

SCREENING FOR CERVICAL CANCER



*Prof DOH Anderson SAMA
FRCOG; FRCS; FICS; FWACS*



INTRODUCTION 1

- ***Cervical cancer :***
 - ***12% of all cancers in women***
 - ***second most common cancer in women worldwide***
 - ***the commonest cancer in developing countries***
 - ***about half a million new cases each year***
 - ***more than ¼ million deaths each year***
 - ***Yet cervical cancer is both preventable and curable***



INTRODUCTION 2

- *In third world countries:*
 - *more than 80% of cervical cancers are in developing countries:*

screening, when it is available , is limited to a few urban areas
 - *screening is of sub optimal quality*
 - *The incidence will rise, especially in Africa, as a result of the AIDS pandemic*
 - *most cancers (>80%) including those of the cervix, are seen at a late stage (stages 3 and 4)*
 - *facilities for treatment do not exist in most areas*
 - *Palliative treatment is also not available*



INTRODUCTION 3

- ***Reasons for late diagnosis:***
 - ***lack of knowledge by the population about the symptoms***
 - ***a fatalistic attitude towards cancer and unawareness about the possibility of cure***
 - ***lack of knowledge by the medical and paramedical staff***
 - ***lack of or disorganized screening programs***
 - ***lack of health care facilities***

INTRODUCTION 4

- ***In Cameroon for instance :***
 - ***only 10 pathologists and 3 cytotechnicians for a population of some 16 million inhabitants (the female population contributes to 51%)***
 - ***facilities for treatment exist only in the two big metropolis, Yaounde and Douala***

INTRODUCTION 5

Cervical cancer and HPV:

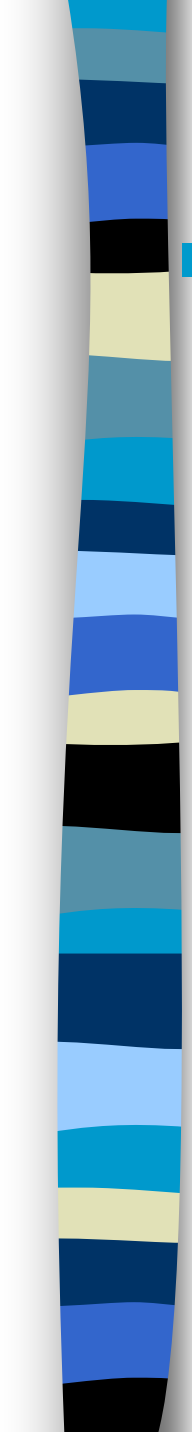
- over 90% of cases of cancer of the cervix are caused by an infection with one or more types of HPV which is sexually transmitted.*
- the virus enters the cells of the cervix and slowly causes cellular changes that can result in cancer*
- women generally infected in their teens or early twenties, but invasive cancer may not develop for as long as 10 to 20 years*
- Immuno-depression may greatly shorten this interval.*
- Many of the otherwise healthy women would shed or eliminate the virus before age 30*

INTRODUCTION 6

Cytology screening :

- is the mainstay of early detection of cervical cancer*
- adequate screening services are not available in developing countries and will not be available for many decades.*
- only about 25% of women above 35 years of age could be properly screened even if the number of cytologists were to increase 10 fold.*
- Since cytology based screening programs for cervical cancer cannot be provided on a large scale in developing countries (lack of trained staff ,program logistics and quality assurance) alternative approaches are needed*

INTRODUCTION 7

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- *A good screening method should have the following characteristics:*
 - *The disease should be one that is frequent with an impact on public health (high morbidity and mortality)*
 - *The sensitivity of the screening procedure should be high (>60%).*
 - *The specificity should also be high*
 - *The test procedure should be acceptable to the population and financially affordable*
 - *Treatment facilities for the disease should be available and should have a positive impact on morbidity and mortality.*



INTRODUCTION 8

- *To be effective, any screening program has to involve at least 70-80% of the population and be well organized to include a good recall system.*

