based fixative/cytofix. Wait for slides to dry before packaging
- NB: label LBC bottles with patient information - minimum viz name, surname, ideally add DOB. This is NB step as it ensures the correct sample is assigned to correct patient
- Patient identifiers are extremely important and form part of lab quality assurance process (preanalytical)
- **Lab form ideally should be filled by the same person taking the smear (QC)**



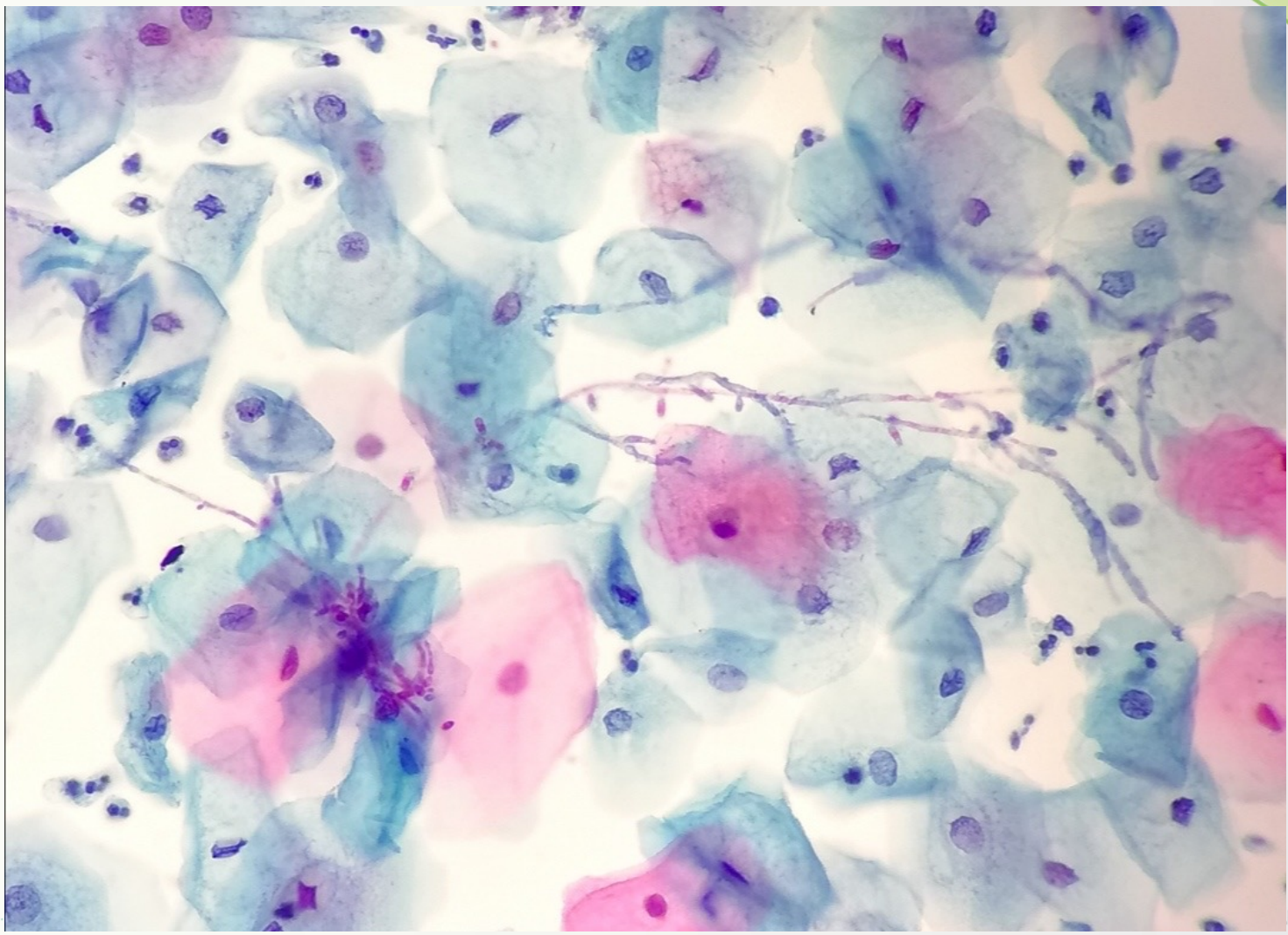

BD SurePath™
Collection Vial 10 mL
IVD


BD SurePath™

HERPES VIRAL CYTOPATHY



CANDIDIASIS



World health organisation (WHO) strategy to eliminate cervical cancer

- 2030 targets
- **90 - 70 - 90**
- 90%: vaccinate 90% of girls by age 15
- 70%: screen 70% of women with high performance/precision test at age 35 and 45
- 90%: treat 90% of women with cervical disease - cervical abnormalities, atypia to dysplasia and invasive malignancy

Why change the current cervical screening algorithm/protocol? Problem statement !!!!!

