



The new Cervical Screening Test for Australian women:

Louise Farrell



Outline and explain the changes to the National Cervical Screening Program due to commence in Dec 2017



LEARNING OBJECTIVES FOR TODAY

- Why are we changing from Pap test to Primary HPV test screening?
- Why all sexually active women should participate in the NCSP, including HPV vaccinated women
- Understand the recommended changes to the NCSP and be able to explain/reassure your patients
- Understand the initial management of cervical screening test results



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Why

- New knowledge on the development of cervical cancer.
- New evidence for cervical cancer prevention and screening
- New technologies
 - liquid-based technology
 - computer assisted image analysis
 - HPV tests
- 2007 - National HPV Vaccination Program (girls)
- 2013 - National HPV Vaccination Program (girls + boys)
- Current NCSP is **intensive** compared to other countries



Main changes from May 2017

Now

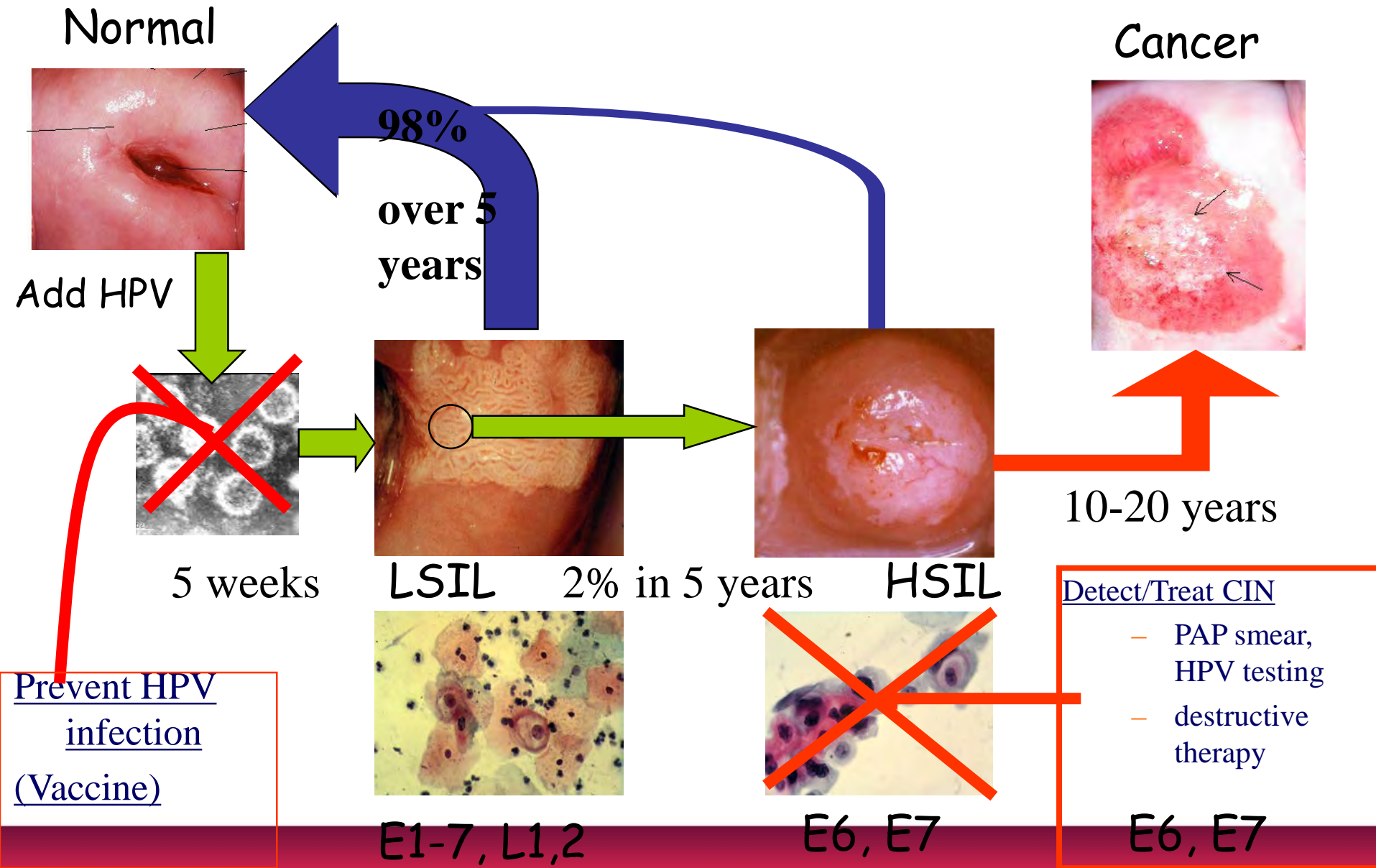
- Pap smear
- 2 yearly
- Start 18 years
- End 69 years
- Reminders

May 2017

- **HPV test**
- **5 yearly**
- **Start 25 years**
- **End 70-74 years**
- **Invitations/Reminders**
- **Self-collection**



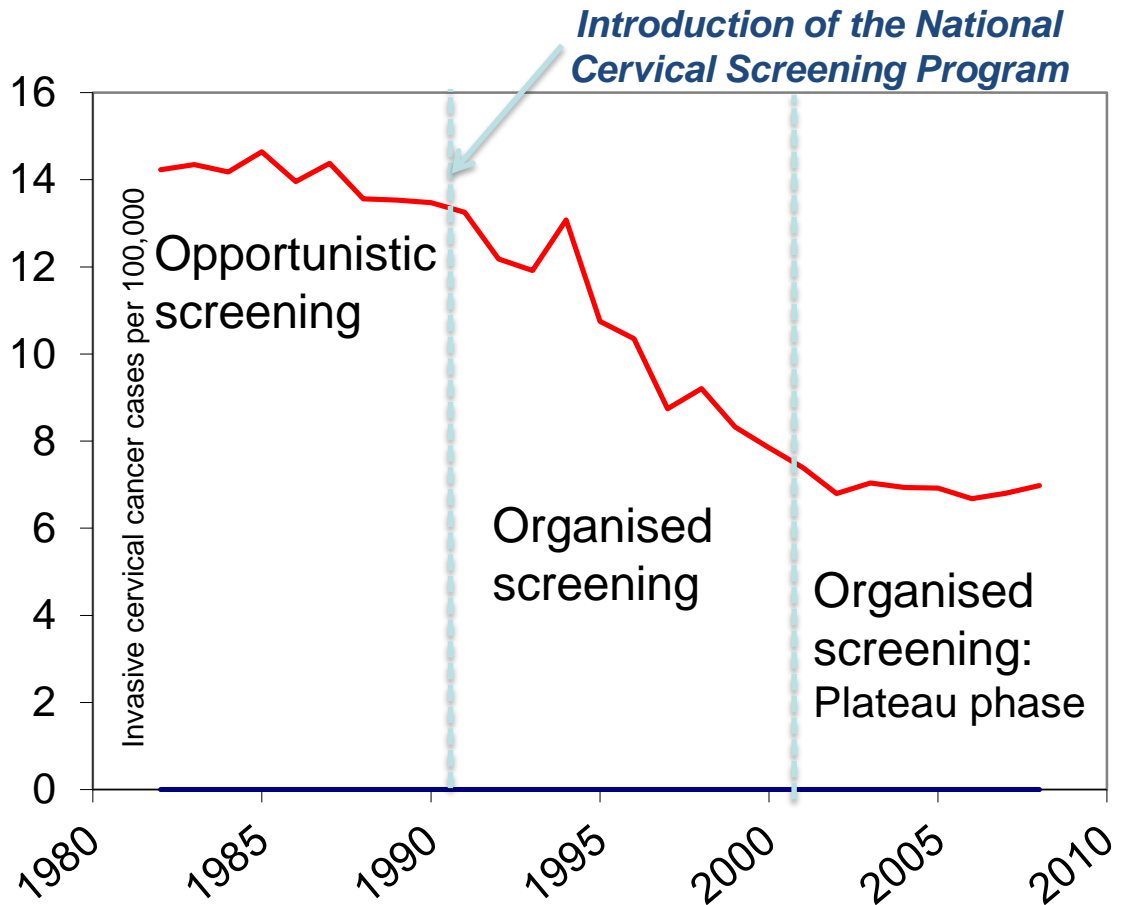
Development of cervical cancer due to HPV infection





Cervical screening in Australia

- 1991 NCSP Policy:
 - 2-yearly (Pap test)
 - 18 to 69 years¹
 - Registry reminder
- Participation:²
 - 2-yearly 58%
 - 5-yearly 83%²
- 50% reduction in incidence & deaths



¹NHMRC Australia, *Guidelines for Cervical Screening 2005*. ²Australian Institute of Health and Welfare 2014, 2011-2012.