INTRODUCTION 9

- ***PUBLIC HEALTH MODEL (After Miller AB)***
 - ***Community based***
 - ***Good population coverage: screening, diagnosis, treatment***
 - ***Quality control systems for screening, reading, colposcopy***
 - ***Data collection for feedback and improving of services***
 - ***Epidemiological pattern well defined***

PROGRAMMATIC ISSUES OF CERVICAL CANCER SCREENING 1

- ***To be successful, a cervical cancer screening program should:***
 - ***All the steps of the programme should be acceptable to the women. ie from education to screening, to diagnosis, to treatment, to follow-up.***
 - ***Women health and rights advocates should be involved right from the planning stages***
 - ***should respect the local customs, dignity, privacy and autonomy of the women***

PROGRAMMATIC ISSUES OF CERVICAL CANCER SCREENING 2

■ *Recommendations from consensus conference of the International Network for the Control of Gynaecological Cancers (INCGC)*

- *Achieve highest possible coverage rate*
- *the indicator here should be number of women screened, not number of Pap smears done*
- *Start off with a comprehensive demonstration programme in a well delimited zone before going national*
- *But aim at setting up organised national programme as soon as possible.*

PROGRAMMATIC ISSUES OF CERVICAL CANCER SCREENING 3

To establish a cervical cancer screening programme, the following requisites should be guaranteed :

- Establish the target group (age range)*
- Persuade women in the target group to attend for screening e.g. : by public and professional education.*
- Establish education programme aimed to reach the target community.*
- Ensure that those found abnormal return for diagnosis and treatment.*
- Persuade those screened and found normal to return for re-screen at the recommended intervals.*



PROGRAMMATIC ISSUES OF CERVICAL CANCER SCREENING 4

- *Ensure that screening facilities are optimal.*
- *Ensure that facilities required for diagnosis and treatment of abnormalities are adequate.*
- *Ensure that follow-up of those treated for abnormalities is complete.*
- *Create a system for dealing with advanced disease.*
- *Define clearly the referral mechanisms for patients.*
- *Institute a system to ensure quality control in the laboratories.*
- *Create an information system that allows for evaluation of the programme (internal and external)*

PROGRAMMATIC ISSUES OF CERVICAL CANCER SCREENING 5

Proposals 1 :

- Community based education is best done by people who have experience in this area.*
- Develop and test appropriate and effective methods.*
- Aim at both men and women since the man could be the obstacle to female participation in the programme.*
- Train staff at all levels before starting the programme.*
 - Taking Pap smears : nurses midwives, laboratory technicians, doctors*
 - Reading Pap smears : cytotechnicians under supervision of cytopathologist*
 - Treatment : doctors, nurses.*



PROGRAMMATIC ISSUES OF CERVICAL CANCER SCREENING 6

Proposals 2:

- *Screening services : the establishment of screening services as part of integrated services may prove to be cost effective (MCH services)*
- *Who to screen :*
 - *Look at peak age incidence in the area and start screening 5 years before.*
 - *In most countries this would be at 30 to 35 years then screen until age 60 to 65 years.*
 - *Women who have had no smear until age 60 or 65, can have one and then exit the programme too.*
- *Frequency : VIA every 2-3 years.*
- *Pap smear every 5 to 10 years.*

PROGRAMMATIC ISSUES OF CERVICAL CANCER SCREENING 7

Proposals 3:

- *Communication : the laboratory should ensure feed back on quality of smears to smear- takers.*
- *Primary prevention is also important. The programme should encourage activities which support :*
 - *Later age at first intercourse.*
 - *Men have fewer sexual partners.*
 - *Women should be empowered to have sex only when they want and how they want including the use of condom.*
 - *Cervical cancer interventions should benefit from initiatives in other areas notably STI and HIV/AIDS prevention programmes.*

METHODS OF SCREENING FOR CERVICAL CANCER

- Cervical cytology
 - The standard and most successful activity to date in reducing incidence and mortality from cervical cancer is the Pap smear
- Other methods
 - In all these other methods, there is lack of data on the extent of incidence or mortality reduction associated with their use.
 - Secondly, there is lack of formal cost effective analysis.