- in SA incidence of cervical cancer remains largely unchanged despite long-term availability of the pap smear and a national screening programme as set out by the NDOH
- reasons are multifactorial viz

- **poor uptake** of cervical screening programme by the general population, patients and HCW. State coverage **22.2%**, private around **15%**. HIV positive women - 95% state pap smears but less than 50% screening coverage. *HIV negative women*

- competing needs: busy health facilities with limited resources. Prioritise acute illnesses over screening test

- lack of prioritisation of screening and preventative medicine in general

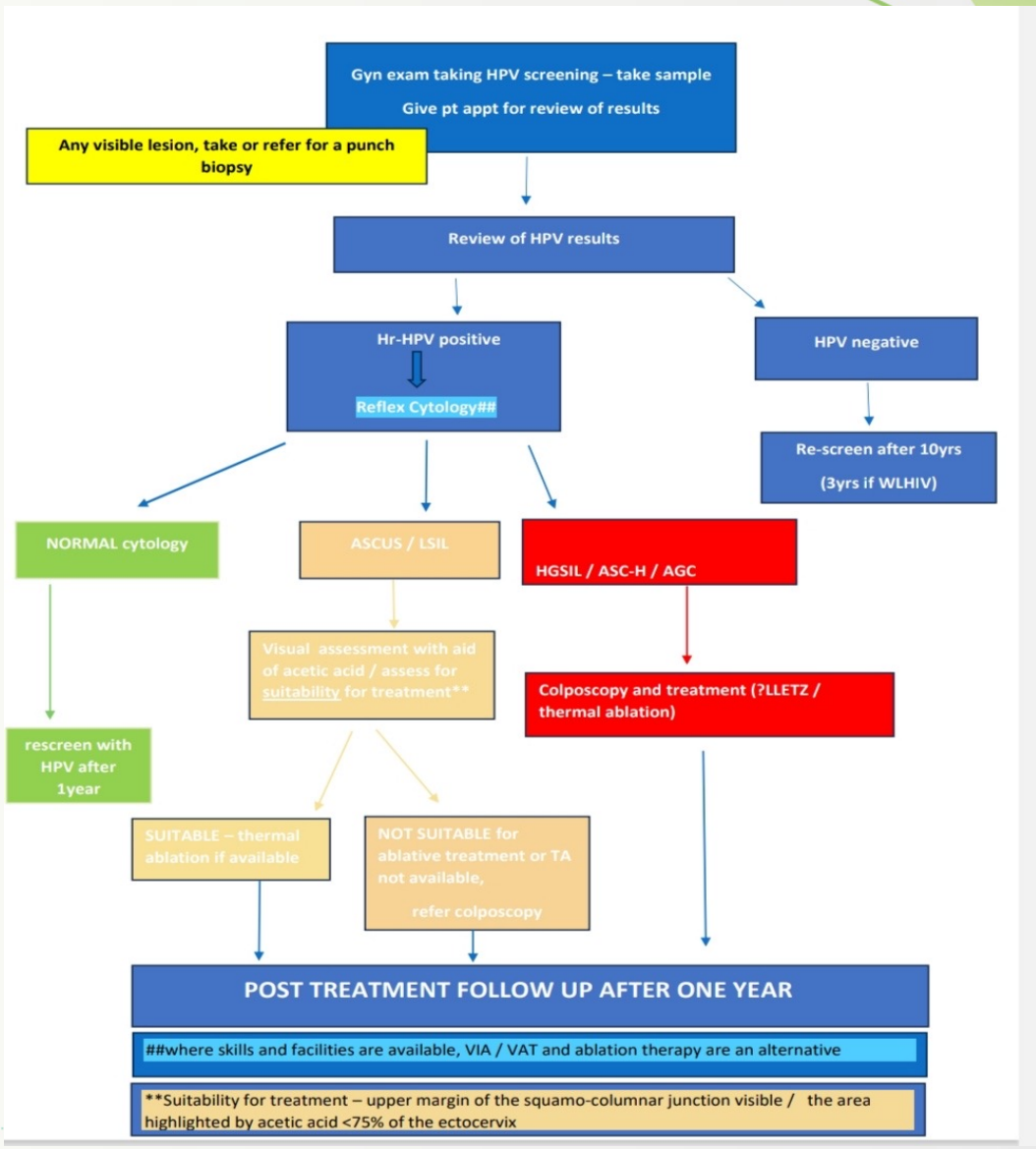
- poor follow up of results especially cervical abnormalities, patients frequently lost to follow up: state and private

