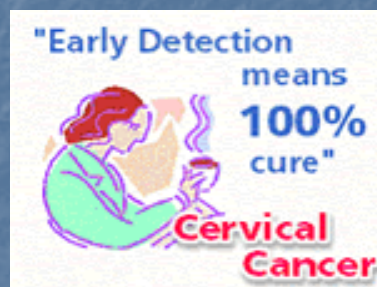


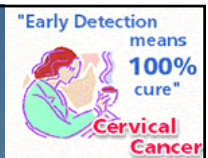
Cervical Cancer VACCINES



Dr C.S Ramdaursingh

*Program Manager Cervical Screening Program M.O.H & Q. L
(Mauritius)*

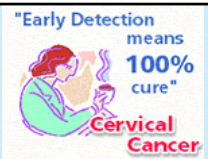

The Facts - Worldwide



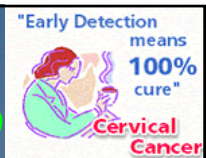
- 2nd commonest female cancer
- 430,000 cases/year
- >200,000 deaths/year
- 80% occur in developing countries



A woman dies of cervical cancer approximately every 2 minutes



Mortality rate of Cervical cancer (year 2000)



2.4 women per 100,000 population in Australia

3.3 women per 100,000 population in the U.S

3.9 women per 100,000 population in the U.K

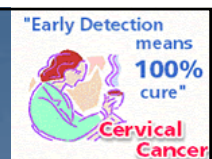
3.5 women per 100,000 population in France 2000

4.2 women per 100,000 population in Germany

15.0 women per 100,000 population in Trinidad and Tobago.

13.6 women per 100,000 population in Mauritius

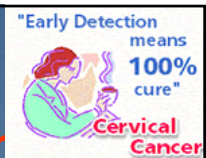
(Cancer Incidence, Mortality, and Prevalence Worldwide, GLOBOCAN, 2000 American Cancer Society)



- Cervical cancer used to be the leading cause of cancer death for women in the United States.
- However, in the past 40 years, the number of cases of cervical cancer and the number of deaths from cervical cancer have decreased significantly.
- This decline largely is the result of many women getting regular *Pap tests*, which can find cervical precancer before it turns into cancer.

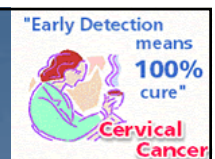
- **Cervical cancer is the most common cancer for women in Central America and S. Africa.**
- **The Caribbean, other parts of Africa, S.America and South Eastern Asia also have very high incidences of this disease.**
- **Unfortunately, many women from these areas don't have access to routine exams such as Pap smears.**

Although the average age of diagnosis is 50, women as young as 17 can contract the disease.



RISK FACTORS

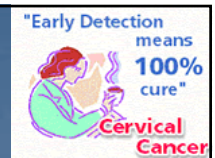
- *Early Marriage*
- *Early age of First Coitus*
- *Multiple Sex Partners*
- *Frequent Coitus*
- *Smoking*
- *HVS*
- *HPV*
- *HIV*



Types of HPV

Low-risk

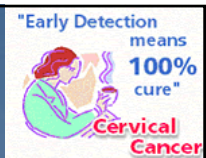
High-risk



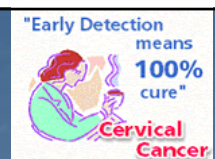
Low-risk

Common types: 6, 11, 40, 42, 43, 44, 54, 61, 72, 73, 81

- Can cause benign or low grade cervical cell changes & genital warts but are rarely, if ever, found in association with invasive cancers.
- **HPV 6 and HPV 11** are the low-risk viruses that are most commonly found in genital warts.



High-risk



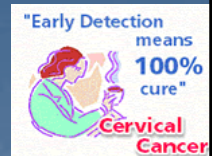
Common types: 16, 18, 31, 33, 35, 39, 45, 51, 52, 56, 58, 59, 68, 82

- **HPV 16** is the most common high-risk type, found in almost **50% of all cervical cancers**.