CERVICAL INSPECTION 1

Clinical down staging

- involves looking at the cervix in a symptomatic woman with a speculum to detect early stage cancer.
- abnormal findings need to be further investigated.
- Data from cross sectional studies in India indicate that the test results in 40 – 70 % referral of pathological cases.
- The method is not intended for the detection of disease at the pre-invasive stage.
- The method could only be recommended in very low resource settings. But it is in this same setting that there is not enough facilities for the management of invasive cancer.
- Therefore, the method cannot be recommended as a primary method of screening.

CERVICAL INSPECTION 2

Unaided Visual Inspection of the Acetic Acid treated cervix (VIA):

- Visual inspection of cervix treated with 3-5 % acetic acid aims to detect CIN. Good lighting is imperative.*
- Has been used for over 15 years in many studies in developing countries. Many have compared VIA to screening cytology.*
- Sensitivity of VIA is 60-90% with an average of 70% depending on training offered to service providers. Cytology is 40-85%.*
- VIA may be particularly useful in developing countries where cytology is unreliable, follow-up rates low and resources limited.*
- VIA + another method e.g. Cytology or HPV/DNA may be an attractive process even in well to do settings; that is a two stage screening process.*



CERVICAL INSPECTION 3

- ***Aided visual Inspection of the Acetic Acid treated cervix***
 - ***This approach involves the use of a gynoscope, a small, light weight, low-powered (2-4x) monocular telescope to view the acetic acid treated cervix. How much better it is than unaided eye is still to be determined.***

CERVICAL INSPECTION 4

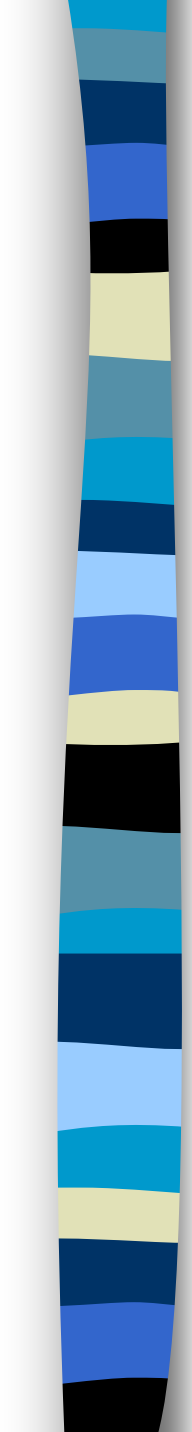
Speculoscopy

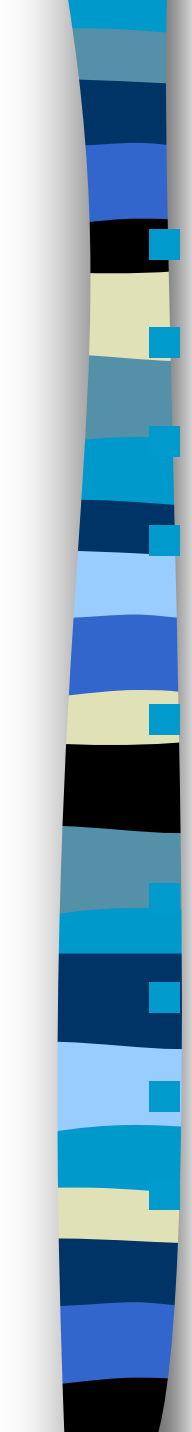
- In this method, an additional florescent light source preferably in a dark room aids in the detection of aceto white lesions.
- Information regarding its efficacy as a screening tool is limited.
- The chemi-luminescent light source is attached to the upper blade of the vaginal speculum but sensitivity and specificity appear to be comparable to that of VIA.
- In view of the additional resources needed, it is unlikely that this method be used as a primary screening test in developing countries.