Cervical Cancer in Australia

Incidence and mortality rates of cervical cancer: selected countries-2012

Country	Incidence per 100,000 women	Mortality per 100,000 women
Sweden	7.4	1.9
United Kingdom	7.1	1.8
USA	6.6	2.7
Canada	6.3	1.7
Australia	5.5	1.6
New Zealand	5.3	1.4
Finland	4.3	1.0

Source: GLOBOCAN 2012



How

- **Assess the evidence for screening pathways**
 - Tests, Screening Interval, Age Range
- **Determine a cost effective pathway**
- Improve national data collection & registers
- Improve quality and safety monitoring
- Assess feasibility & acceptability of renewed program



Medical Services Advisory Committee

- Any potential changes to the Program must achieve equal or better outcomes for women
- **Evidence review**
 - Sally Lord: NHMRC Clinical Trials Group, USyd
- **Effectiveness modeling and economic evaluation**
 - Karen Canfell: Lowy Institute, UNSW



Australian Government
Department of Health



Australian Government

Medical Services Advisory Committee

MSAC Outcomes

Application No. 1276 – Renewal of the National Cervical Screening Program

Sponsor/Applicant/s: Standing Committee on Screening

Date of MSAC consideration: MSAC 61st Meeting, 3-4 April 2014



- **Cervical Screening Test (CST)**
- HPV test with partial genotyping (16/18)
 - Reflex Liquid Based Cytology (LBC) triage
- Five year screening interval
- Start at age 25 years
- Exit at 70–74 years
- All sexually active women-HPV vaccinated or not
- Self collection: never-screened & under-screened
- Invitation & reminders to screen: National Register



Good News for Women

Primary HPV screening program will lead to:

Up to 30% ↓

Fewer cases of cervical cancer

Fewer deaths from cervical cancer



- Less frequent testing
- Fewer tests overall

For women aged 25 – 69

26 —————→ **10** tests in lifetime



- **Why are we changing from Pap test to Primary HPV test screening?**
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HRHPV vs Cytology

- **Cytology high specificity lower sensitivity.
Low cost**
- **HPV high sensitivity, poor specificity.
Specificity improves > 30yrs. High cost**
- **HPV has a superior -ve predictive value.**
- **At 5 yrs -ve HPV test lower incidence of
CIN 3+ (0.25%) than -ve Pap smear
(0.83%). Effect of -ve HPV lasts double that
of neg Pap smear (ARTISTIC trial)**



LEARNING OBJECTIVES FOR TODAY

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- **Why all sexually active women should participate in the NCSP, including HPV vaccinated women**
- Understand the recommended changes to the NCSP and be able to explain/reassure your patients
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Papillomaviruses

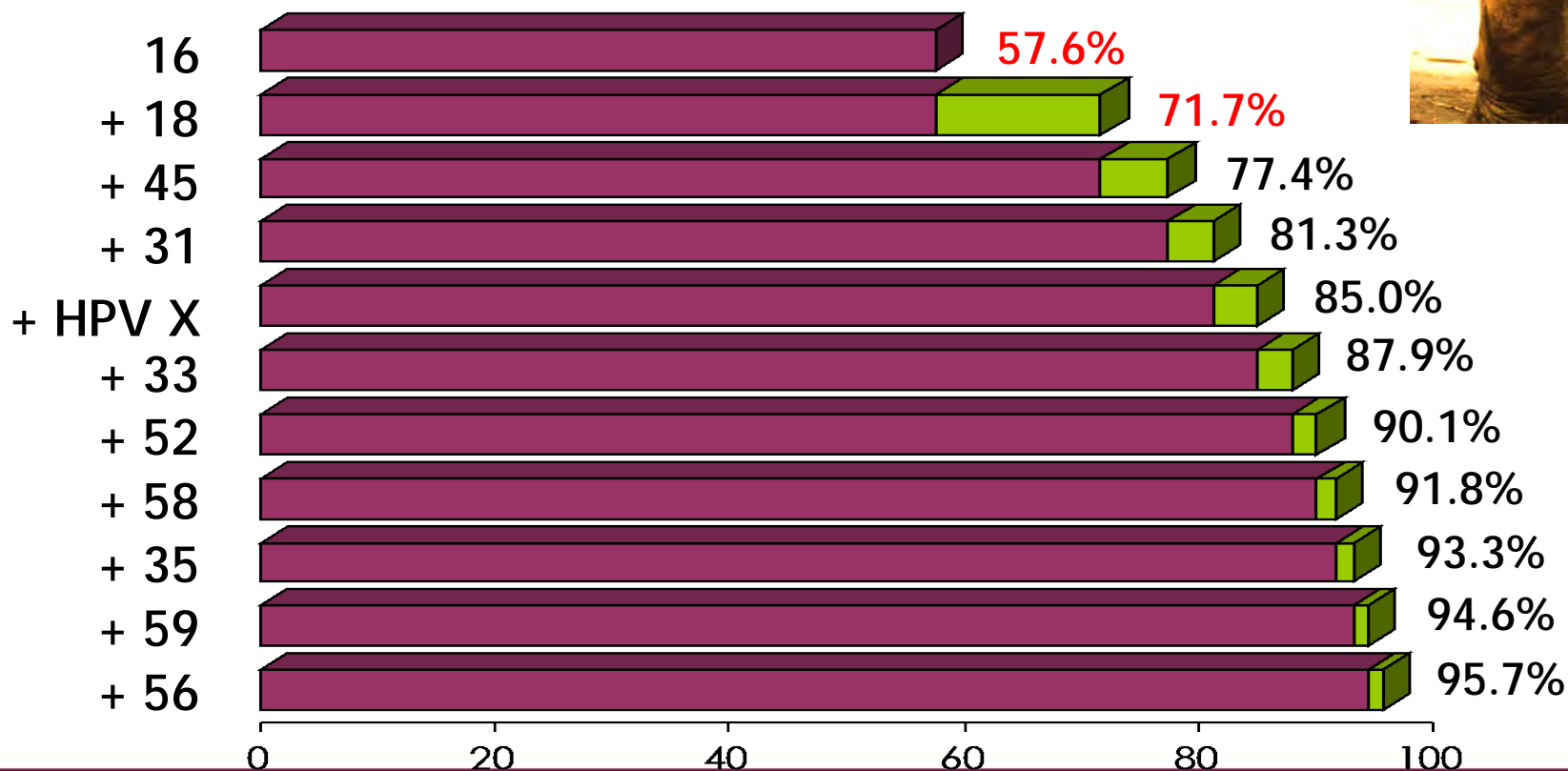
4 main groups in man:

-skin warts (HPV1,2)

-EV associated (HPV 5,8)

genital warts (HPV6,11)

genital cancers (HPV16,18)





