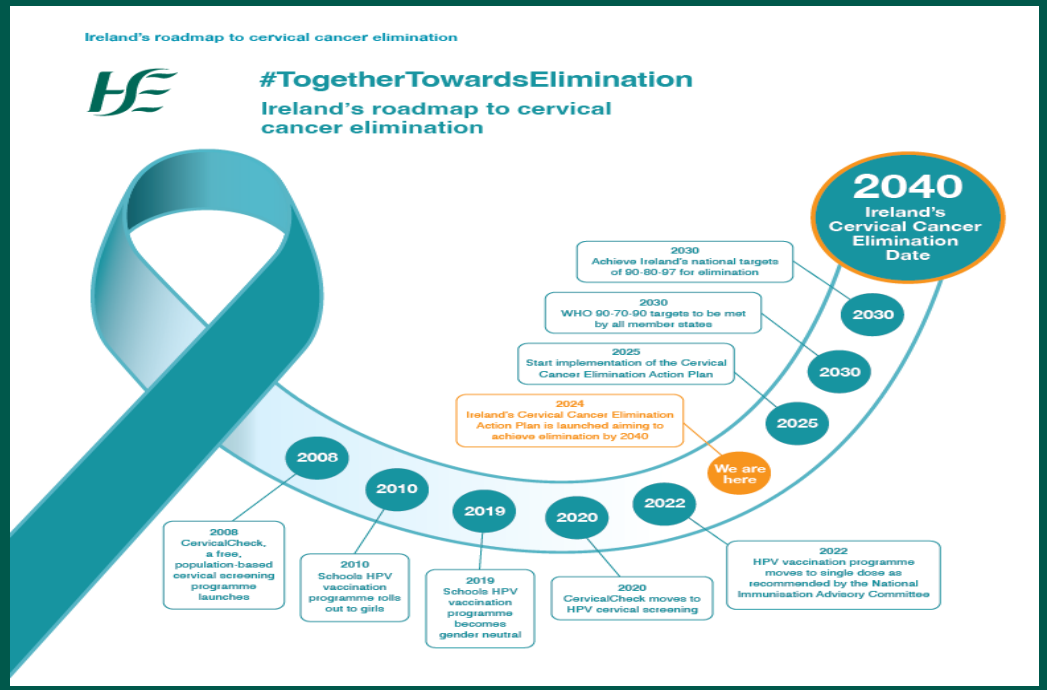
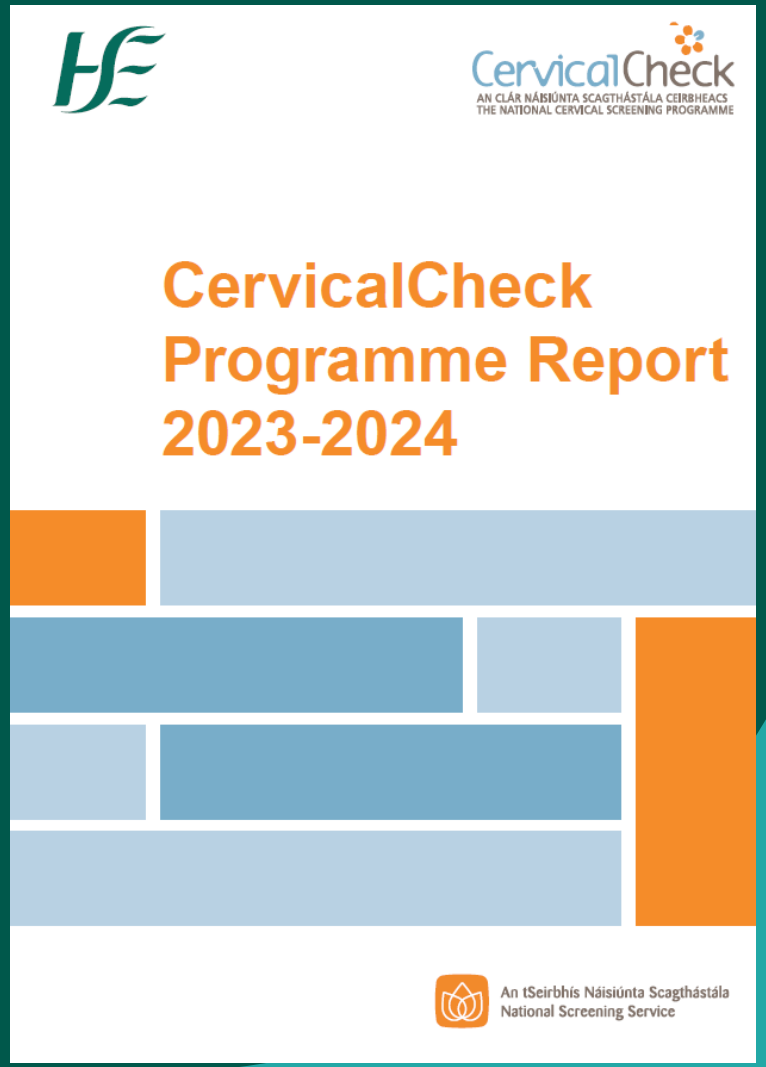
CervicalCheck – a high quality cervical screening service

Professor Nóirín Russell
Clinical Director CervicalCheck

17th September 2026

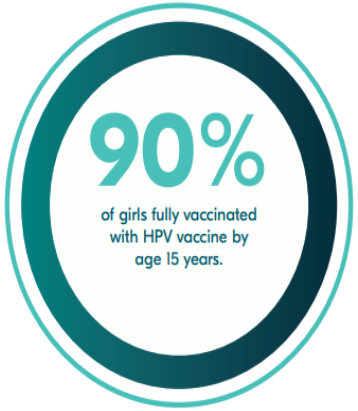


CervicalCheck
AN CLÁR NÁISIÚNTA SCAGTHÁSTÁLA CEIRBHEACS
THE NATIONAL CERVICAL SCREENING PROGRAMME

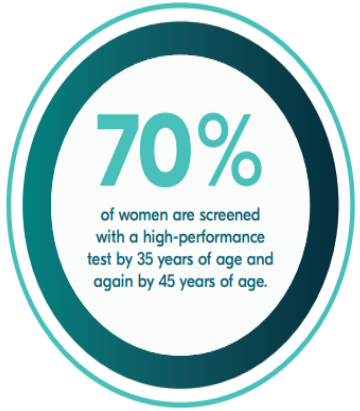


Elimination as a public health problem is defined as an incidence < 4 per 100,000