It is also one of the most common types found in women without cancer

- **HPV 18** is another common high-risk virus, found not only in squamous lesions but also in **glandular lesions** of the cervix.
HPV 18 accounts for **10% - 12% of cervical cancers**.
- HPV types 31, 33, 45, 52 & 58 each account for between 2%-4% of cancers.
- Each of the other high-risk types account for 1% or less of cancers.

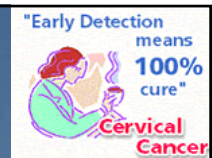
Risk Factors Strongly Associated with Acquisition of HPV Infection in Women



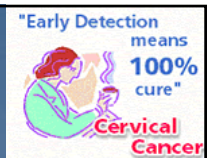
A number of prospective studies conducted primarily in young women have defined the risk factors for HPV acquisition.

- **Young age (< 25 years)**
- **Increasing number of sex partners**
- **Early age at first sexual intercourse (<16 years)**
- **Male partner has (or has had) multiple sex partners**

Transmission of HPV

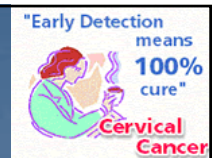


- HPV is usually transmitted through **direct skin-to-skin contact**, most often during penetrative genital contact (vaginal or anal sex).
- Genital HPV infections are uncommon in women reporting no previous sexual intercourse, appearing in less than 2% of this population.
- *Sexual behavior is the most constant predictor of acquiring infection.*
- Most importantly, the **number of sex partners** is proportionately linked to the risk of HPV infection.

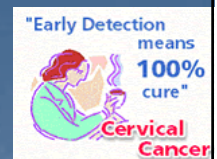


- Having sex with a new partner may be a stronger risk factor for initial HPV acquisition than having sex with a steady partner.
- For women, the sexual activity of their partner(s) is also important for determining risk of HPV acquisition.
- For adolescent females and college students, the risk of acquiring HPV is increased if a woman's partner has had or currently has other partners

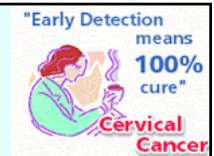
History of Genital HPV Infections



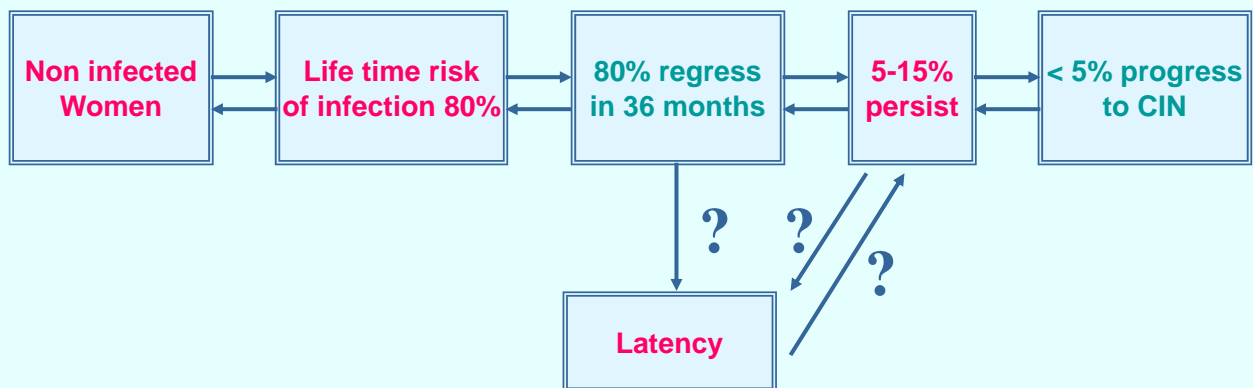
- **Most genital HPV infections are transient and asymptomatic.**
- Approximately 70% of women with HPV infections become HPV DNA negative within 1 year & as many as 91% of them become HPV DNA negative within 2 years.
- *The median duration of new infections is typically 8 months.*
- **HPV 16** infections tend to persist longer than infection with other HPV types, but most HPV 16 infections become undetectable within 2 years.