Australian Government
Department of Health

Ian Frazer AC

1991-2005

Developed the first vaccine
for HPV

2006

Australian of the Year

2007

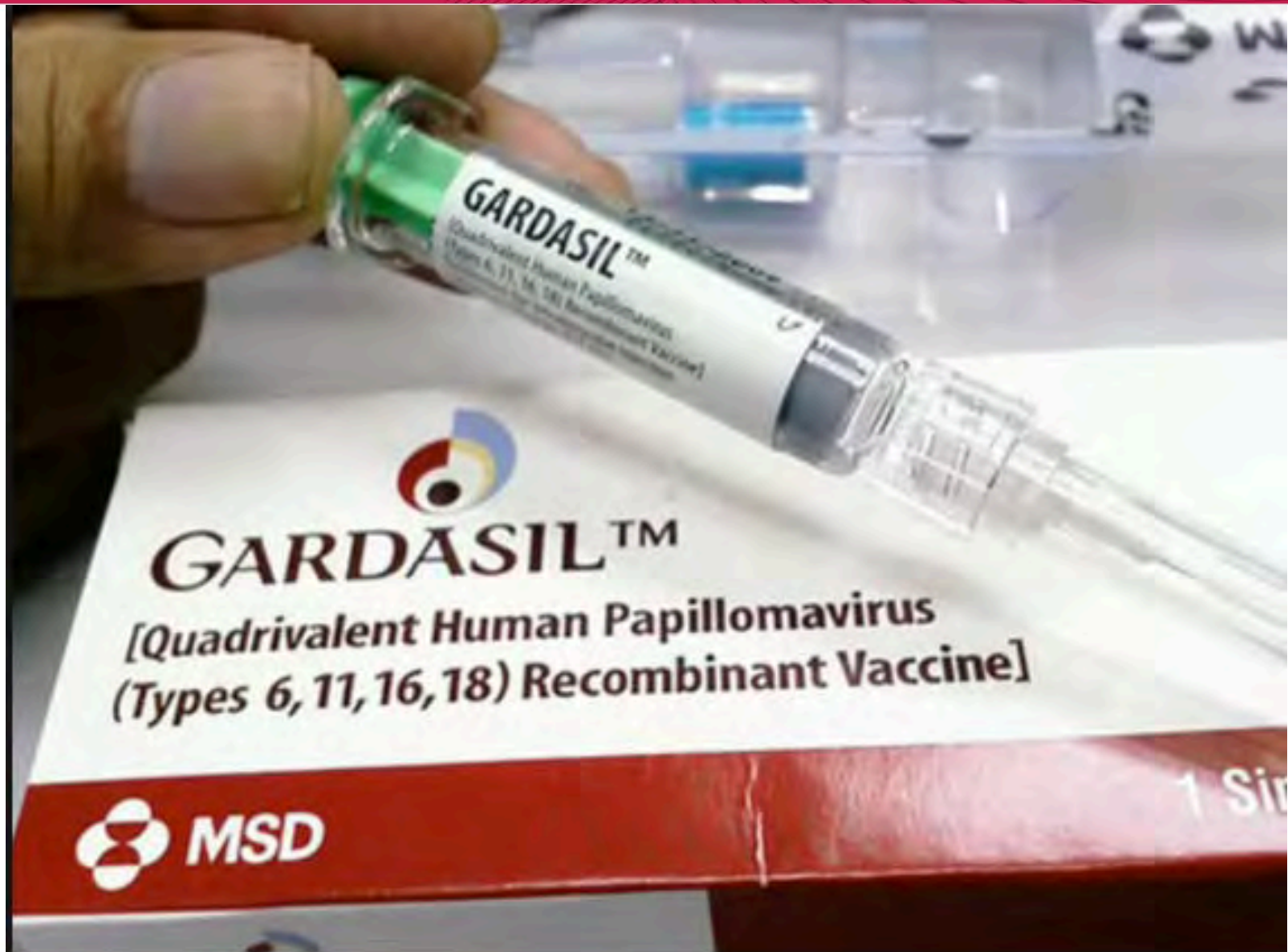
National HPV Vaccination
Program – girls

2013 - boys

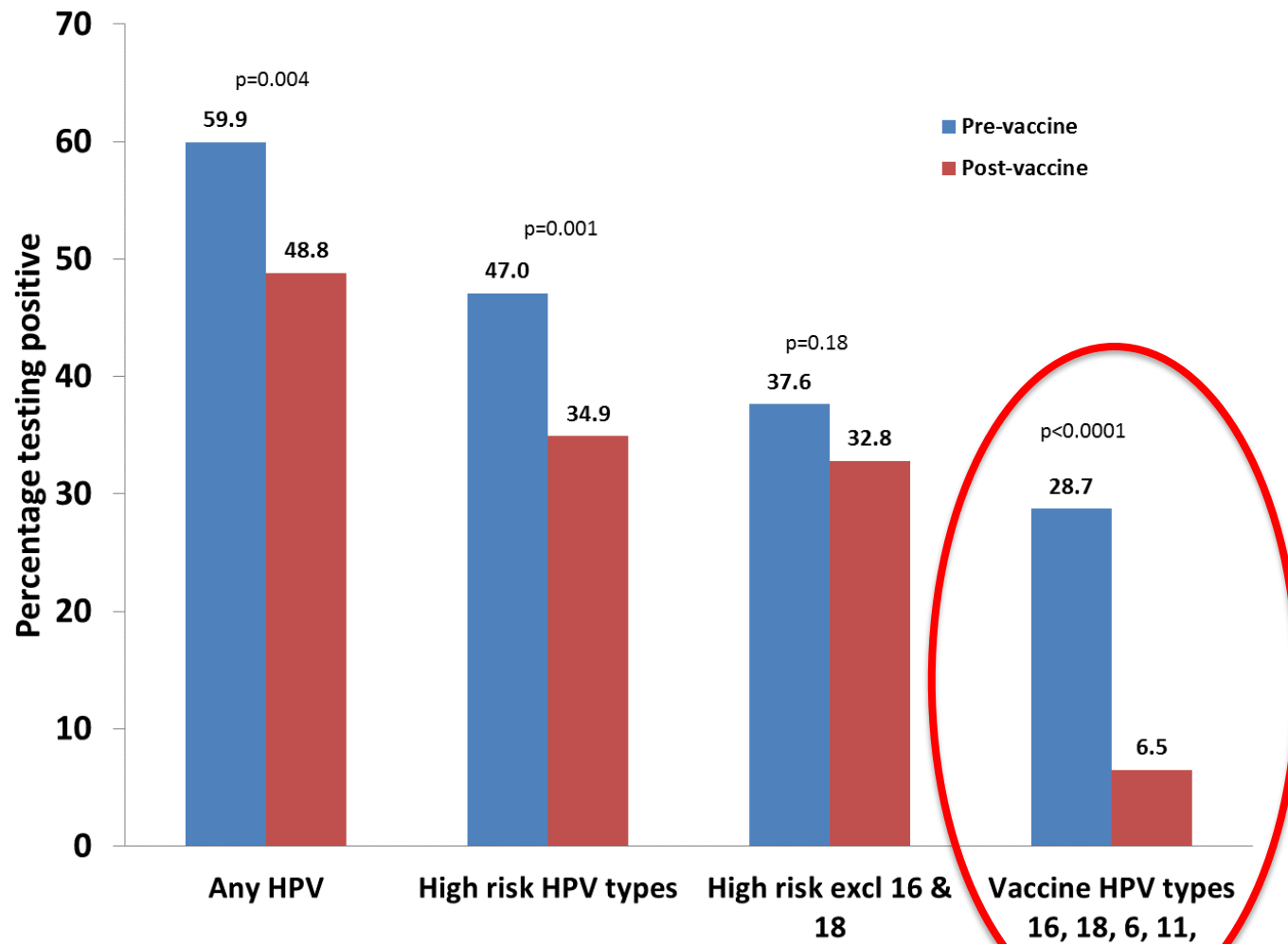




Australian Government
Department of Health



Fall in cervical HPV prevalence in young women 18-24yrs (pre vaccine n=202, post vaccine n=1058)



Tabrizi and Brotherton et al. *Lancet Infect Dis* 2014
Online 6 August 2014

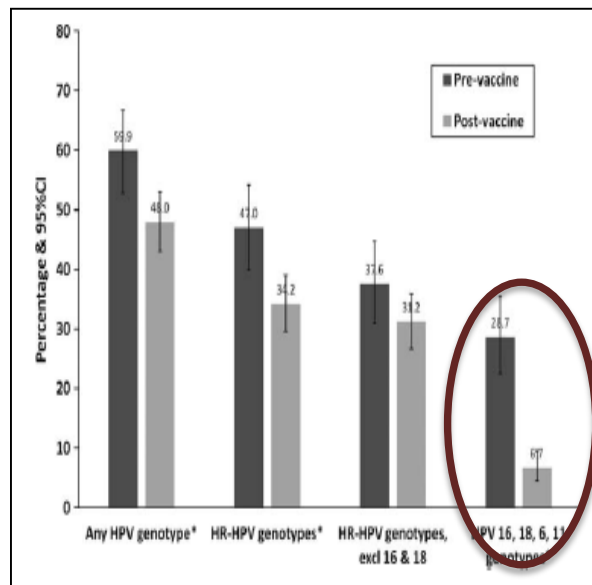


National HPV Vaccination
Program Register



National (Australia) HPV 3-dose vaccination coverage for females turning 15 years of age in 2012