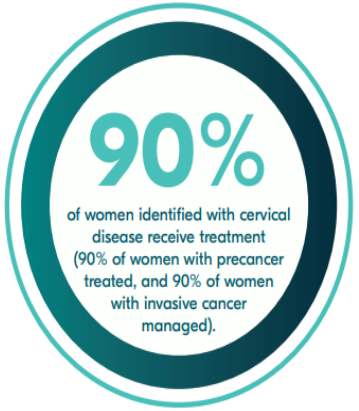
Vaccination



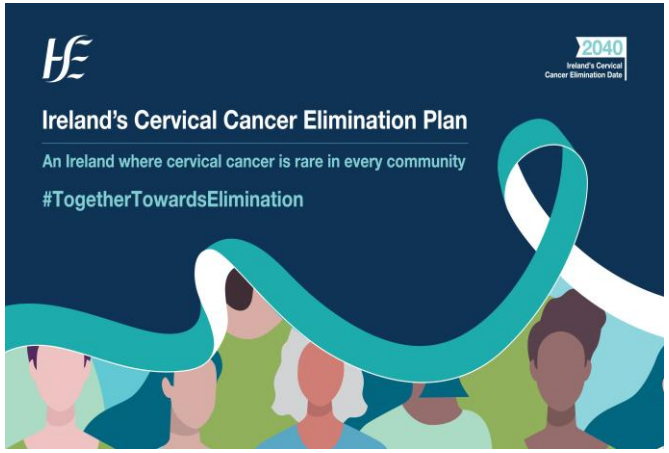
Screening



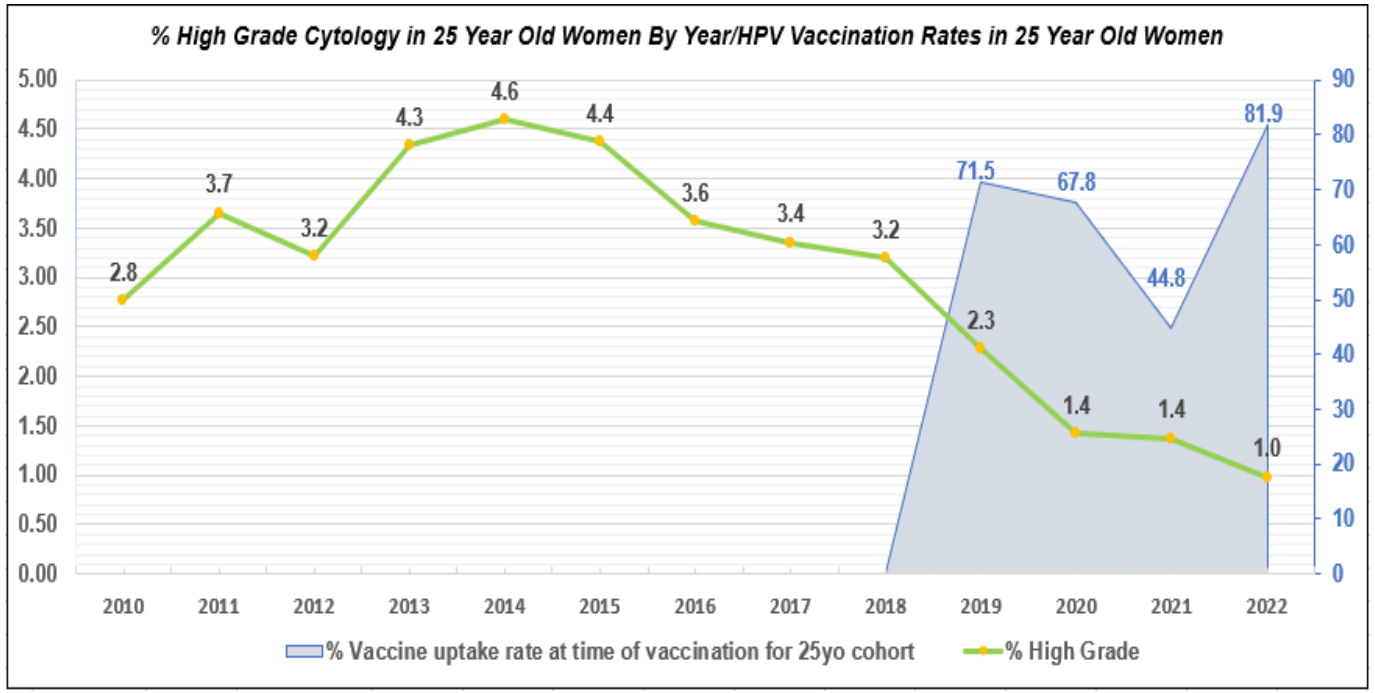
Treatment





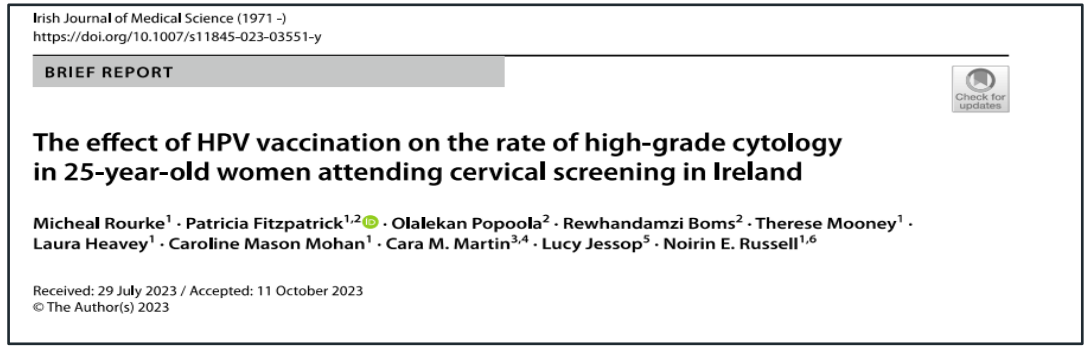


HPV Vaccination – “ the gamechanger”



- Vaccine most effective before sexual activity
- First vaccinated cohorts turned 25 in 2019
- Rate of HGCIN decreased from 3.7% to 1.5% P < 0.001
- Vaccinated 25yo have lower risk of HGCIN

Rourke et al 2023



Irish Journal of Medical Science (1971 -)
https://doi.org/10.1007/s11845-023-03551-y

BRIEF REPORT

The effect of HPV vaccination on the rate of high-grade cytology in 25-year-old women attending cervical screening in Ireland

Micheal Rourke[1] · Patricia Fitzpatrick[1,2] · Olalekan Popoola[2] · Rewhandamzi Boms[2] · Therese Mooney[1] · Laura Heavey[1] · Caroline Mason Mohan[1] · Cara M. Martin[3,4] · Lucy Jessop[5] · Noirin E. Russell[1,6]

Received: 29 July 2023 / Accepted: 11 October 2023
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HPV vaccination - a snapshot

HPV Vaccination pre 13yo NNV

22 vaccinations needed to prevent one case CIN2+
202 vaccinations needed to prevent one case of cancer

HPV Vaccination up to age 45 years NNV

800 vaccinations needed to prevent one case of CIN2+
6500 vaccinations needed to prevent one case of cancer

HPV vaccine to treat low grade disease

" A heterologous, multiantigenic HPV 2-component immunotherapy regimen was well-tolerated and immunogenic but did not result in a statistically significant clearance of either hrHPV or the associated cervical lesions in women with persistent high-risk HPV infections."

Hellner et al 2026



JOURNAL ARTICLE

A Phase 1b/2, Randomised, Placebo-controlled Study to Evaluate Safety, Tolerability, Efficacy, and Immunogenicity of VTP-200, a Chimpanzee Adenovirus and Modified Vaccinia Ankara-vectored Multigenotype High-risk Human Papillomavirus Vaccine in Women With Low-grade Cervical Lesions

Get access

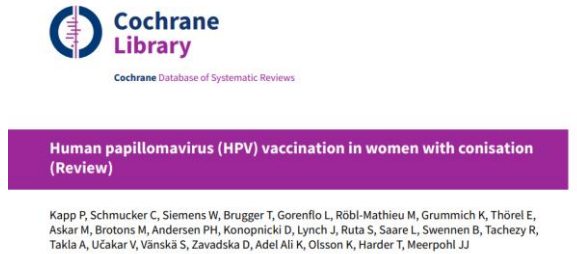
Karin Hellner, Philippe Simon, Philippe De Sutter, Kadri-Liina Vahula, Paula Briggs, Ülle Kiisla, Michelle Russell, Claire Newton, Kobe Dewilde, Katie Anderson ... Show more

Clinical Infectious Diseases, Volume 83, Issue 1, 15 July 2026, Pages 51–58, https://doi.org/10.1093/cid/ciaf658

Published: 17 December 2025 **Article history**

HPV vaccine post treatment

- Human papillomavirus (HPV) vaccination in comparison to no HPV vaccination in women with conisation may reduce the risk of precancerous cervical cell changes (primarily CIN 2+).
- Uncertain whether HPV vaccination (given shortly before, or at conisation) affects cervical cancer risk or persistent HPV infection.
- Further high-quality studies are needed to assess the effectiveness and unwanted effects of HPV vaccination in women with conisation.



Cochrane Library

Cochrane Database of Systematic Reviews

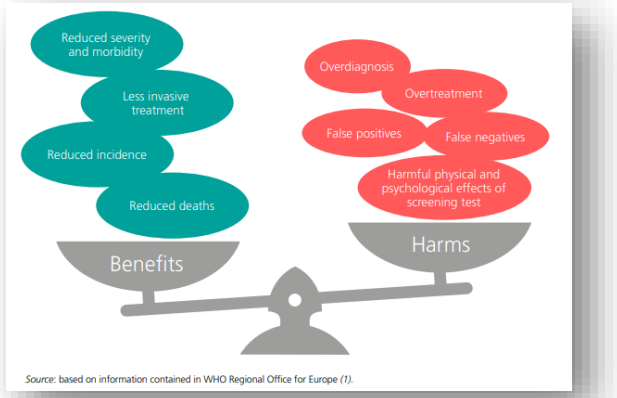
Human papillomavirus (HPV) vaccination in women with conisation (Review)

Kapp P, Schmucker C, Siemens W, Brugger T, Gorenflo L, Röbl-Mathieu M, Grummich K, Thörel E, Askar M, Brotons M, Andersen PH, Konopnicki D, Lynch J, Ruta S, Saare L, Swennen B, Tachezy R, Takla A, Učakar V, Vänskä S, Zavadska D, Adel Ali K, Olsson K, Harder T, Meerpohl JJ

Screening is a balance between harms and benefits

For every 1000 people screened:

- 882 people do not have HPV and will get a 'HPV not found' result.
- 2 people do have abnormal cells and will get a 'HPV not found' result.
- 98 people will get a 'HPV found' result and do not have abnormal cells that need treatment.
- 18 people do have HPV and abnormal cells that need treatment and will get a 'HPV found' result.



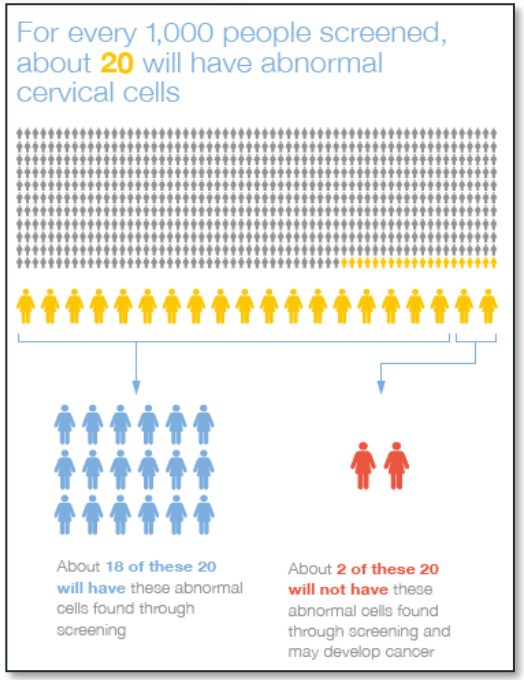
True positive n =18
People with cancer / pre-cancer caught and treated early. Reduced morbidity and mortality

True negative n= 882

People appropriately reassured their risk is low

False positives n = 98
People referred for further investigation +/- intervention. Stressful and unnecessary.

False negatives n =2
People falsely reassured. Screening does not detect their disease at earliest possible stage.