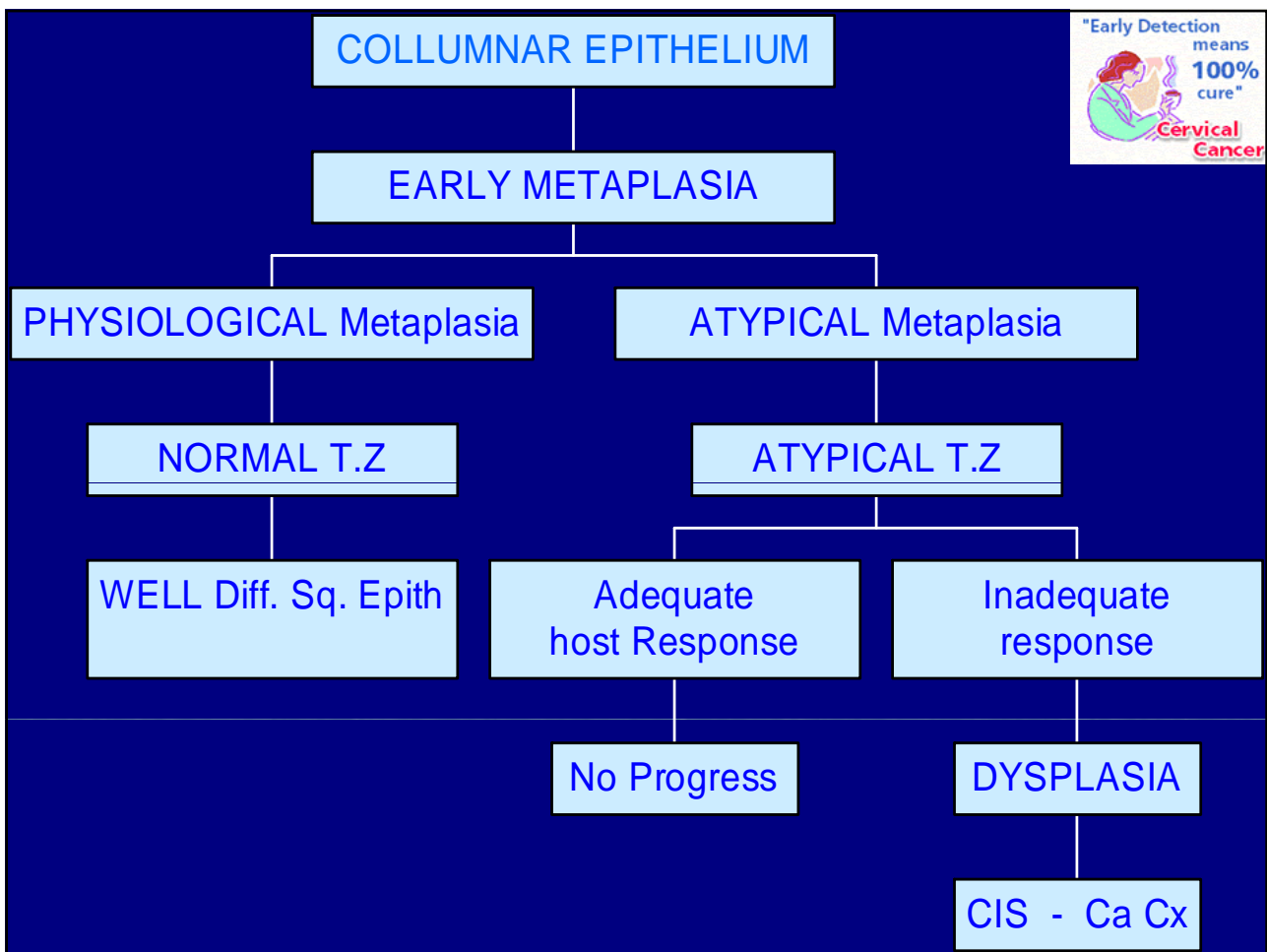
- Many women with transient HPV infections may develop **ASC-US or LSIL**, as detected on a Pap test, and they may spontaneously regress.
- Only about 10% of women infected with HPV develop **persistent HPV infections**.
- *Women with persistent high-risk HPV infection are at greatest risk for developing high-grade cervical Ca precursors & cancer.*