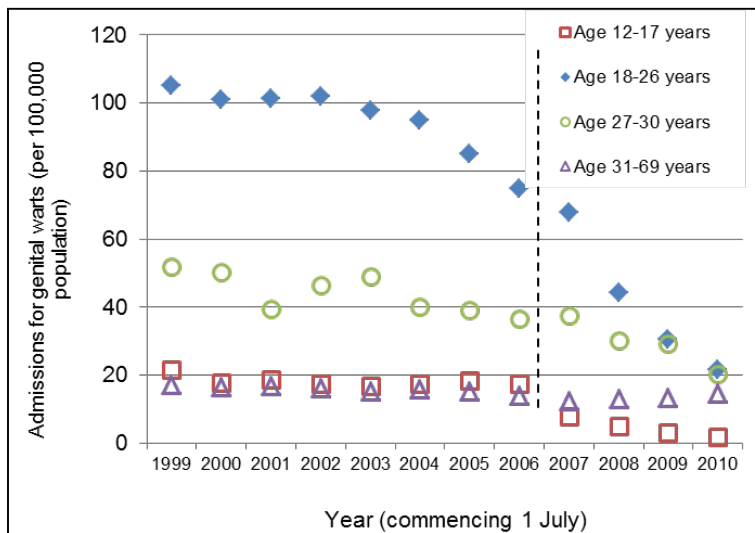
HPV infections

77%↓

Tabrizi S/Brotherton J et al JID 2012

Vaccine impact in Australia

Females, early twenties



Warts

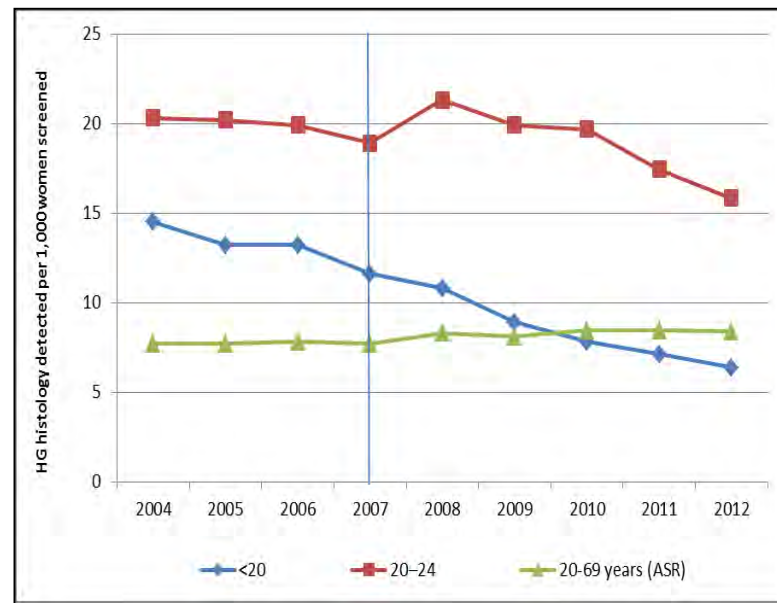
73%↓

Smith M et al JID 2014

Confirmed HSIL

21%↓

Australian Institute of Health and Welfare 2014, 2011-2012.





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Now

- Pap smear
- 2 yearly
- Start 18 years
- End 69 years
- Reminders

Renewal

- **HPV test**
- **5 yearly**
- **Start 25 years**
- **End 70-74 years**
- **Invitations/Reminders**
- **Self-collection**



What does this mean for women?

- Will be invited to have a screening test every 5 years
- Will still need a speculum vaginal examination
- A sample will be taken from her cervix and sent to lab
 - If cytology needed – no additional visit to GP
- Women will receive results from their doctor
 - **active communication**
- Test results: kept by National Cancer Screening Registry

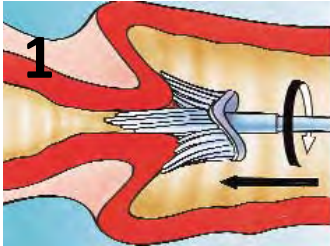


What sample should you collect for a cervical screening test ?

- **Liquid based cervical specimen only**
 - Conventional Pap smear not accepted
- **Laboratories will provide**
 - detailed instructions
 - appropriate consumables
 - so that the sample satisfies requirements both of the HPV test and LBC, should this be required.

Collecting a ThinPrep Sample

Broom-Like Device Protocol



**3 to 5
rotations of
broom**



Cap vial



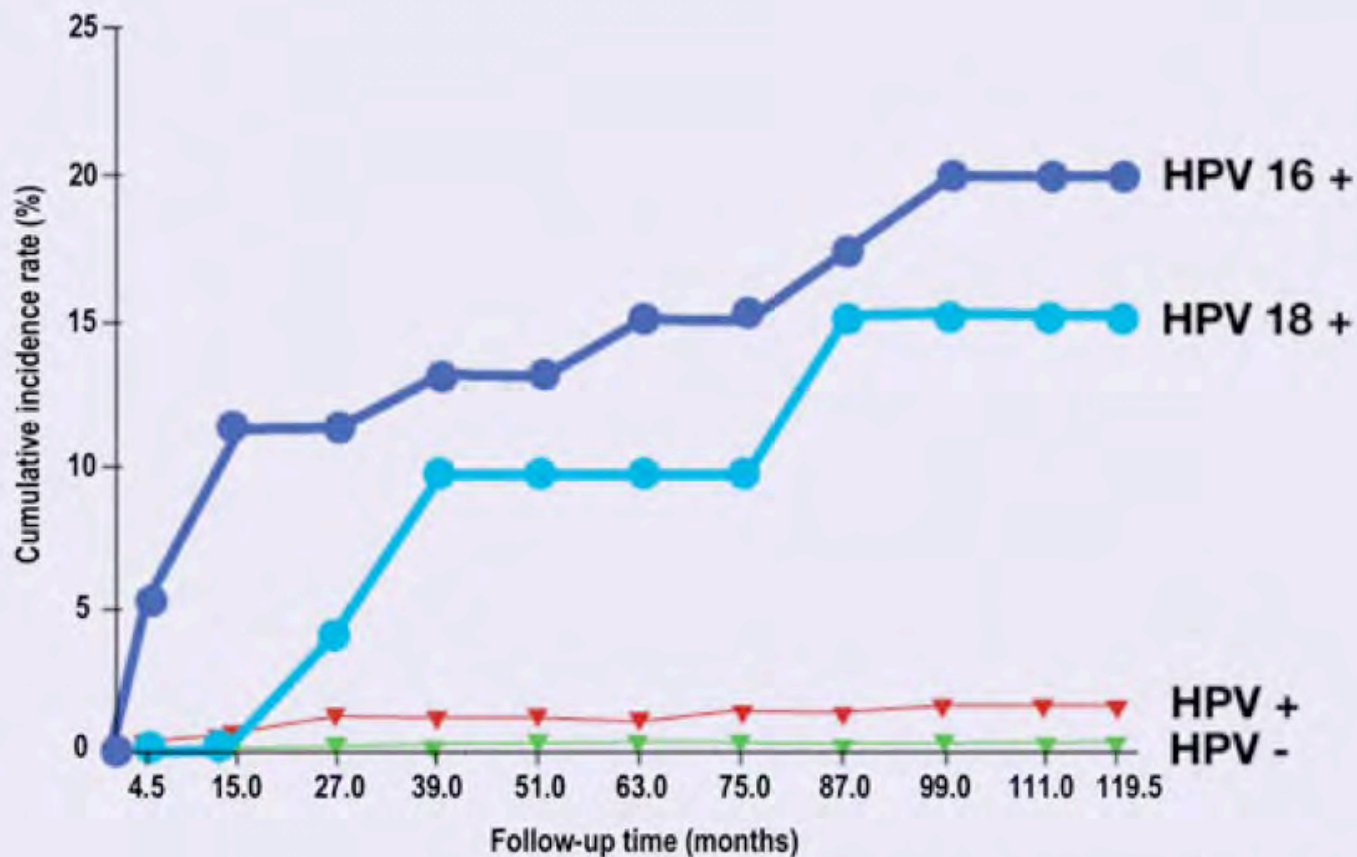
**Crush 10
times on
base of vial
and swirl**



**Record
patient
details**



HPV test identifying HR HPV type



Khan, et al., Journal of the National Cancer Institute 2005

The Journal of the National Cancer Institute 2005 "The Elevated 10-Year Risk of Cervical Precancer and Cancer in Women With Human Papillomavirus (HPV) Type 16 or 18 and the Possible Utility of Type-Specific HPV Testing in Clinical Practice," demonstrated that [HPV 16 and 18](#) screening may identify women at greatest risk for cervical cancer (CIN3)¹.






What does this mean for laboratories ?

- Changing technologies
 - HPV testing + partial genotyping
 - LBC
 - Automated assisted image analysis
- Less cytology tests, more HPV tests
- Changes to reporting (HPV + Cyto)
- Changes to quality standards
- Register changes: one woman one record
- Workforce and practice changes



What should you expect from the lab report?