Age standardised incidence of cervical cancer in Ireland per 100,000 women (NCRI 2026)



HPV vaccine

16
14
12
10
8
6
4
2
0

10
15
11.9
10.4
9.4
4

2000 Pilot

2008 Cytology programme

2010 HPV vaccination girls

2020 HPV primary screening

2040
Ireland's Cervical Cancer Elimination Date

2002 2009 2016 2023 2024 2025 2030 2040

Opportunistic screening

2000-2008
- Opportunistic screening
- 230,000 smears per annum

Cytology screening

2008-2020
- Call/ recall cytology programme
- 250,000 smears per annum
- Standardised follow up of abnormalities
- Treatment of precancers

HPV screening

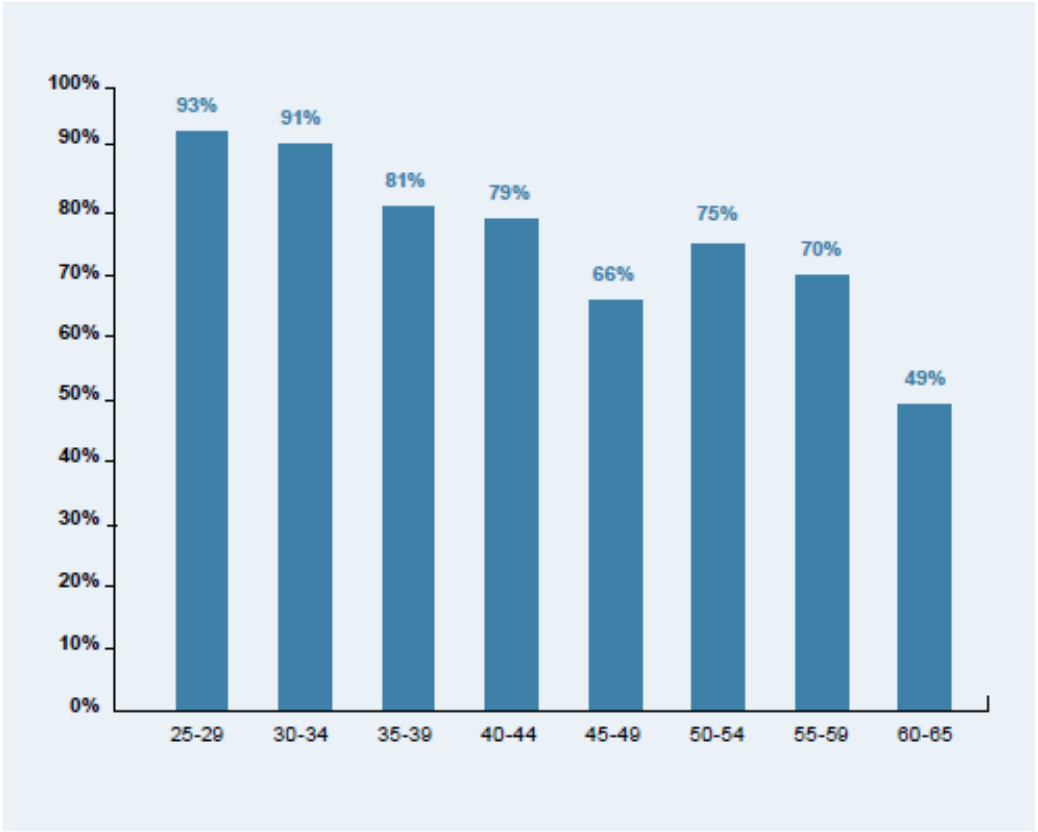
2020- 2040
- Call / recall HPV Screening
- Vaccinated cohorts enter programme
- Standardised follow up abnormal results
- Treatment of precancers

Population coverage

CervicalCheck
AN CLÁR NÁISIÚNTA SCAGTHÁSTÁLA CEIRBHEACS
THE NATIONAL CERVICAL SCREENING PROGRAMME

Coverage

Figure 1. 5-year coverage of eligible women by age group



5 year coverage

Figure 2. CervicalCheck coverage over time (2009-2024)

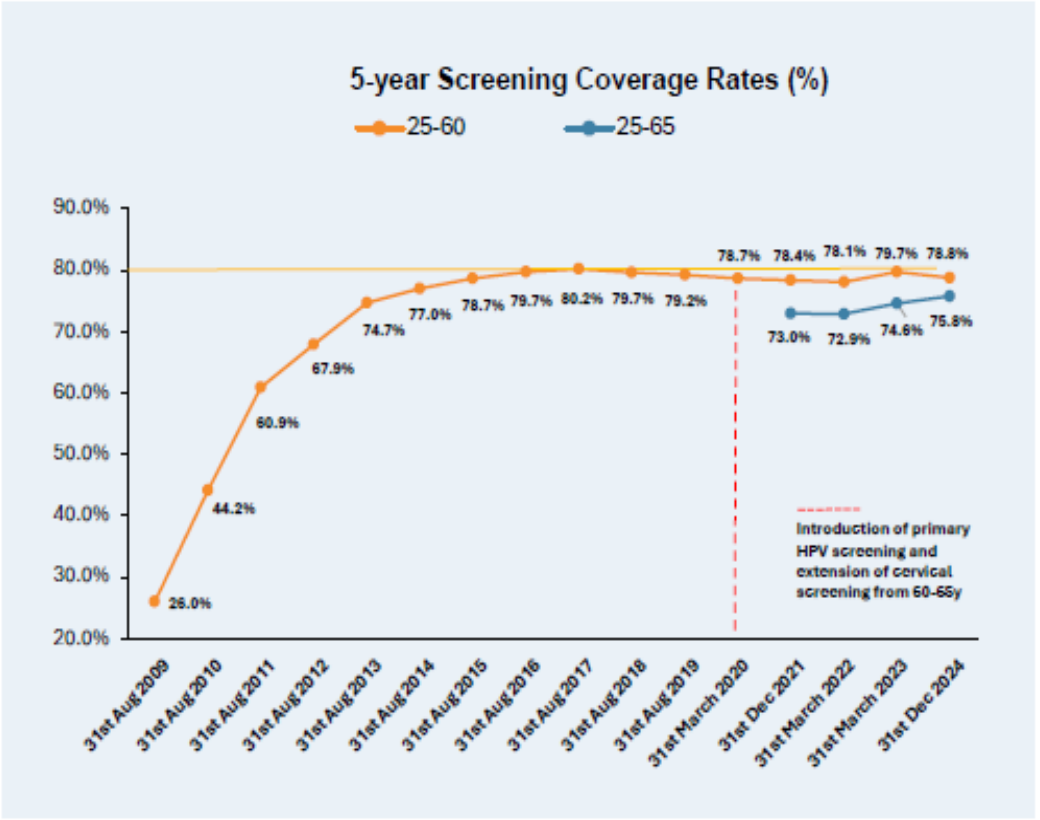


Figure 6-3. Five-year net survival (2019-2023), by cancer site and stage: number and percentage at time 0

cancer	stage	No. at time 0	[%]	5-yr net survival [%]
C50 breast	unstaged	964	5%	69%
	IV	1,040	6%	37%
	III	2,276	13%	80%
	II	7,020	40%	95%
	I	6,459	36%	100%
C53 cervix uteri	unstaged	104	8%	59%
	IV	173	14%	21%
	III	268	21%	63%
	II	182	14%	84%
	I	529	42%	95%
C54 corpus uteri	unstaged	208	8%	47%
	IV	194	8%	19%
	III	327	13%	51%
	II	113	4%	77%
	I	1,729	67%	96%

Breast (C50)

Most breast cancers were diagnosed at early stage (stages I–II accounted for over three-quarters of cases). Five-year net survival was extremely high for stage I (100%) and stage II (95%), declining with advancing stage but remaining relatively favourable even for stage III (80%). Stage IV survival was substantially lower (37%) (Figure 6-3).

Cervix uteri (C53)

Cervical cancer was most commonly diagnosed at stage I. Five-year net survival was very high for stage I (95%) and for stage II (84%) but dropped for stage III (63%) and stage IV (21%) disease (Figure 6-3).