CERVICOGRAPHY

- *This screening method involves examination of magnified photographic documentation of the acetic – acid – impregnated cervix.*
- *Sensitivity to detect high grade lesions is lower than that of cytology and even VIA.*
- *The specificity is however, comparable to that of cytology.*
- *Because of the equipment involved, it is unlikely to be used as a primary screening test in developing countries.*

CERVICAL SMEARS 1

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- Cytological screening using the Papanicolaou smear is the established method of screening.
 - A reduction in both the incidence of and mortality from cervical cancer has been demonstrated in many countries (eg : British Columbia, Canada, Finland, UK).
 - These have been countries with well organised national programmes based on cytological screening.
 - In most developing countries, limited financial, logistic and manpower resources have inhibited the establishment of national screening services. The problems associated with this method are :
 - high costs

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- requirement of skilled technical staff
 - labour intensive reading and reporting of smears
 - inadequate follow up of abnormal smears
 - high false negative rates eg : 30% in Norway, 10 % UK.

To improve on the results of Pap smears the following improvements have taken place.

- Use of cyto-brushes
- Liquid-based cytology
- Automation

Combination with other methods eg : HPV/DNA



LIQUID BASED CYTOLOGY

- *specimen quality improved*
- *preparations are easier to read*
- *higher sensitivity than conventional smears*
- *specificity at least similar to that of cytology*
- *suited for simultaneous testing for HPV, GC, chlamydia*
- *cost effective*

HPV/DNA TESTING

- Several approaches to HPV/DNA testing are available and include :
 - Hybrid capture – sensitivity very high for oncogenic types of HPV
 - PCR
 - In site hybridisation tests
- Trials
 - As an alternative to cervical cytology
 - 2 step screening programme
 - Management of women with abnormal Pap smear

JUSTIFICATION OF HPV TESTING IN CERVICAL CANCER SCREENING 1

- *HPV infection are quite common .*
- *Most of these infections with high HPV type end in a benign manner because most women would eliminate them before age 30 years*
- *A persistent high risk HPV and its progression to invasive cancer.*
- *Therefore, only a few cases infected with high risk HPV will become cervical cancer.*
- *In view of the above, begin screening at 30 years or at 25 years in high risk groups, or 8 years after the first sexual intercourse*



JUSTIFICATION OF HPV TESTING IN CERVICAL CANCER SCREENING 2

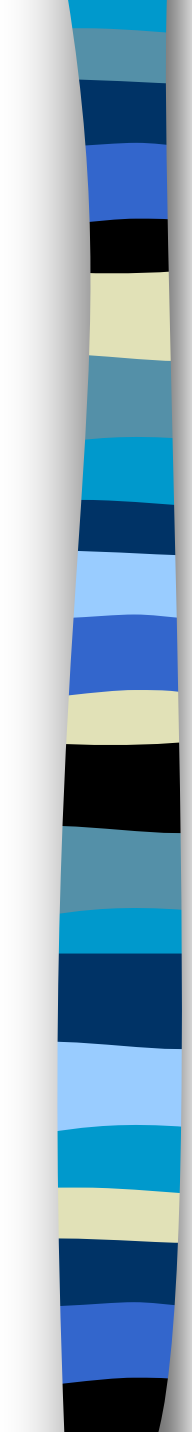
- *Cytology results suffer from a degree of inherent subjectivity and not even liquid based cytology can completely eliminate this.*
- *HPV testing is objective and highly reproducible.*
- *High risk HPV is detected in almost all (99.8%) cases of cervical cancer, hence the rationale for using it in cervical cancer screening programmes*



ROLE OF HPV IN CERVICAL SCREENING 1

- If HPV testing is combined with cytological screening, the screening interval can be safely increased. But the HPV test should not be used before 30 years.
- Combining Pap smear + HPV screen allows us to space screening intervals to 8-10 years since HPV has a negative predictive value of 100 %
- This combination will also allow us to refer fewer women for colposcopy.