- lack of technology innovation = no defined systems to call patients despite most citizens having access to cell phones. Labs and clinicians

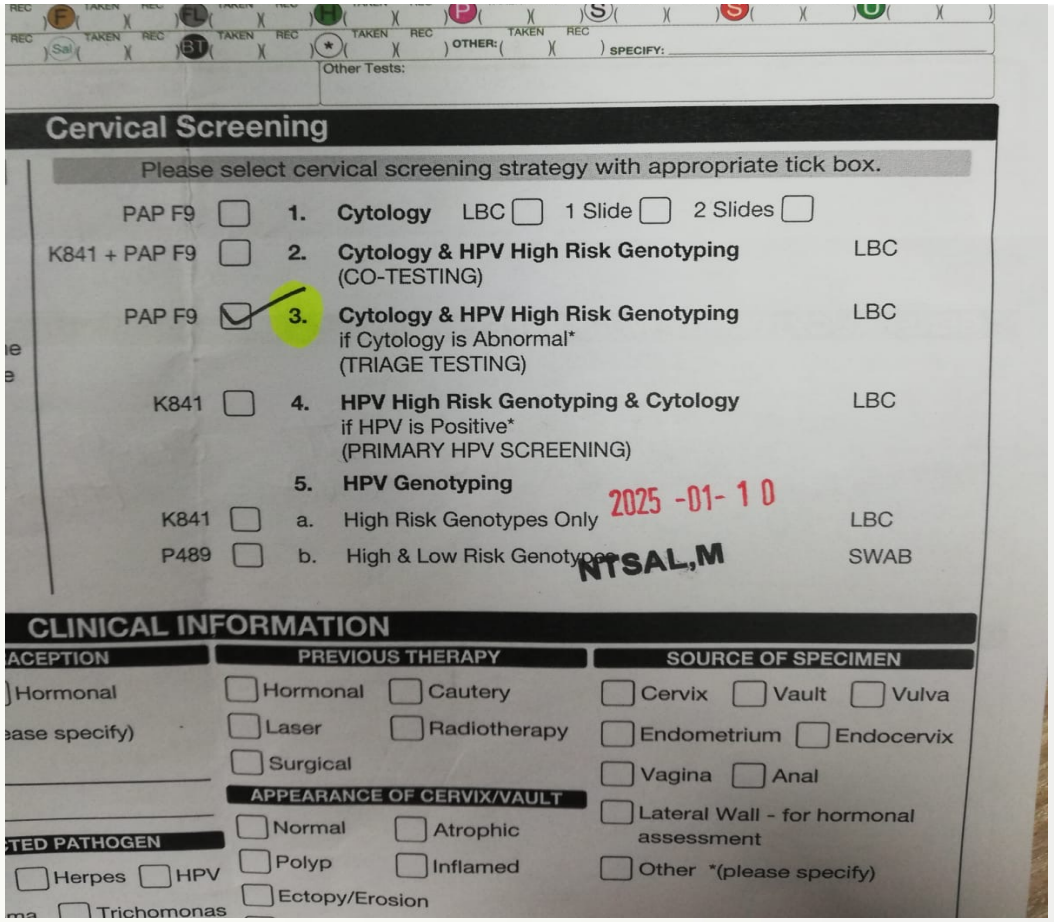
- variable cytology smear sensitivity: 60-87%