Table 2. Turnaround times and programme response times 2023 and 2024

Performance Parameter	2023 (April – Dec)	2024 (Jan – Dec)	QA Standard
Overall			
% results returned to the programme within 10 working days of receipt of sample at laboratory	85.7%	96.0%	>95%
% of women who received results within 4 weeks	95.6%	98.9%	>90%

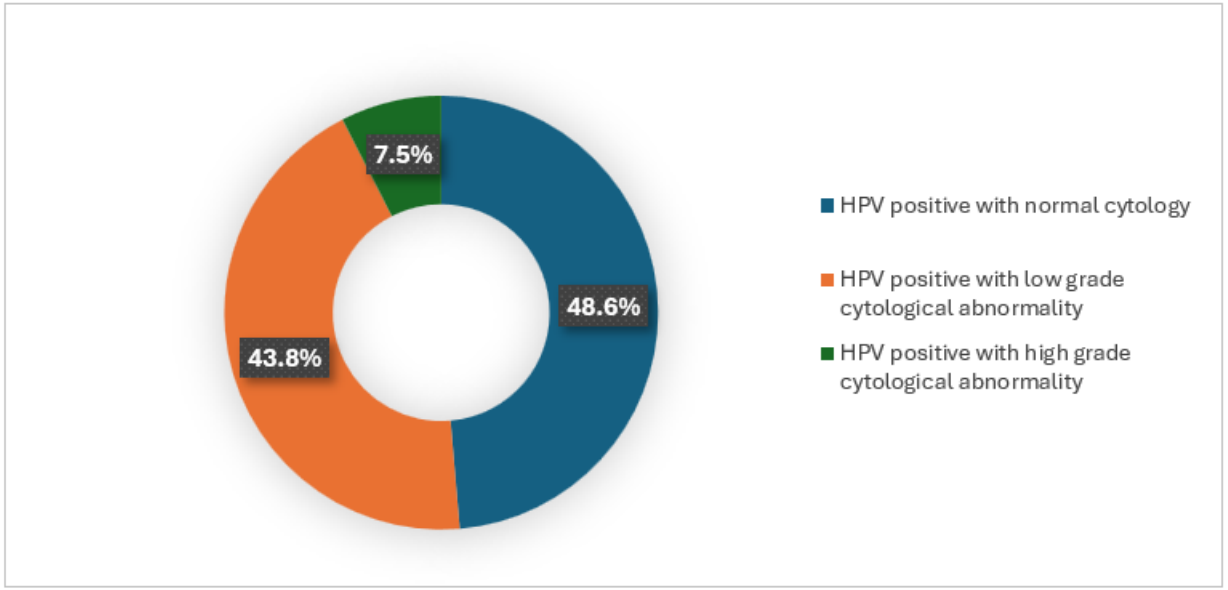
Primary screening round results 2022/23

Table 4. Primary screening results* (HPV & cytology) for women aged 25-65 years

	2022/2023	
	Number	**%**
HPV screening result		
HPV negative**	207,207	89.0
HPV positive	25,736	11.0
Total	**232,943**	**100.0**
Cytology result in HPV positive women		
HPV positive with normal cytology	12,518	48.6
HPV positive with low grade cytological abnormality	11,283	43.8
HPV positive with high grade cytological abnormality	1,935	7.5
Total of HPV positive women	**25,736**	**100.0**

*excluding unsatisfactory/inadequate screening tests and samples taken in colposcopy
**HPV negative/no cytology performed (primary HPV screening result)

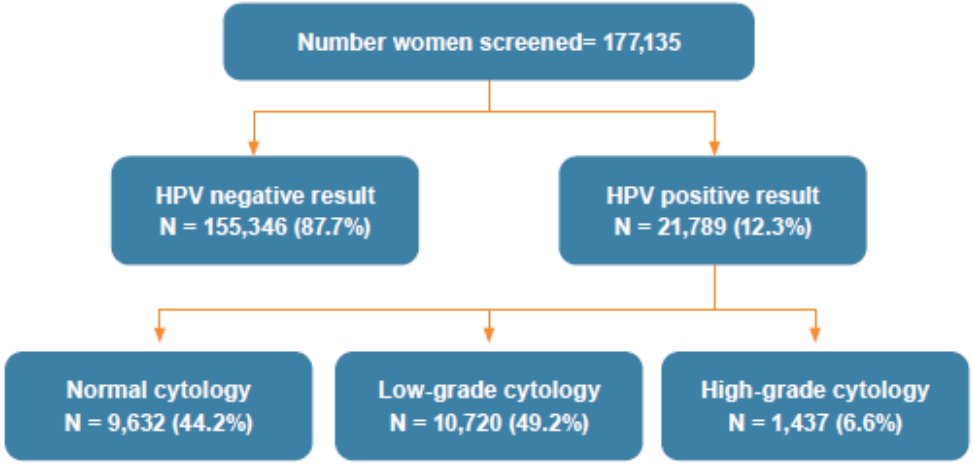
Figure 6. Cytology results in HPV positive women aged 25-65 years



- 11% of the screened population are HPV positive
  - Half normal cytology (5.4%)
  - Half abnormal cytology (5.6%)
- 0.8% of screened population are HPV positive with high grade cytology
- 4.8% of screened population are HPV positive with low grade cytology
  - 88% attend within 15/12 of advised repeat *
  - 46% have cleared HPV infection – return to routine screening
  - 54% persistent HPV positive (all referred to colposcopy)

2024 data

Figure 6. Primary screening results* (HPV & cytology) in January to December 2024



*ages 25 to 65 years only and excludes unsatisfactory results. Primary screening results do not contain women who attended for their 12-month follow-up repeat HPV screening test.

Figure 7. Cytology findings in HPV positive women in the screened population January- December 2024

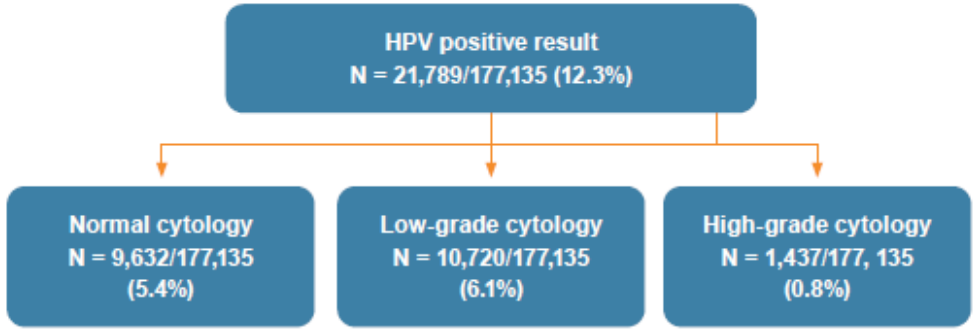
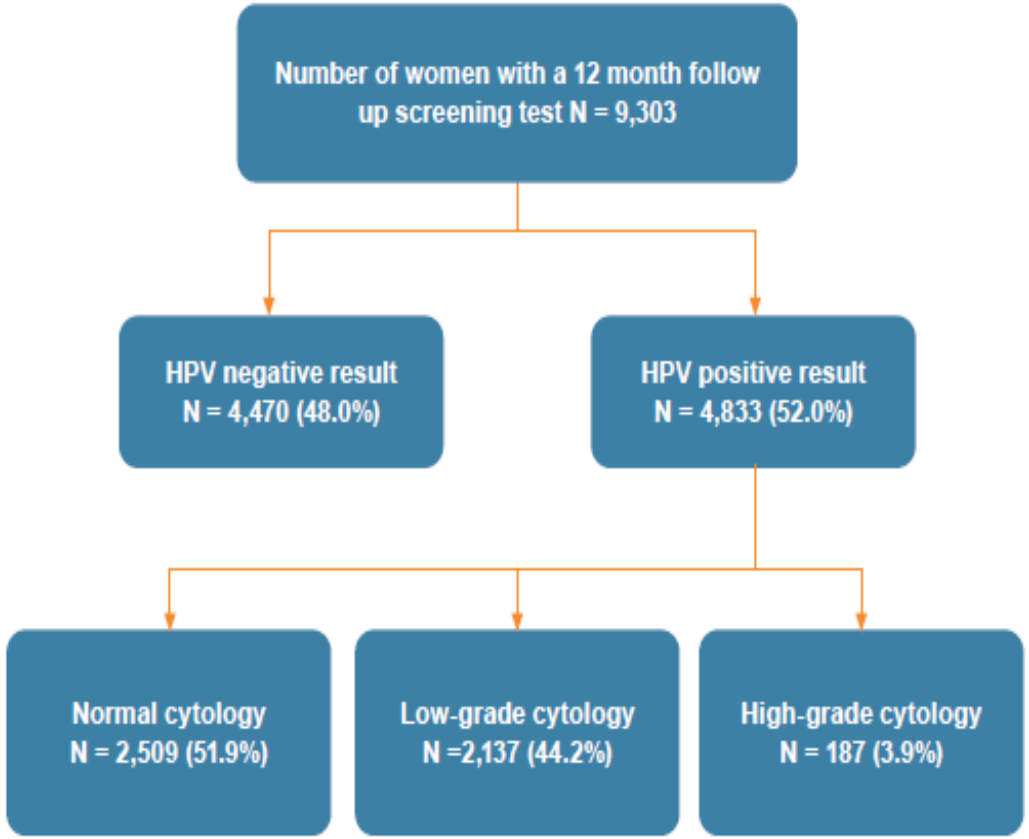


Figure 9. Follow-up screening result* in early repeat cohort at 12 months (2024)



*ages 25 to 65 years only and excludes unsatisfactory results

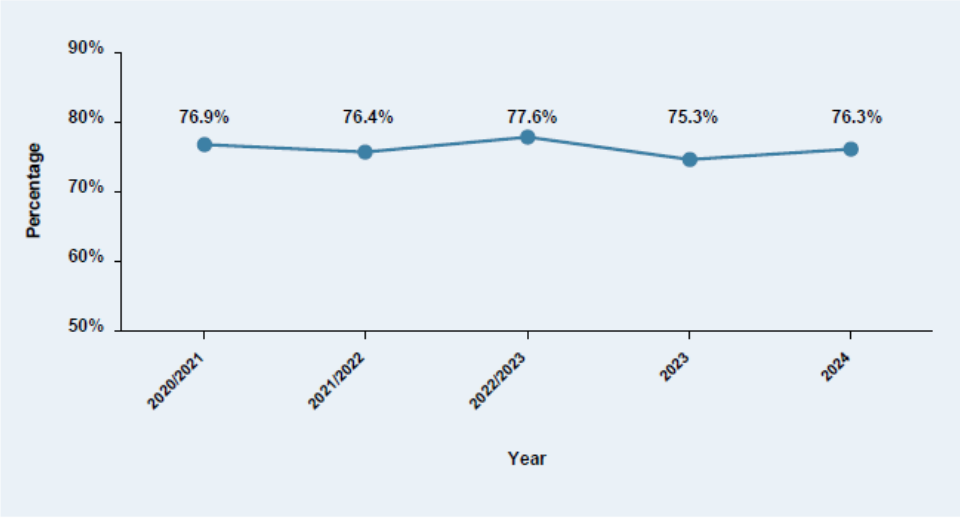
Positive predictive value of HG cytology (likelihood of finding HGCIN)

Table 12. Positive predictive value of a high-grade cytology HPV result in HPV positive women

Performance parameter	2023	2024
Correlation between high-grade cytology and histologically proven high-grade CIN	75.3%	76.3%

Figure 12 shows that the PPV of high-grade cytology since the introduction of the primary HPV screening programme.