- **An overall cervical screening risk assessment**
 -  Low risk
 -  Higher risk
 -  Intermediate risk
- **A statement of test(s) performed and the results**
HPV test result including any LBC result
- **A recommendation for follow-up/action**
Taking account of screening history and clinical notes

Cervical Screening Test

Women's Risk Based Assessment

(risk of women having a cervical cancer precursor
or cervical cancer)

Low risk

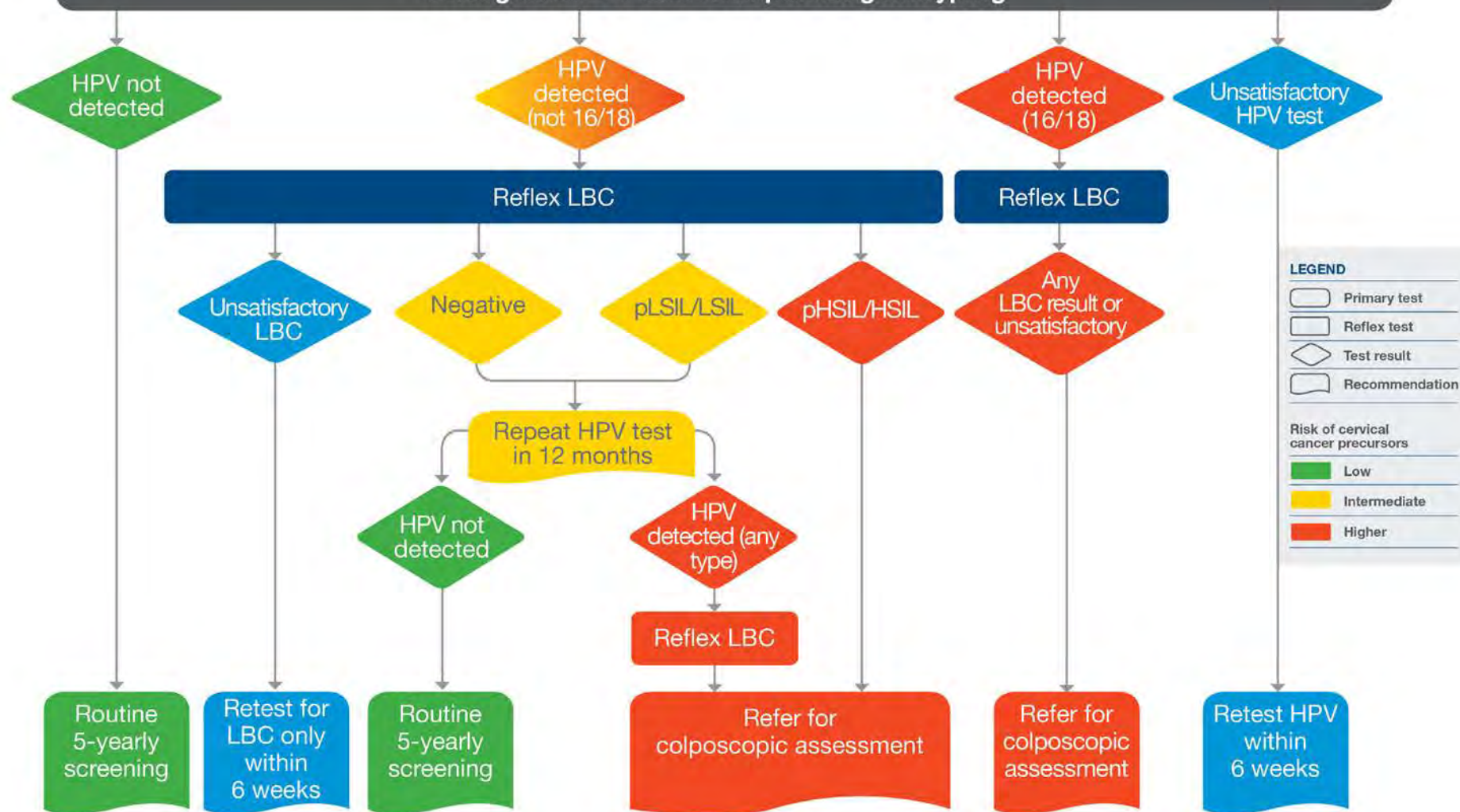
(the majority of women)

Higher risk

Intermediate Risk

CERVICAL SCREENING PATHWAY

Oncogenic HPV test with partial genotyping



Suggested citation: Cancer Council Australia Cervical Cancer Screening Working Party. Clinical pathway: Cervical screening pathway. National Cervical Screening Program: Guidelines for the management of screen detected abnormalities, screening in specific populations and investigation of abnormal vaginal bleeding. 2016.

National Cervical Screening Program

A joint Australian, State and Territory Government initiative


Australian Government
Department of Health

 **Cancer Council Australia**



Sample Cervical Report

CERVICAL SCREENING

INTERMEDIATE RISK FOR SIGNIFICANT CERVICAL ABNORMALITY

Specimen

Cervical – SurePath

Test results

PCR for oncogenic HPV and genotype

- HPV 16 – Not detected
- HPV 18 – Not detected
- HPV (not16/18) – **Detected**

Liquid based cytology (LBC) manually read:

There is no evidence of a squamous intraepithelial lesion or malignancy

Endocervical component: Present

Recommendation: Repeat HPV test in 12 months

Follow up of Intermediate risk women after initial cervical screening test result

Women at Intermediate risk

Follow-up HPV test in 12 months

At follow-up 12 month test

HPV detected (any type) with any LBC result
(= persistent HPV infection)

ACTION: REFER for COLPOSCOPY

At follow-up 12 month test

HPV not detected

ACTION: REPEAT CST in 5 YEARS

Cervical Screening Test

Women's Risk Based Assessment

Low risk

HPV not detected

ACTION: REPEAT CST in 5 YEARS

Higher risk

HPV (16/18) detected

(with any LBC result)

OR

HPV (not 16/18) detected

(with LBC: pHSIL, HSIL or any glandular abnormality)

ACTION: REFER for COLPOSCOPY

Cervical Screening Test

Women's Risk Based Assessment

Intermediate risk

(risk is determined by combined HPV and LBC result)

HPV (not 16/18) detected

(with LBC negative or pLSIL/LSIL)

**ACTION: Follow-up HPV test
in 12 months**



Sample Cervical Report

CERVICAL SCREENING

LOW RISK FOR SIGNIFICANT CERVICAL ABNORMALITY

Specimen

Cervical – ThinPrep

Test results

PCR for oncogenic HPV and genotype

- HPV 16 – Not detected
- HPV 18 – Not detected
- HPV (not16/18) – Not detected

Recommendation: Re-screen in 5 years



Sample Cervical Report

CERVICAL SCREENING

UNSATISFACTORY

Specimen

Cervical – ThinPrep

Test results

PCR for oncogenic HPV and genotype

- HPV 16 – Not detected
- HPV 18 – Not detected
- HPV (not16/18) – **Detected**

Liquid based cytology (LBC) image assisted:
Unsatisfactory

Recommendation: Repeat LBC in six weeks



Sample Cervical Report

CERVICAL SCREENING

HIGHER RISK FOR SIGNIFICANT CERVICAL ABNORMALITY

Specimen

Cervical – SurePath

Test results

PCR for oncogenic HPV and genotype

- HPV 16 – Not detected
- HPV 18 – Not detected
- HPV (not16/18) – **Detected**

Liquid based cytology (LBC) manually read:

HSIL (high-grade squamous intraepithelial lesion)

Endocervical component: Present

Recommendation: Referral for colposcopic assessment



Sample Cervical Report

CERVICAL SCREENING

HIGHER RISK FOR SIGNIFICANT CERVICAL ABNORMALITY

Specimen

Cervical – SurePath

Test results

PCR for oncogenic HPV and genotype

- HPV 16 – **Detected**
- HPV 18 – Not detected
- HPV (not16/18) – Not detected

Liquid based cytology (LBC) manually read:

Unsatisfactory

Recommendation: Referral for colposcopic assessment

Repeat LBC at colposcopy visit



Possible concerns

- Younger women < 25 yr
- HPV self - collection
- Participation rates



- **Younger women < 25 yr**
- HPV self collection
- Participation rates



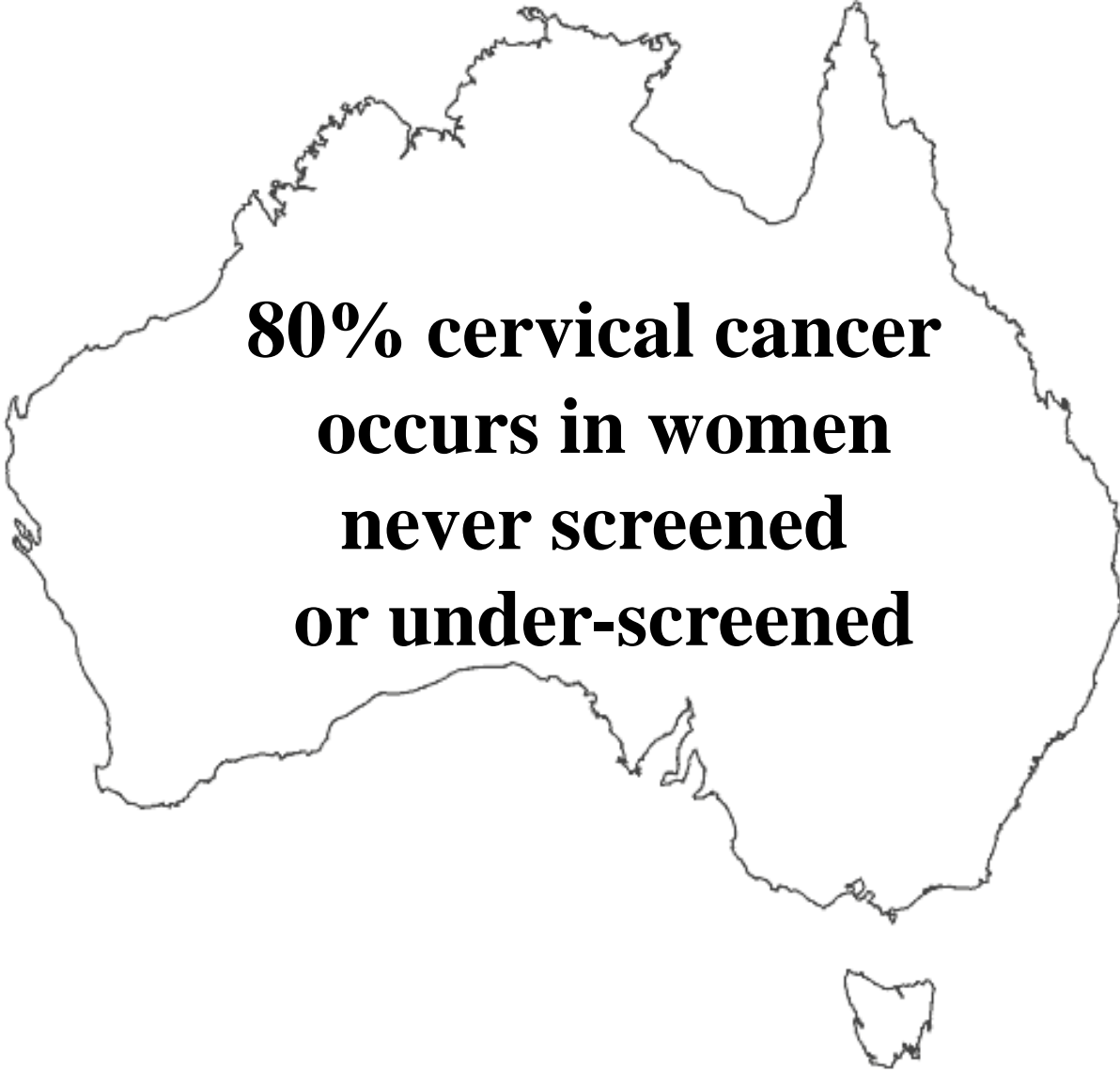
Young women < 25 years of age

- HPV prevalent in young women and regresses
- Cervical cancer is very rare
- Screening has not decreased mortality
- HPV vaccination has reduced the risk of high grade abnormalities in young women
- Starting at age 25, reduces over-treatment & minimises harms such as future pregnancy loss.



Other changes

- Younger women < 25 yr
- **HPV self collection**
- Participation rates

A black outline map of Australia, including the island of Tasmania, serves as a background for the central text.

**80% cervical cancer
occurs in women
never screened
or under-screened**



- **Self collection of vaginal sample for HPV test**
 - Under screened and never screened women only > 30 yrs
 - Facilitated by nurse or medical practitioner
 - Carried out at the practice *not* at home
 - Or on behalf of a medical practitioner
 - Who also offers routine cervical screening



HPV self-collection

- increased participation rate for never and under-screened
- not as effective as health professional collected sample
- more effective than the current Pap test
- accuracy varies for different sampling devices, HPV tests
- less cost effective than routine pathway.
- **if HPV+ve will need separate visit for LBC sample**
- **only available to under or never screeners.**



Some concerns

- Younger women < 25 yr
- HPV self collection
- **Participation rates**

Cervical screening rates for women vaccinated against human papillomavirus

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MJA 2014; 201: 279-282
doi: 10.5694/mja14.00021

Australia has a well established cervical screening program that currently recommends 2-yearly Pap tests for women aged 18 years (or 2 years after commencement of sexual activity, whichever is later) to 69 years. The program is supported by opt-off cervical cytology registers ("Pap test registers") in each state and territory that record the results of cervical cytology tests, cervical histopathology tests and human papillomavirus (HPV) DNA tests. The relatively high level of participation in Australia's National Cervical Screening Program has led to halving of cervical cancer incidence and mortality rates.¹

In April 2007, Australia initiated a national, publicly funded HPV vaccination program, using a three-dose schedule of a quadrivalent HPV recombinant vaccine that protects against HPV types 16 and 18 (which are responsible for 70%–80% of cervical cancer cases in Australia²) and types 6 and 11 (which cause genital warts). The program vaccinates 12-year-old and 13-year-old girls in schools and included a catch-up vaccination program for 14–18-year-old girls in schools and 18–26-year-old women in community-based settings until the end of 2009. All communications provided to vaccinated women emphasised the

Abstract

Objective: To compare cervical screening rates for women vaccinated with a quadrivalent human papillomavirus (HPV) vaccine with those for unvaccinated women, to address concerns that vaccinated women may not be participating in cervical screening.

Design, setting and participants: Cross-sectional analysis of linked data from the Victorian Cervical Cytology Registry and the National HPV Vaccination Program Register for 20–29-year-old women in Victoria, Australia, for the period 1 January 2009 to 31 December 2011.

Main outcome measures: Screening participation rates for vaccinated and unvaccinated women.

Results: Participation in cervical screening during the 2-year period 2010–2011 was significantly lower in 20–24-year-old vaccinated women compared with unvaccinated women of the same age (37.6% v 47.7%, a 10.1 percentage point difference [95% CI, 9.7–10.6]; $P < 0.001$) and significantly lower in 25–29-year-old vaccinated women compared with unvaccinated women of the same age (45.2% v 58.7%, a 13.5 percentage point difference [95% CI, 13.1–13.9%]; $P < 0.001$). Similar results were observed for participation during the 3-year period 2009–2011.

Conclusions: Despite education messages provided to young women, our results suggest that vaccinated women are being screened at lower rates than unvaccinated women in Australia. While some degree of undermatching of women in the study may have occurred, this cannot wholly explain our findings. Effective implementation of individual Healthcare Identifiers to health records, including registry records, is needed to prevent potential undermatching of individuals in future linkage studies. In the meantime, efforts to increase participation in cervical screening by vaccinated women are needed.