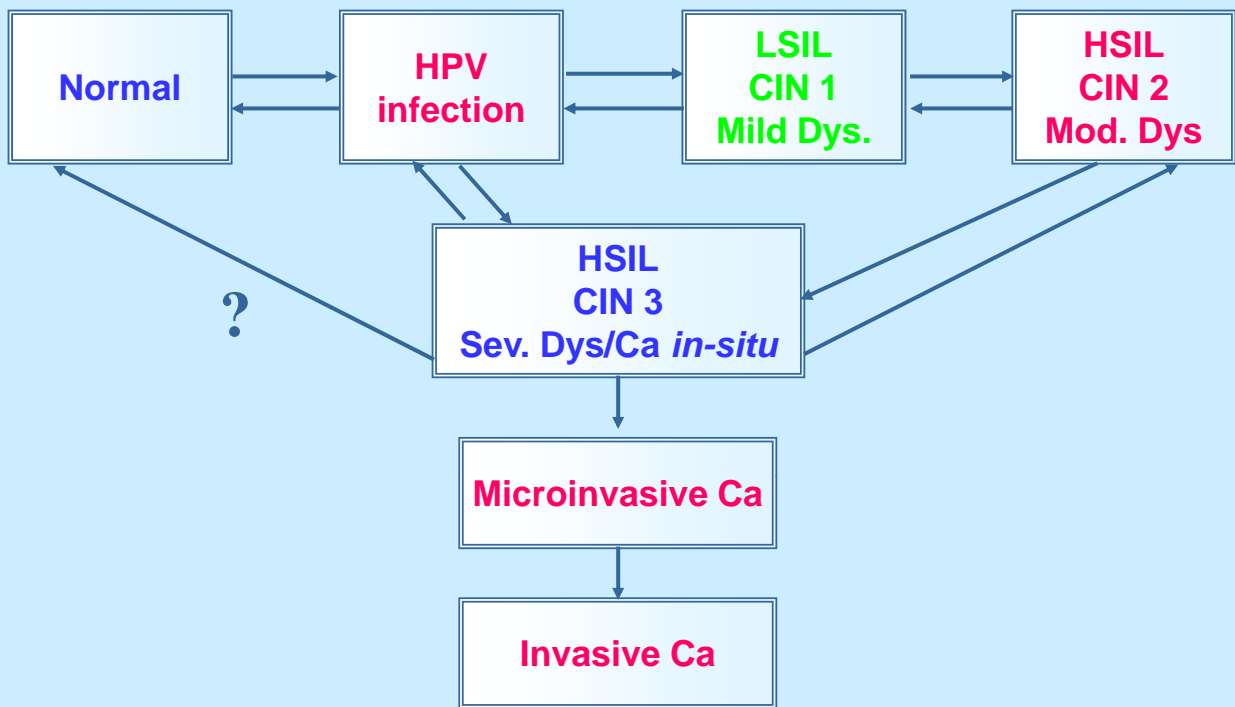
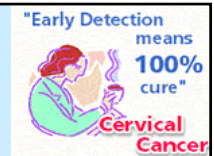
NATURAL HISTORY OF HPV INFECTION



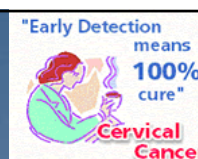
Median duration of new infection 8 months



NATURAL HISTORY OF CERVICAL CANCER PRECURSOR LESIONS

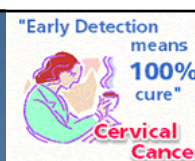


NATURAL HISTORY OF CERVICAL CANCER PRECURSOR LESIONS



Pap smear classes	WHO system	CIN system	Bethesda system
Class I	Normal	Normal	Normal
Class II Class III	Mild dysplasia	CIN 1	LSIL
Class III	Moderate dysplasia	CIN 2	HSIL
Class III	Severe dysplasia	CIN 3	HSIL
Class IV	Ca <i>in-situ</i>	CIN 3	HSIL