Figure 12. Positive predictive value of a high-grade cytology 2020 to 2024



Standard 5-11	**Women who present with high grade cytological abnormality** If the colposcopy suggests low grade disease and treatment is not performed, multiple biopsies should be taken where possible.	**Target** Minimum 95%

Referral to colposcopy rate and reason

Figure 10. Referral to colposcopy rates September 2008 to December 2024

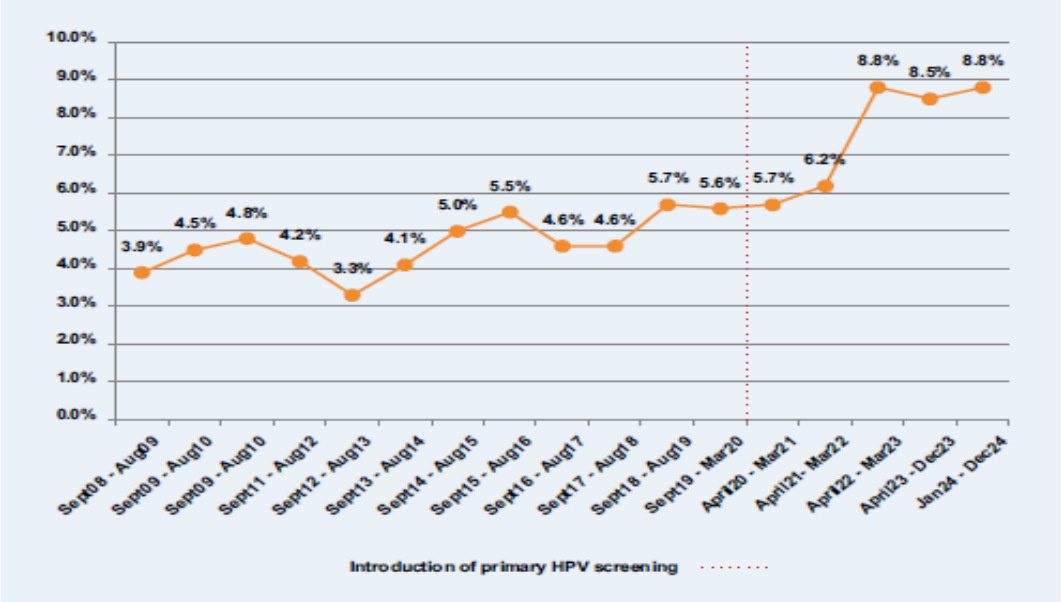


Table 3. Referral to colposcopy in 2023/2024

Time period	Number and percentage of screening tests performed in primary screening locations resulting in a new referral to colposcopy
2023 (April – December)	14,127 (8.5%)
2024 (January – December)	17,496 (8.8%)

Table 5. HPV and cytology results in patients newly referred to colposcopy

	2023	Percentage	2024	Percentage
Abnormal screening test	**18,196**	**87.8%**	**20,979**	**86.1%**
Reasons:				
HPV positive/high-grade cytology	1,975	9.5%	2,125	8.7%
HPV positive/low-grade cytology	13,152	63.5%	15,455	63.5%
Persistent HPV/normal cytology	3,057	14.8%	3,379	13.9%
Unsatisfactory/inadequate sample	12	0.1%	20	0.1%
Clinical indication	**2,527**	**12.2%**	**3,378**	**13.9%**
Reasons:				
Clinical indication - non-urgent	1,570	7.6%	2,268	9.3%
Clinical indication - urgent	957	4.6%	1,110	4.6%
Total no. of referrals	**20,723**	**100%**	**24,357**	**100%**

Key performance indicators

Key performance indicators

- Individual unit measure
- Programmatic national analysis
- Troubleshoot delays together

Ensure timely access

Reduce DNA

Table 7. The percentage of women seen at colposcopy within the programme QA standard for waiting times 2023/2024

Referral reason	QA Standard	2023 % women seen within standard	2024 % women seen within standard
Suspicion of cancer	2 weeks	100%	100%
HPV positive/high-grade cytology	4 weeks	81.4%	91.7%
HPV positive/low-grade cytology	8 weeks	75.1%	91.1%
HPV positive/normal cytology	8 weeks	74.0%	89.3%
Cytology not recorded/ cytology unsatisfactory	8 weeks	71.9%	89.3%
All referrals to colposcopy	8 weeks	76.7%	90.8%

Table 6. DNA rate at colposcopy clinics

Time period	2023	2024
Overall DNA rate	7.7%	8.0%
DNA rate - new appointments	7.2%	7.5%
DNA rate - follow-up appointments	10.1%	9.6%

Modelling - Predicted Attendances for 2024

Predicted Screening and Referral Numbers for Cervical Check for 2024 - Revised July'24

Month	Forecast Screening Numbers (Not including HPV + 12 Month Returns)	HPV + 12 Month Returns - Forecast	Screened Forecast Each Month (12 Months Returns + Forecast Screening Numbers)	51.3% of HPV + 12 Month Returns Referred to Colp Clinics	55% OF HPV + 12 Month Returns Referred To Colp Clinics	Referrals To Colp Clinics		Referrals Including Clinical Indications (15% on lower forecast)	Referrals Including Clinical Indications (20% on upper forecast)
						Lower Forecast *	Upper Forecast **		
Jan	19,356	870	20,226	444	485	1,799	2,324	2068	2789
Feb	19,470	850	20,320	434	474	1,796	2,324	2066	2789
Mar	18,021	890	18,911	454	497	1,715	2,209	1973	2650
Apr	18,937	790	19,727	403	441	1,728	2,240	1988	2688
May	17,020	890	17,910	454	497	1,645	2,114	1892	2536
Jun	13,260	750	14,010	383	419	1,311	1,678	1507	2014
Jul	12,320	780	13,100	398	435	1,260	1,606	1449	1927
Aug	12,450	750	13,200	383	419	1,254	1,601	1442	1922
Sep	12,830	770	13,600	393	430	1,291	1,649	1484	1978
Oct	12,890	810	13,700	413	452	1,315	1,677	1513	2012
Nov	12,310	790	13,100	403	441	1,265	1,610	1454	1932
Dec	12,210	790	13,000	403	441	1,258	1,601	1446	1921
Grand Total	181,074	9,730	190,804	4,962	5,429	17,637	22,631	20283	27158

N.B. The 12 Month returns forecast is for screens which are HPV positive but have a management recommendation to return in 12 Months time. The research and literature suggests that 60% of these that return in 12 Months time end up being referred to a Colp Clinic but data since June 2020 suggests it lies between 51.3% and 55.8% with 53.5% being the average

The prediction Model produces a band of forecasted referrals that lies between the lower and Upper Forecast figures based on referral rates outlined below. The number only includes referrals from Primary Care.

*** Lower Forecast is a sum of the 51.3% of HPV+ Monthly Returns plus 7% of the Forecast Screening numbers**

**** Upper Forecast is a sum of the 58% of HPV+ Monthly Returns plus 9.5% of the Forecast Screening numbers**

The Average of the Lower and Higher Forecast of Referrals to Colp Clinics for 2024 is approx 24,000

Future directions

- Europe's Beating Cancer Plan is a comprehensive strategy aiming to improve cancer prevention, detection, diagnosis, treatment, and survivorship in the European Union. As part of this plan, the EC launched the European Commission Initiative on Cervical Cancer executed by the International Agency for Research on Cancer (IARC) / World Health Organization (WHO) in collaboration with the EC's Joint Research Centre (JRC).
- The key elements of the EC Initiative on Cervical Cancer are
  - development of the European clinical practice guidelines
  - development of a European quality assurance (QA) scheme.



HIGHLIGHTED

VERSION 1

The official version of the quality assurance scheme is available!

The European quality assurance (QA) scheme defines a common set of both quality and safety requirements for breast cancer services wishing to improve the quality of care offered to women. All the information of the scheme is embodied in the scheme manual.