48.1% to 41.7%; for women aged 25–29 years, it declined from 58.9% to 52.3%. This trend was mirrored in national participation rates over this period.¹

We aimed to evaluate the effect of HPV vaccination on participation in cervical screening in Victoria to address concerns that vaccinated women may not be continuing to par-

Data collection

The VCCR captures cervical screening results for all female residents of Victoria (a population of more than 2.7 million), including cervical cytology and cervical histopathology test results obtained directly from laboratories. Fewer than 1% of women "opt off" the VCCR.³ The NHVR



- **National Cancer Screening Register**
 - Linked to HPV register
 - Used to issue invitations/reminders
 - Full history from vaccination-diagnosis
 - Colposcopy and pathology data
- Monitoring and service improvement
- **One woman = One record**



- **National Prescribing Service**
 - On line education modules
 - Practical training modules
 - Train the Trainer module
 - (For all CST providers)
- **Cancer Council Australia**
 - On line education clinical scenarios
 - (For GPs, O&G specialists and others)
- **Department of Health Australia**
 - Cancer screening website, Publications



Changes to the NCSP

- New screening test: HPV
- New screening interval: 5 years
- New starting age: 25 years
- New finishing age: 74 years
- Self-collection
- National Cancer Screening Register

2017

NATIONAL CERVICAL SCREENING PROGRAM:

Guidelines for the management of
screen-detected abnormalities, screening
in specific populations and investigation
of abnormal vaginal bleeding





- **Terminology**
- **Management of oncogenic HPV test results**
- **Specific Populations**
 - Pregnant women
 - Early sexual activity or victims of abuse
 - Immune-deficient women
 - DES
 - After hysterectomy
 - Aboriginal and Torres Strait Islander women
- **Investigation of abnormal vaginal bleeding**



Terminology: the tests

- **HPV test:**
- **Liquid Based Cytology (LBC):**
- **Reflex LBC:**
- **Co-test:**



Terminology: the tests

- **HPV test:** detects HPV DNA or RNA in cervical cells contained in a liquid based cervical sample
- **Liquid Based Cytology (LBC):** cytology performed on a liquid cervical sample and may be manual or automated
- **Reflex LBC:** cytology performed ‘automatically’ on a cervical sample in which HPV is detected
- **Co-test:** HPV test *and* LBC test ordered *together* and is used for test of cure; investigation of abnormal vaginal bleeding; after hysterectomy; DES exposed women: but *not* for routine screening



Guidelines: what's new

- Terminology
- Management of oncogenic HPV test results
- **Specific Populations**
- Transition to the renewed NCSP
- Investigation of abnormal vaginal bleeding



Specific Populations

- Pregnant women
- **Early sexual activity or victims of abuse**
- **Immune-deficient women**
- DES
- **After hysterectomy**
- Aboriginal and Torres Strait Islander women



Specific Populations

- Pregnant women
- **Early sexual activity or victims of abuse**
- Immune-deficient women
- DES
- After hysterectomy
- Aboriginal and Torres Strait Islander women



MSAC EVIDENCE-BASED RECOMMENDATION

REC15.1: Routine cervical screening is not recommended in young women

Routine cervical screening is not recommended in women under the age of 25 years.

CONSENSUS-BASED RECOMMENDATION

REC15.2: Early sexual activity and cervical screening in young women

For women who experienced first sexual activity at a young age (<14 years) and who had not received the HPV vaccine before sexual debut, a single HPV test between 20 and 24 years of age could be considered on an individual basis.

- **Routine screening not recommended for women <25 years**
- **Women who experience first sexual activity <14 years**
 - not had the HPV vaccine
 - **single HPV test could be considered**
 - between age 20 – 24 years of age



Specific Populations

- Pregnant women
- Early sexual activity or victims of abuse
- **Immune-deficient women**
- DES
- After hysterectomy
- Aboriginal and Torres Strait Islander women



CONSENSUS-BASED RECOMMENDATION

REC16.1: Immune-deficient women in whom oncogenic HPV is **not** detected

Immune-deficient women who have a HPV test in which oncogenic HPV types are **not** detected should be screened every 3 years with a HPV test.

CONSENSUS-BASED RECOMMENDATION

REC16.2: Colposcopy referral: positive oncogenic HPV test result (any type) in immune-deficient women

Women who are immune-deficient and have a positive oncogenic HPV (any type) test result should be referred for colposcopic assessment informed by the reflex LBC.

- **3 yearly screening for immune-deficient women**
- **If HPV detected (any type) refer for colposcopy**

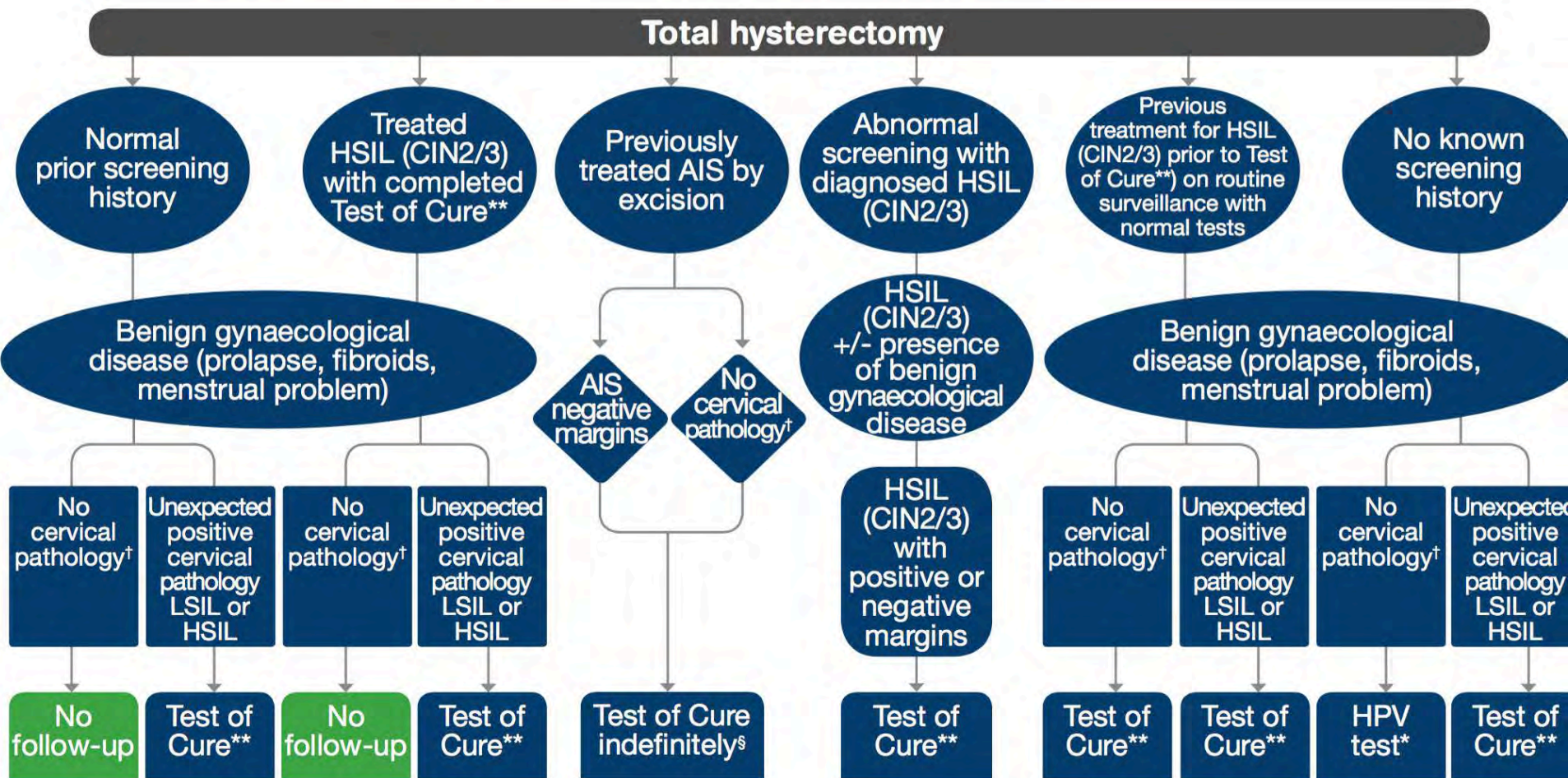


Specific Populations

- Pregnant women
- Early sexual activity or victims of abuse
- Immune-deficient women
- DES
- **After hysterectomy**
- Aboriginal and Torres Strait Islander women

VAGINAL SCREENING AFTER TOTAL HYSTERECTOMY

Total hysterectomy



* HPV test to be taken from the vaginal vault 12 months after treatment & annually thereafter until the woman has tested negative on 2 consecutive occasions, after which she does not need further testing

§ Until sufficient data become available that may support a policy decision that cessation of testing is appropriate