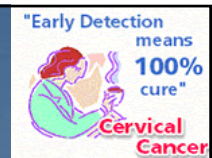
Natural History of CIN



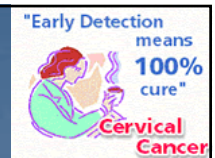
	Regress	Persist	Progress To CIN3	Progress to Invasion
CIN 1	57%	32%	11%	1%
CIN 2	43%	35%	22%	5%
CIN 3	32%	56%		>12%

Ostor AG. Int J Gynecol Pathol 1993; 12(2): 186-92

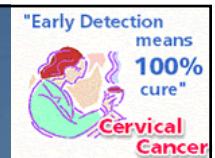
Factors associated with HPV persistence & progression to cervical Cancer



- **The single most important factor associated with invasive cervical cancer is the factor of never or rarely being screened for cervical cancer**
- **Immunosuppression** from any cause, including HIV.
- **Cigarette smoking**
- long-term use of oral contraceptives
- Co-infections such as Chlamydia, parity & nutritional factors.



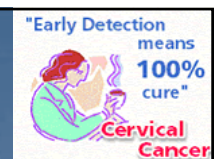
- *In populations that are screened regularly, cervical cancer develops rarely in women, even with persistent HPV infection.*



- Prevention of genital HPV infection is important in reducing the prevalence of genital warts, abnormal Pap tests, and cancer

Preventing Cervical Cancer

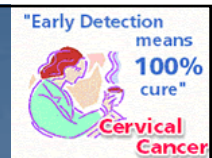
■ Pap Smear test



■ HPV vaccination

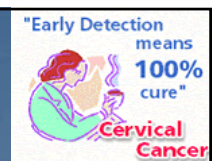
- *In 2006, the U.S. Food and Drug Administration (FDA) approved the use of a vaccine to prevent infection by the four most common types of HPV.*
- *The Centers for Disease Control and Prevention (CDC) recommends the use of the vaccine in females aged 11 to 26.*
- *Because not all HPV types that cause cervical cancer are included in the vaccine, the CDC recommends no change in cervical cancer screening practices for females receiving the HPV vaccine.*

HPV Vaccines



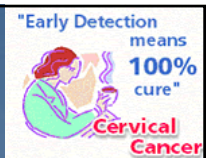
- This prophylactic vaccine is made from non-infectious HPV-like particles (or virus like particles, VLP).
- It does not contain thimerosal or mercury.
- The vaccine is administered through a series of three intramuscular injections over a six-month period (at 0, 2, and 6 months).

Recommendations for HPV Vaccine



- The vaccine should be administered to 11- to 12-year-old girls and can be administered to girls as young as 9 years of age.
- The vaccine also is recommended for 13- to 26-year-old females who have not yet received or completed the vaccine series. (Cervarix- upto 45 yrs)
- Ideally, the vaccine should be administered before onset of sexual activity.
- However, females who are sexually active also may benefit from vaccination.
- Females who already have been infected with one or more HPV type would only get protection from the vaccine type(s) they have not acquired.

Vaccine Safety, Efficacy, and Duration of Protection

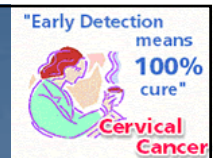


- In studies of over 11,000 females (9 – 26 years of age), *the vaccine has been found to be safe and to cause no serious side effects.*
- Adverse events were mainly mild injection site pain.
- Offers an additional, promising method of **preventing up to 70% of cervical cancer** cases through primary prevention.
- The duration of vaccine protection is unclear.
Current studies indicate that the vaccine is effective for at least five years.
- There is no evidence of waning immunity during that time period.