English
(11.25 MB - PDF)

Download

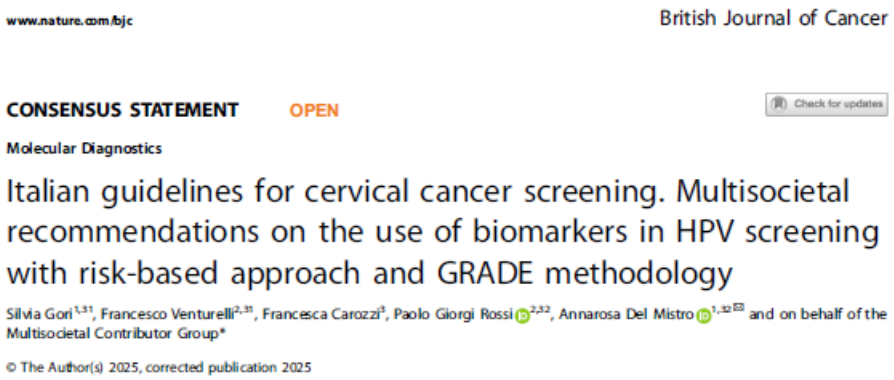
European guidelines to date

EC CVC Recommends

- HPV screening NOT co-testing and NOT cytology
- Age 25-64
- HPV negative cohorts
  - Screening interval of 5 years after a negative human papillomavirus (HPV) test under 40 years
  - Screening interval of 7 years after a negative human papillomavirus (HPV) aged 40 to 64 years (for those with no history of a previous HPV-positive test)
- Vaccinated cohorts
  - Screen at 10 yearly intervals after a negative HPV test
  - Start screening at 25 or 30 based on vaccine coverage and HPV16 prevalence pre vaccine introduction

Update on Triage

- No EC CVC agreement!
- Italian paper
  - 3 grades of oncogenicity
    - HPV 16/ 18
    - HPV 31/33/35/45/52/58
    - HPV 39/51/56/59/66/68



www.nature.com/bjc British Journal of Cancer

CONSENSUS STATEMENT OPEN

Molecular Diagnostics

Italian guidelines for cervical cancer screening. Multisocietal recommendations on the use of biomarkers in HPV screening with risk-based approach and GRADE methodology

Silvia Gori[1,31], Francesco Venturelli[2,31], Francesca Carozzi[3], Paolo Giorgi Rossi[2,32], Annarosa Del Mistro[1,32] and on behalf of the Multisocietal Contributor Group*

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	HPV 16–18	HPV 31–33–35–45–52–58	HPV 39–51–56–59–66–68
HSIL	Colposcopy (CIN3+ risk 36%)	Colposcopy (CIN3+ risk 19%)	Colposcopy (CIN3+ risk 22%)
LSIL	Colposcopy (CIN3+ risk 5.5%)	Colposcopy (CIN3+ risk 3.1%)	Retesting after 1 year (CIN3+ risk 1.1%)
NILM	Colposcopy (CIN3+ risk 3.4%)	Retesting after 1 year (CIN3+ risk 1.5%)	Retesting after 3 years (CIN3+ risk 0.5%)

	HPV 16–18	HPV 31–33–35–45–52–58	HPV 39–51–56–59–66–68
p16/ki67-positive	Colposcopy (CIN3+ risk 17.3%)	Colposcopy (CIN3+ risk 6.7%)	Colposcopy (CIN3+ risk 4.2%)
p16/ki67-negative	Retesting after 1 year (CIN3+ risk 1.2%)	Retesting after 1 year (CIN3+ risk 1.1%)	Retesting after 3 years (CIN3+ risk 0.5%)

- “extended genotyping, combined with cytology or p16/ki67 dual staining, is the only strategy providing a better risk stratification than cytology alone ”
- These biomarkers should be used in triaging HPV-positive women to identify those with sufficiently low risk to be referred to 3-year retesting.

Oncogenicity

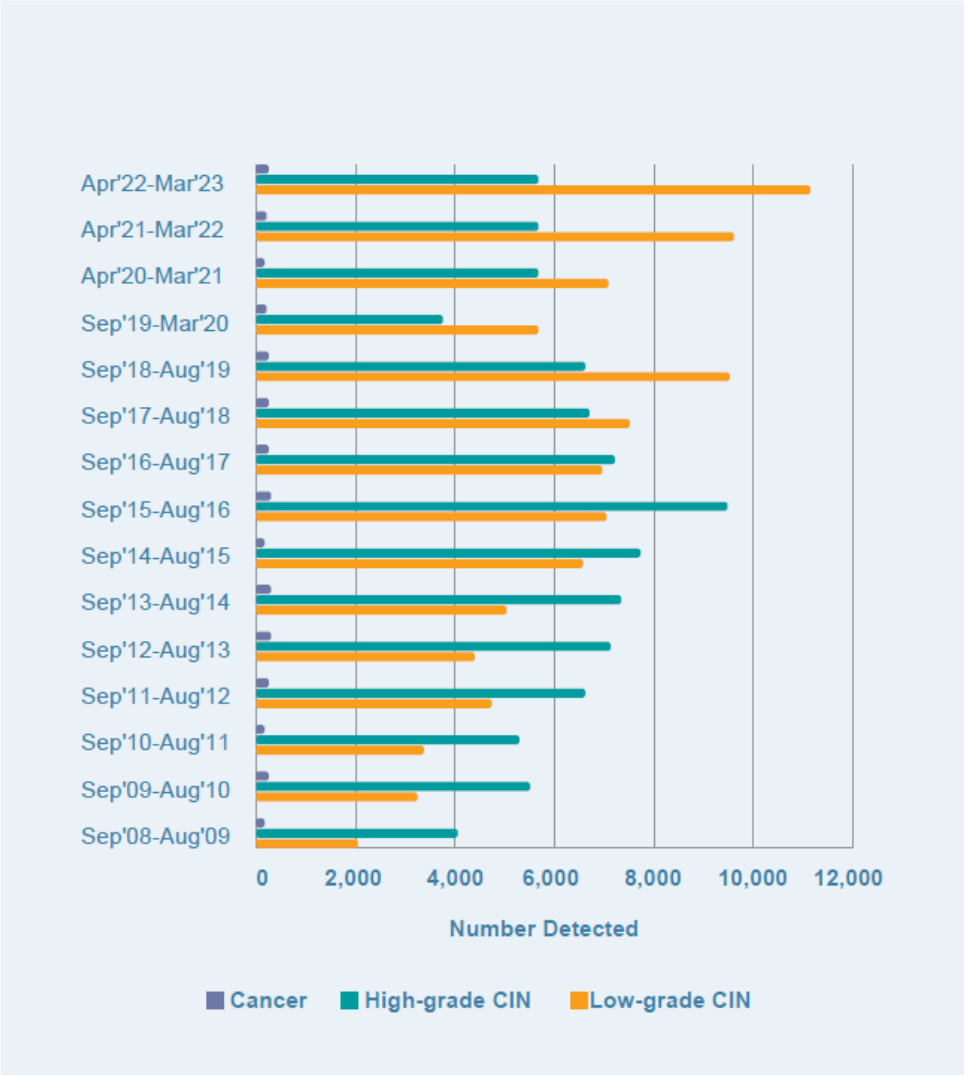
HPV type	HPV species	IARC Group[a]	% HPV type prevalence in cancer	% HPV type prevalence in normal	Odds ratio	% Attributable (etiological) fraction
HPV16	**α-9**	**Group 1**	**55.8**	**2.6**	**47.6**	**62.4**
HPV18	**α-7**	**Group 1**	**14.3**	**1**	**15.7**	**15.3**
HPV45	**α-7**	**Group 1**	**4.8**	**0.6**	**8.3**	**4.8**
HPV33	**α-9**	**Group 1**	**4**	**0.6**	**7.1**	**3.9**
HPV58	**α-9**	**Group 1**	**4**	**0.8**	**5.1**	**3.7**
HPV31	**α-9**	**Group 1**	**3.5**	**1**	**3.7**	**2.9**
HPV52	**α-9**	**Group 1**	**3.2**	**1**	**3.3**	**2.6**
HPV35	**α-9**	**Group 1**	**1.6**	**0.4**	**3.9**	**1.4**
HPV59	**α-7**	**Group 1**	**1.2**	**0.4**	**2.9**	**0.9**
HPV39	**α-7**	**Group 1**	**1.3**	**0.6**	**2.0**	**0.8**
HPV68	**α-7**	**Group 2A**	**0.6**	**0.4**	**1.5**	**0.2**
HPV51	**α-5**	**Group 1**	**1**	**0.9**	**1.2**	**0.2**
HPV56	**α-6**	**Group 1**	**0.8**	**0.6**	**1.3**	**0.2**
HPV73	α-11	Group 2B	0.5	0.3	1.8	0.2
HPV26	α-5	Group 2B	0.2	0.1	4.1	0.2
HPV30	α-6	Group 2B	0.2	0.1	2.6	0.1
HPV69	α-5	Group 2B	0.2	0.1	1.4	0.1
HPV67	α-9	Group 2B	0.3	0.2	1.2	< 0.1
HPV82	α-5	Group 2B	0.2	0.1	1.2	< 0.1
HPV34	α-11	Group 2B	0.1	0.1	1.0	Not attributable
HPV66	**α-6**	**Group 2B**	**0.3**	**0.6**	**0.4**	**Not attributable**
HPV70	α-7	Group 2B	0.2	0.8	0.3	Not attributable
HPV53	α-6	Group 2B	0.5	1.1	0.4	Not attributable

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Conclusion

- **Incidence of and mortality from cervical cancer reducing**
- **250,000 cervical screens per annum**
  - 12% positive for HPV
- **8.8% referral to colposcopy rate**
  - Majority of referrals are low grade or normal cytology in HPV positive women
  - Will this reduce with changes to triage ?
  - Will this reduce as more vaccinated younger women enter programme?
- **Most women referred to colposcopy do not have HGCIN "false positive"**
  - Likelihood of CIN2+ in all women referred for colposcopy approx. 8%
- **Screening is changing and will continue to do so**
- **All HPV positive women eventually end up in colposcopy regardless of triage!**