ROLE OF HPV IN CERVICAL SCREENING 2

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- Those to be referred for colposcopy will include the following categories of women :
 - High grade SIL
 - Persistently positive HPV (after 12 months) even if cytology is normal.
 - Persistent ASCUS/AGCUS or low grade SIL no matter the HPV status.
 - HPV testing
 - High negative predictive value (99-100%)
 - High sensitivity (95-100%) for HG SIL lesions.

COLPOSCOPY 1

■ *Definition :*

- *Examination of cervix and related parts e.g.: vagin using a suitable magnifying apparatus with good illumination. The colposcopy views also alterations in the underling stroma. The term was first used by the inventor of the method, Hinselman, in 1925.*

■ *Indications :*

- *Women with HG-SIL*
- *Women with LG-SIL on more than 2 six monthly assessment.*
- *Clinically suspicious cervix (or PCB, IMB).*
- *Multi centric disease (VIN, VAIN, CIN)*

■ *Basic requirement*

- *Good apparatus and instrumentation*
- *Pathology: essential the communication between cytologist and colposcopist,*



– Training of colposcopist must be of the highest standards

■ *Suitable setting*

■ *Counselling of patients referred for colposcopy important.*

■ *Simple leaflet and/ or video essential information.*

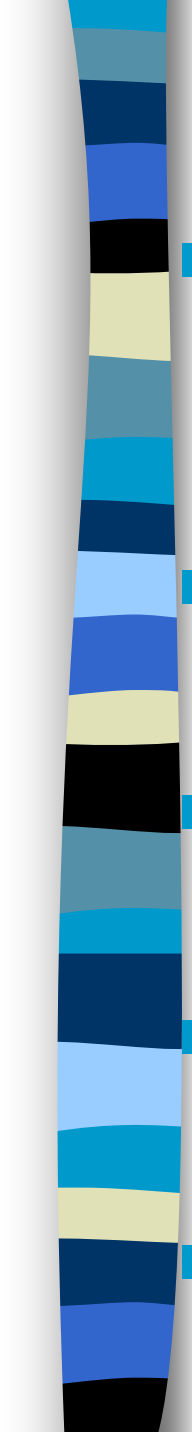
■ *Quality standard in colposcopy and cervical pathology. In UK National colposcopy Quality Assurance Group oversees quality standards.*

■ *Computerisation of clinic data, slides and digital photography.*

POLAR PROBE

- Real time electronic device for detection of cervical neoplasia
- Applied directly to cervix with instant recognition of normal and abnormal tissue.
- May be used in primary screening or as an adjunct to cytology.
- Sensitivity similar to that of cytology.
- Specificity better than cytology in some settings.
- Further trials in progress

CONCLUSION 1

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- *Cervical screening programmes have made major contribution in reducing mortality from cervical cancer.*
 - *The basic screening test used in these programmes had been the Pap smear.*
 - *There has been, however, worries as to the false negative rates of Pap smear.*
 - *Efforts have been undertaken during the past few years to reduce these false negative rates.*
 - *These include :*

CONCLUSION 2

■ *These include:*

- *repeat smears in a year or use of colposcope in clinically suspicious cases. No need repeating smears immediately, (e.g. less than three months) since it still finds false rates.*
- *liquid based preparations in 2/3 of cases.*
- *Telemedicine – counting education*
- *Quality control in cytology and colposcopy*
- *Direct consultation for primary or secondary opinion*
- *Use of HPV/DNA testing*
- *Molecular diagnosis may reveal details of pathogenesis*

■ *But these new technologies must be cost effective and not compromise sensitivity or specificity*



■ *SCREENING PROGRAMMES IN EUROPE*

The programme in Finland is the model for organised programmes of screening by cervical cytology.

- Programme started in 1960*
- Women 30-59 years*
- Yearly screening interval.*

Screening programmes in Europe

- Characteristics

- Education of the population*
- Fast feed back of screening results to women*
- Cost effective system for referral of women with abnormalities*
- Histological confirmation of diagnosis*
- Continuous quality control*

Organized programmes yield far better results in reducing morbidity and mortality than opportunistic screening.



**THANKS FOR YOUR
ATTENTION!**