HPV vaccine

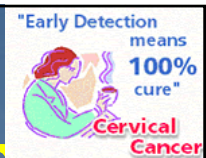
Cervarix

Gardasil

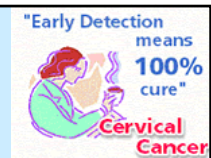


HPV vaccine can be given

- **Lactating mothers**
- **In minor acute illnesses** (*such as diarrhea or mild upper respiratory tract infections, with or without fever*)
- **An equivocal or abnormal Pap test, Genital warts.**
- **Immunocompromised patients** either from disease or medication. (*However, the immune response to vaccination and vaccine efficacy might be less than in immunocompetent females*).

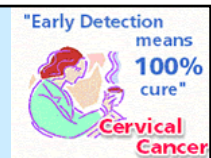


HPV vaccine should not be given



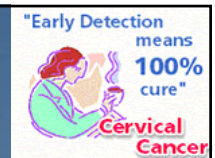
- **In Pregnancy.** *(Although the vaccine has not been causally associated with adverse pregnancy outcomes or adverse events to the developing fetus, data on vaccination in pregnancy are limited)*
- History of immediate hypersensitivity to yeast or to any vaccine component
- **In moderate or severe acute illnesses.** *(In these cases, girls/women should wait until the illness improves before getting vaccinated)*

Limitations



- About 30 % of cervical cancers & 10 % of genital warts will not be prevented by these vaccines.
- In addition, the vaccines do not prevent other STDs nor do they treat HPV infection or Ca Cx.
- Because the vaccines will not protect against all infections that cause cervical cancer, *it is important for vaccinated women to continue to undergo cervical cancer screening* as is recommended for women who have not been vaccinated

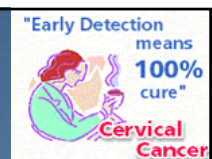
Other Strategies to prevent HPV INFECTION



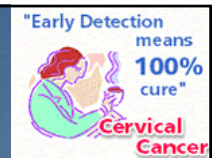
- Reduction of the duration of infection.
- Decreasing the efficiency (likelihood) of transmission
- Reduction of the number of sex partners.

Reduction of the duration of infection

- **The most common approach to reducing infectiousness of an STD is treatment.**
- However, there is no effective systemic treatment for genital HPV
- Treatment for genital HPV may be applied to lesions, such as genital warts or cervical cancer precursors (cryotherapy, electrocautery, or surgical excision)

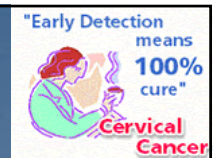


Decreasing the efficiency of transmission



- **Use physical barriers, such as condoms.**
- One recent prospective study among newly sexually active college women demonstrated that consistent condom use was associated with a 70% reduction in risk for HPV transmission
- *The use of condoms has been associated with higher rates of regression of CIN and clearance of HPV infection in women*

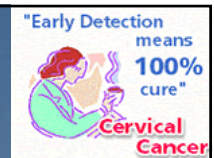
Reduction of the number of sex partners.

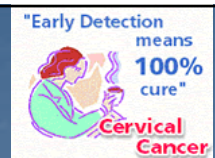


- *The surest way to prevent HPV infection is to abstain from any genital contact, including nonpenetrative intimate contact of the genital area.*
- Long-term mutual monogamy with a single uninfected partner is likely to be the next most effective approach to prevent infection

1. The vaccine will NOT provide protection against all types of HPV that cause cervical cancer.

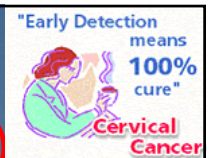
2. *Women may not receive the full benefits of the vaccine if they do not complete the vaccine series.*





- *Approximately half of all cervical cancers occur in women who have never been screened.*
- Therefore, **screening** is particularly important in women who have never or rarely been screened.