- **HPV screening** introduced as adjunct to traditional pap smear or primary modality of cervical screening
- recent NDOH migration to primary HPV screening
- private patients have different options to choose from, but these are predominantly informed by physician preference

NDOH SCREENING ALGORITHM



- Private practice/Lancet laboratories = clinicians have different options for cervical screening
- Note: patient age, history of menstruation, parity, pregnancies
- Relevant clinical information: comorbid medical conditions, previous surgery, medication
- Gross appearance of cervix - any abnormalities, inflammation, lesion ? Contact bleeding
- Previous pap smear results or biopsies, test results especially if different labs are used
- NB: previous cancer treatment - type, duration, last treatment. NB patients lost to follow up from gynae back to GP
- Previous HPV status



Other Tests:

Cervical Screening

Please select cervical screening strategy with appropriate tick box.

PAP F9 ☐	1.	**Cytology** LBC ☐ 1 Slide ☐ 2 Slides ☐	
K841 + PAP F9 ☐	2.	**Cytology & HPV High Risk Genotyping** (CO-TESTING)	LBC
PAP F9 ☑	3.	**Cytology & HPV High Risk Genotyping** if Cytology is Abnormal* (TRIAGE TESTING)	LBC
K841 ☐	4.	**HPV High Risk Genotyping & Cytology** if HPV is Positive* (PRIMARY HPV SCREENING)	LBC
	5.	**HPV Genotyping**	
K841 ☐	a.	High Risk Genotypes Only	LBC
P489 ☐	b.	High & Low Risk Genotypes	SWAB

2025 -01- 10

NTSAL,M

CLINICAL INFORMATION

ACEPTION
☐ Hormonal
ease specify)

TED PATHOGEN
☐ Herpes ☐ HPV
☐ Trichomonas

PREVIOUS THERAPY
☐ Hormonal ☐ Cautery
☐ Laser ☐ Radiotherapy
☐ Surgical

APPEARANCE OF CERVIX/VAULT
☐ Normal ☐ Atrophic
☐ Polyp ☐ Inflamed
☐ Ectopy/Erosion

SOURCE OF SPECIMEN
☐ Cervix ☐ Vault ☐ Vulva
☐ Endometrium ☐ Endocervix
☐ Vagina ☐ Anal
☐ Lateral Wall - for hormonal assessment
☐ Other *(please specify)

HPV VACCINATION

- 60-70% of invasive cervical cancer Sub-Saharan Africa related to HPV 16 + 18
- Vaccination coverage limited by **cost** of vaccines (barrier to access)
- Study in Kenya proved that a **single dose** of HPV vaccine is as effective as the 3-dose regimen. 98% effectiveness against HPV 16 &18 (Kenya medical research institute &University of Washington)
- Available to girls age 9-10. school vaccine programme. Government vaccine: cervarix, bivalent - 16 & 18. schedule 0,1, 6 months
- Gardasil 4, quadrivalent - covers low risk HPV 6, 11 (vulvovaginal warts); 16, 18. schedule 0, 2, 6 moths
- Gardasil 9 - nonavalent vaccine. 6, 11. 16, 18, 31, 33, 45, 52, 58. schedule 0, 2, 6 months

- Recommended vaccine age: 9-45 years but can and should be administered to all persons
- NB to remember that vaccine catchup is also available to individuals who missed vaccination at earlier ages
- Vaccines should not be gender specific but stipulated population to be vaccinated is most cost-effective strategy. disease elimination will be achieved by herd immunity. Privately funded vaccination = **all** eligible should be vaccinated
- Males and older persons should also get vaccinated including HCW who are exposed. MSM should also get vaccinated
- HPV cervical abnormalities in much older women including geriatric population are seen. Infections acquired through sexual contact as well as cases of sexual exploitation

HPV vaccination prices Dischem

GARDASIL 9

R2600 per dose

Admin fee R99 per dose

Requires 3 doses

Total R8100

HPV genotypes covered: 6, 11, 16, 18, 31, 33, 45, 52, 58

GARDASIL 4

R1600 per dose

Admin fee R99 per dose

Requires 3 doses

Total R5100

HPV genotypes covered: 6, 11, 16, 18

Please note: no vaccine covers HPV 35 currently

INCREASE AWARENESS OF CERVICAL CANCER AND SCREENING !!!

END