Figure 1. Pre-cancerous changes (cervical intra-epithelial neoplasia) and cancers detected since the CervicalCheck screening programme began (Sept 2008 - March 2023)



Ireland
250 cancers per annum
80 deaths per annum

CervicalCheck
250,000 screens per annum

20,000 referrals to colposcopy
(+ 15% clinical referrals)

6,500 treatments per annum for CIN2+
- Approx 120 cancers

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Back to basics: programmatic data

Dr Laura Heavey, Consultant in Public Health Medicine, National Screening Service

What I will be talking about…

- PPV, NPV, sensitivity and specificity of HPV testing, cytology and colposcopy
- Monitoring CervicalCheck programme performance
- Balances benefits and harms of screening
- Decisions to adapt screening to a HPV-vaccinated population

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Monitoring performance of screening

- Is cancer incidence and mortality reducing? =>NCRI
- Sensitivity and specificity of your screening test
- False negatives
- False positives
- Interval cancer rate

Sensitivity & specificity: fixed properties of a test

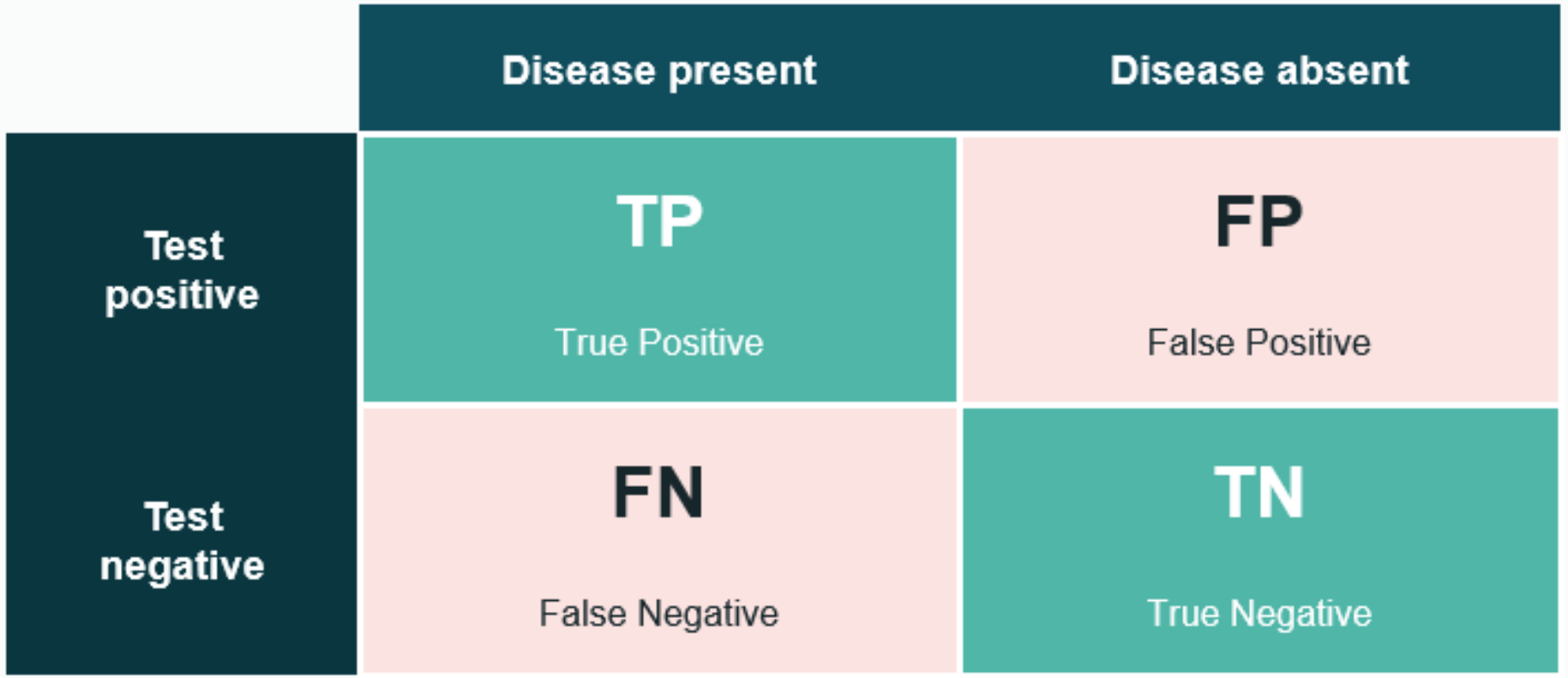
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Sensitivity

- If someone has the disease, what is the test's ability to detect it?
- Calculated only among people who truly have the disease
- A highly sensitive test misses few true cases (few false negatives)
- Drives confidence in a negative result
- Doesn't depend on how common the disease is

Specificity

- What is the test's ability to correctly identify someone without disease is disease-free?
- Calculated only among people who are truly disease-free
- A highly specific test rarely flags healthy people (few false positives)
- Drives confidence in a positive result being worth acting on
- Also independent of disease prevalence


Disease present
Disease absent
Test positive
TP
True Positive
FP
False Positive
Test negative
FN
False Negative
TN
True Negative

$$\text{Sensitivity} = \frac{\text{True positive}}{\text{True positive + false negative}}$$

GEEKYMEDICS.COM

$$\text{Specificity} = \frac{\text{True negative}}{\text{True negative + false positive}}$$

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PPV & NPV: it depends on the population and the disease prevalence

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PPV — Positive Predictive Value

- The positive predictive value is the likelihood that following a positive test result, that individual will truly have the disease.
- Lower disease prevalence (as in a screening population) pulls PPV down and pushes NPV up — even for an unchanged test.

$$\text{PPV} = \frac{\text{True positive}}{\text{True positive + false positive}}$$

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NPV — Negative Predictive Value

- The negative predictive value is the likelihood that following a negative test result, that individual will truly not have that specific disease.

$$\text{NPV} = \frac{\text{True negative}}{\text{True negative + false negative}}$$

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Prevalence	PPV	NPV
1%	8%	>99%
10%	50%	99%
20%	69%	97%
50%	90%	90%

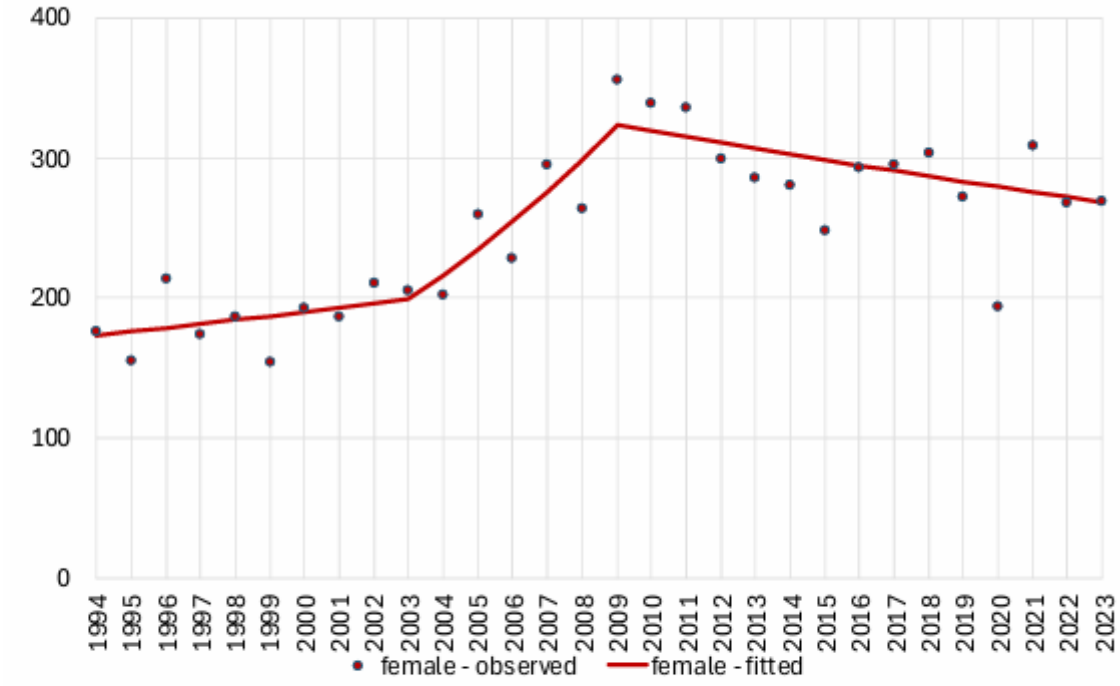
HPV screening vs cytology-based screening

	HPV screening	Cytology screening
Sensitivity	90% approx	75% approx
Specificity	<90%	>90%