Cervical Screening Program (Mauritius)



Screen age: 30- 60 years

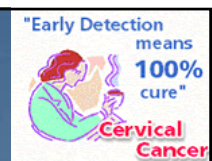
If women screened only once in her lifetime then—best age is between 35 – 45

Repeat Normal smear every 3 years

In HIGH RISK cases Normal smear repeated less 1 Yearly

Above 65 yrs -- screening not necessary if last 2 previous smears were Negative

AIM of Cervical Screening program:

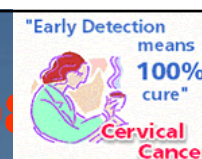


- To screen at least 80% of the female population between 30-60 years in Mauritius & Rodrigues in 10 year span.
- To ensure that all patients with abnormal smears are treated and have a proper follow-up.
This will definitely help in reducing the rate of mortality and morbidity from Cancer of cervix in Mauritius.
- To maintain computerized records of all the positive cases and their follow-up

September 2005 – October 2008

- No of women screened : 13,380
- No of results received & disseminated 13,380.
- **No of Normal results : 10,960**

10,960 normal results were recorded & sent to respective participants individually.

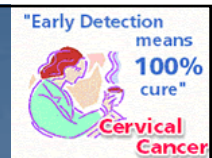


Referred Cases		
Borderline /ASCUS	333	2.49%
Mild Dyskaryosis	74	0.55%
Moderate Dyskaryosis	36	0.27%
Severe Dyskryosis	54	0.40%

Cases refered to AHC/ CHC

- Inflammatory/Candidia: 1,276 (9.54%)
- Inadequate smears : 647 (4.84%)

Cervical Screening Results (March 2001-Nov 2008)



- Total No of cases Screened : 58,480.
- Normal cases : 47,682 (81.53%)
- **Abnormal cases:** : **2,098 (3.59%)**
- Inadequate Smear : 2805 (4.80%)

Cervical smear Management Protocol



Smear	Management	If next smear negative then:
Normal	Repeat in 3 years if no previous abnormality	Routine Recall
Inflammatory	Repeat in 3 years if no previous abnormality. Treat any current infection	Routine Recall
Borderline	Repeat in 6 months. If persists 2 occasions, refer to Colposcopy	Repeat in 1 year, then 2 years then routine recall
MILD Dyskaryosis	Repeat in 3 months If persists refer to Colposcopy & / Biopsy	Repeat in 1 year, then 2 years then routine recall
MODERATE Dyskaryosis	Urgent Colposcopy/ Biopsy	Repeat at the follow up
SEVERE Dyskaryosis	Urgent Colposcopy/Biopsy	Repeat at the follow up
Invasion Suspected	Urgent Colposcopy/Biopsy	

Why should my daughter have this vaccine at 12 to 13 years of age when the age of consent is 16?

Whilst most girls don't start having sex until they are 16 or older, it is recommended that they have the vaccination at 12 to 13 years of age to get the most benefit from the vaccine.

The virus that causes cervical cancer is spread by someone having sex or being sexually intimate with another person who has the virus.

Both men and women can become infected with this virus.



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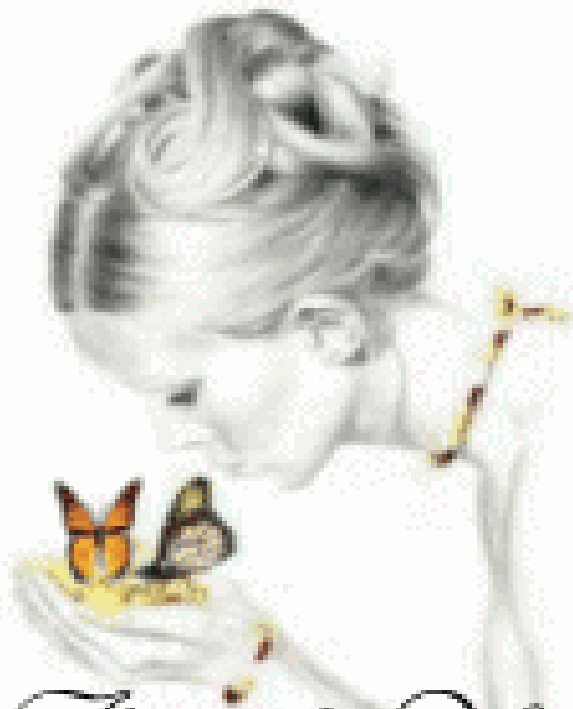
"Early Detection

means

100%
cure"



**Cervical
Cancer**



Thank You