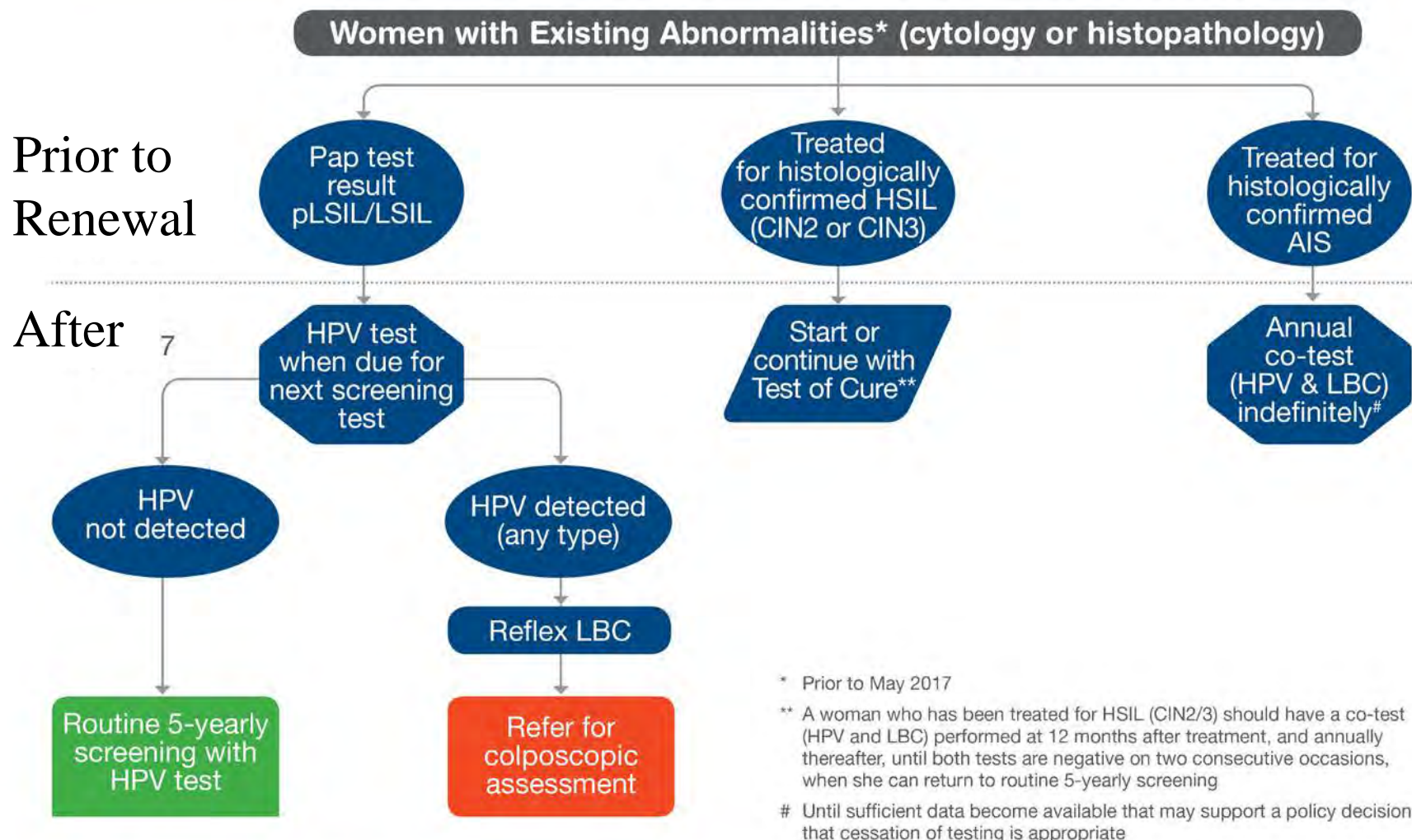
† No cervical pathology (LSIL, HSIL or AIS) found on examination of the cervix

** No further testing/follow-up after completion of Test of Cure



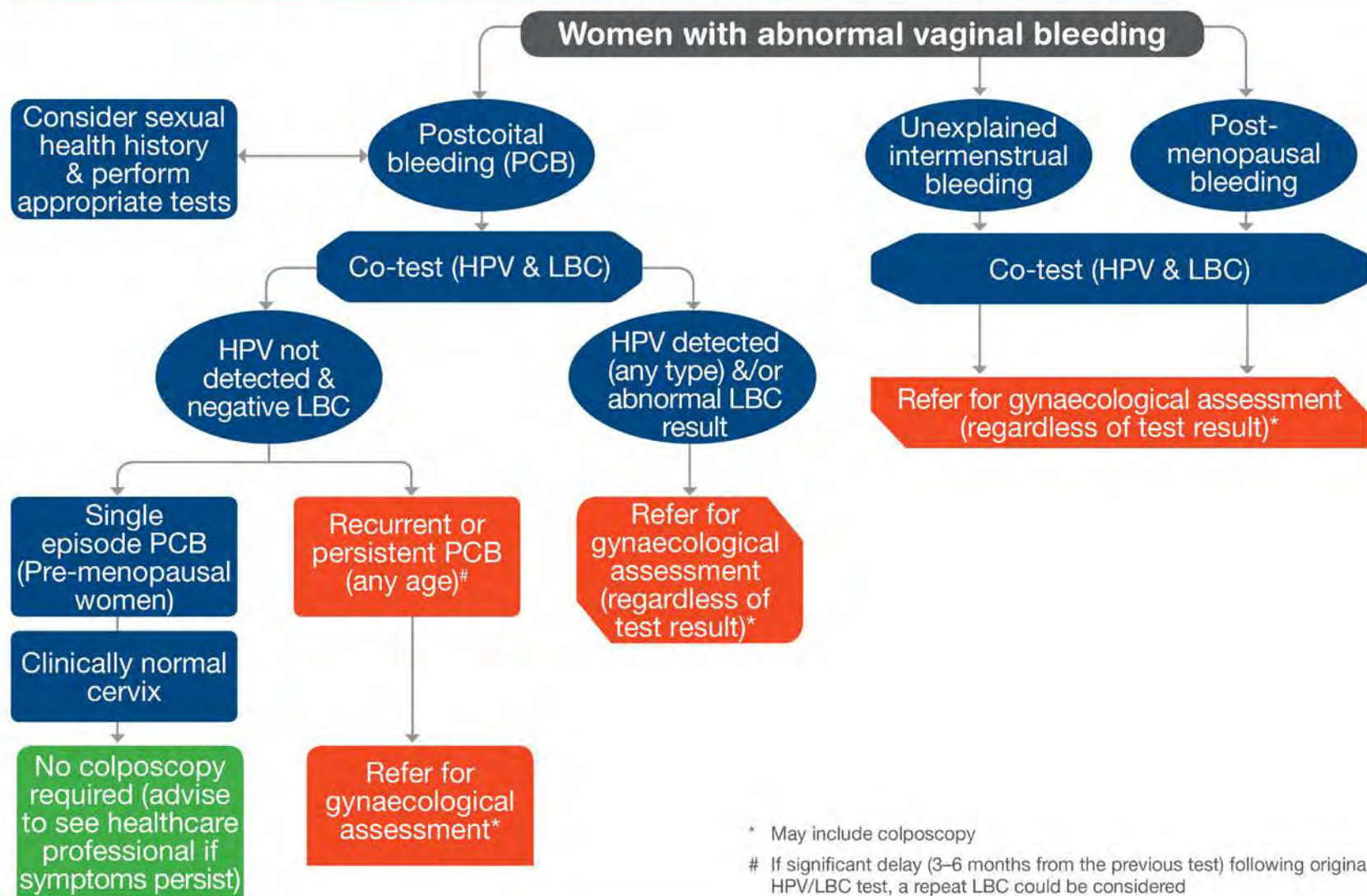
- Terminology
- Management of oncogenic HPV test results
- Specific Populations
- **Transition to the renewed NCSP**
- Investigation of abnormal vaginal bleeding

TRANSITION TO THE RENEWED NATIONAL CERVICAL SCREENING PROGRAM



Suggested citation: Cancer Council Australia Cervical Cancer Screening Working Party. Clinical pathway: Transition to the renewed national cervical screening program. National Cervical Screening Program. Guidelines for the management of screen detected abnormalities, screening in specific populations and investigation of abnormal vaginal bleeding. 2016.

INVESTIGATION OF WOMEN WITH ABNORMAL VAGINAL BLEEDING



Suggested citation: Cancer Council Australia Cervical Cancer Screening Working Party. Clinical pathway: Investigation of women with abnormal vaginal bleeding. National Cervical Screening Program: Guidelines for the management of screen detected abnormalities, screening in specific populations and investigation of abnormal vaginal bleeding, 2016.



Main changes in Renewal

Now

- Pap smear
- 2 yearly
- Start 18 years
- End 69 years
- Reminders

Renewal

- **HPV test**
- **5 yearly**
- **Start 25 years**
- **End 70-74 years**
- **Invitations/Reminders**
- **Self-collection**

May 2017

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	1 HPV	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31	Notes:		

Target start date

Watch this space



Thank you



Questions??????

Further information:

www.msac.gov.au

www.cancerscreening.gov.au

Email:

Cervicalrenewal@health.gov.au