CervicalCheck performance

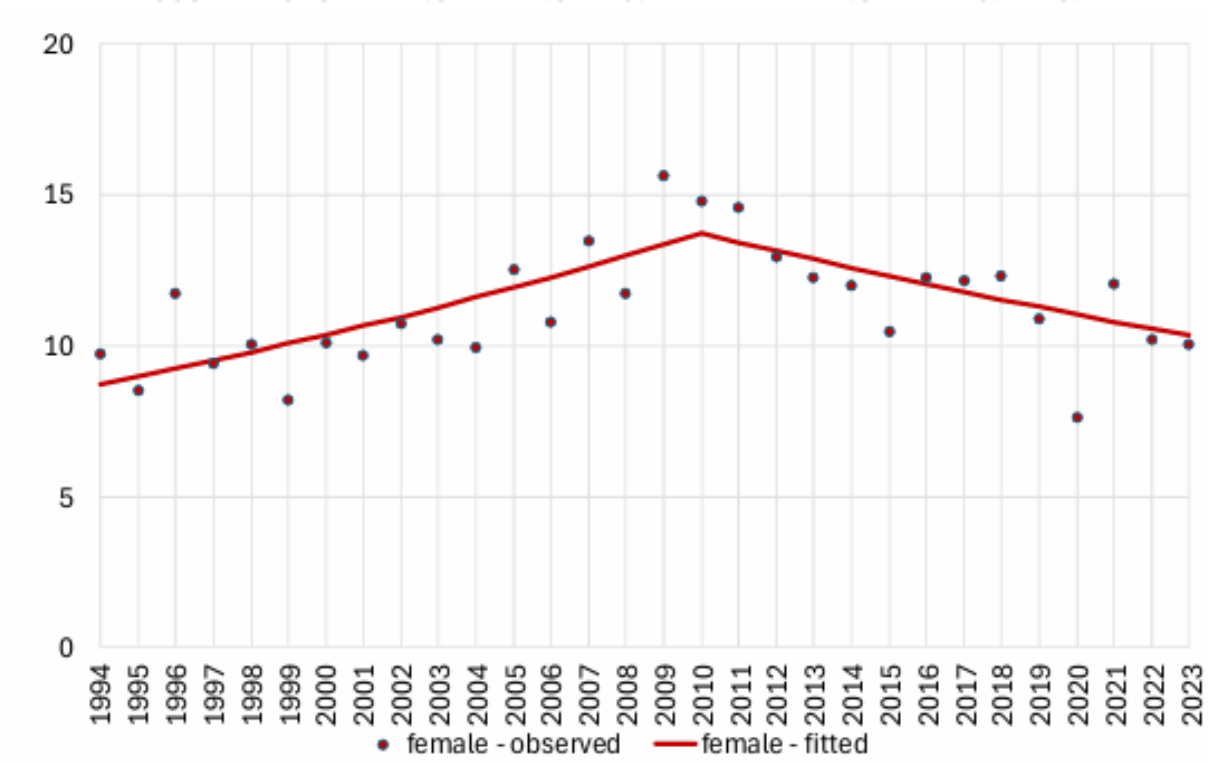
incidence

Cases



sex	period		APC%	95%CI			‡AAPC%	95%CI		
F	1994	2003	1.6	-1.3	4.6	↔				
F	2003	2009	8.4	1.8	15.4	↑				
F	2009	2023	-1.3	-2.5	-0.1	↓	1.5	-0.1	3.2	↔

Crude rate x100,000



sex	period		APC%	95%CI			‡AAPC%	95%CI		
F	1994	2010	2.9	1.6	4.1	↑				
F	2010	2023	-2.2	-3.6	-0.7	↓	0.6	-0.3	1.5	↔

The 2022-2023 annual report figures…

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Positive predictive value of high-grade cytology

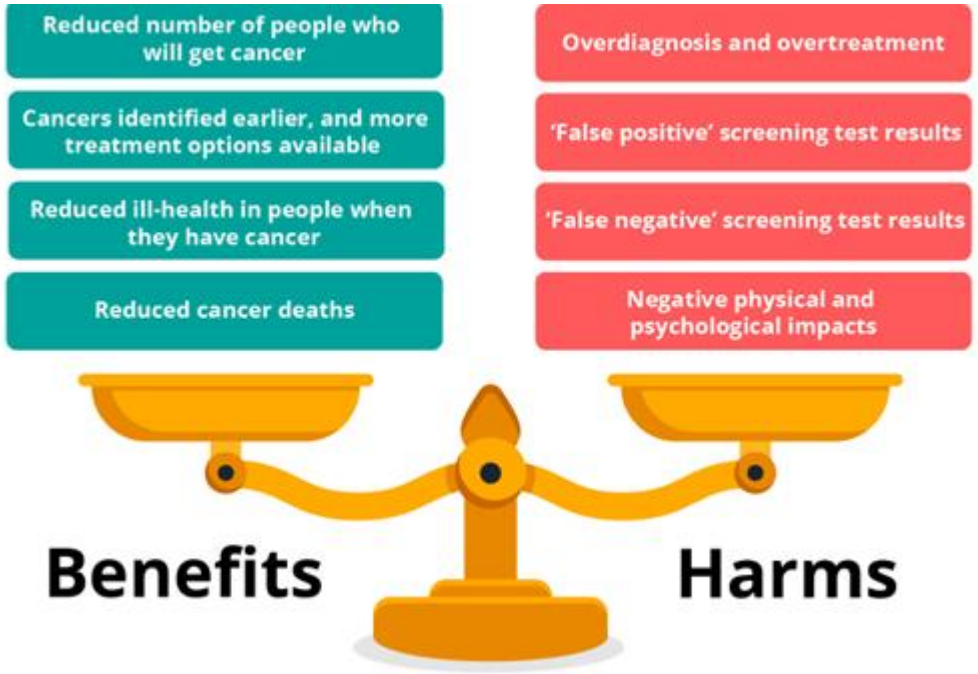
Performance parameter	2022/2023
Correlation between high-grade cytology and histologically proven high-grade CIN	**77.6%**

Positive predictive value of colposcopy

Performance parameter	2022/2023
Correlation between colposcopic impression of high-grade disease and histologically proven high-grade CIN	**59.9%**

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What HPV vaccination (and changing HPV prevalence) means for the future of screening



The future….

Cervical cancer elimination by 2040

Fewer lifetime cervical screening tests

?Another triage test

Take home messages

Disease prevalence is decreasing in younger vaccinated cohorts
PPV for an abnormal screening test is dropping, more false positives

Looking at Big Data

CervicalCheck Programme Data 2023-2024

Dr Therese Mooney
Head of Programme Evaluation Unit
18 September 2026

Number of unique women who had a CervicalCheck screening (all locations) test by age cohort from 1 April to 31 December 2023 and 1 January to 31 December 2024

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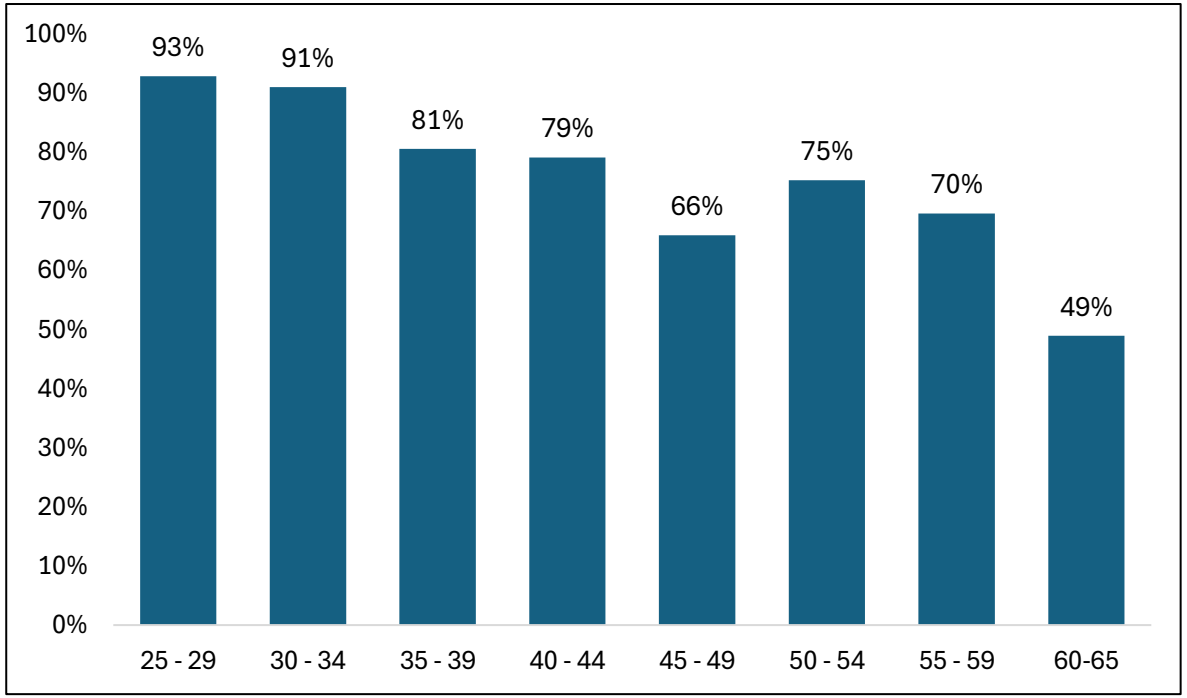
Age group	2023 (01 April- 31 December)		2024 (01 January-31 December)	
	N	%	N	%
<25	207**	0.1%	263**	0.1%
25 - 29	31,261	18.2%	43,110	20.7%
30 - 34	22,247	13.0%	36,371	17.5%
35 - 39	18,529	10.8%	23,845	11.5%
40 - 44	16,793	9.8%	21,210	10.2%
45 - 49	12,838	7.5%	16,278	7.8%
50 - 54	23,037	13.4%	25,046	12.0%
55 - 59	21,193	12.3%	19,647	9.4%
60	3,751	2.2%	3,352	1.6%
61-65	13,679	8.0%	12,007	5.8%
>65	8,137***	4.7%	6,931***	3.3%
Total	171,672	100.0%	208,060	100.0%

Programme Coverage

Overall coverage

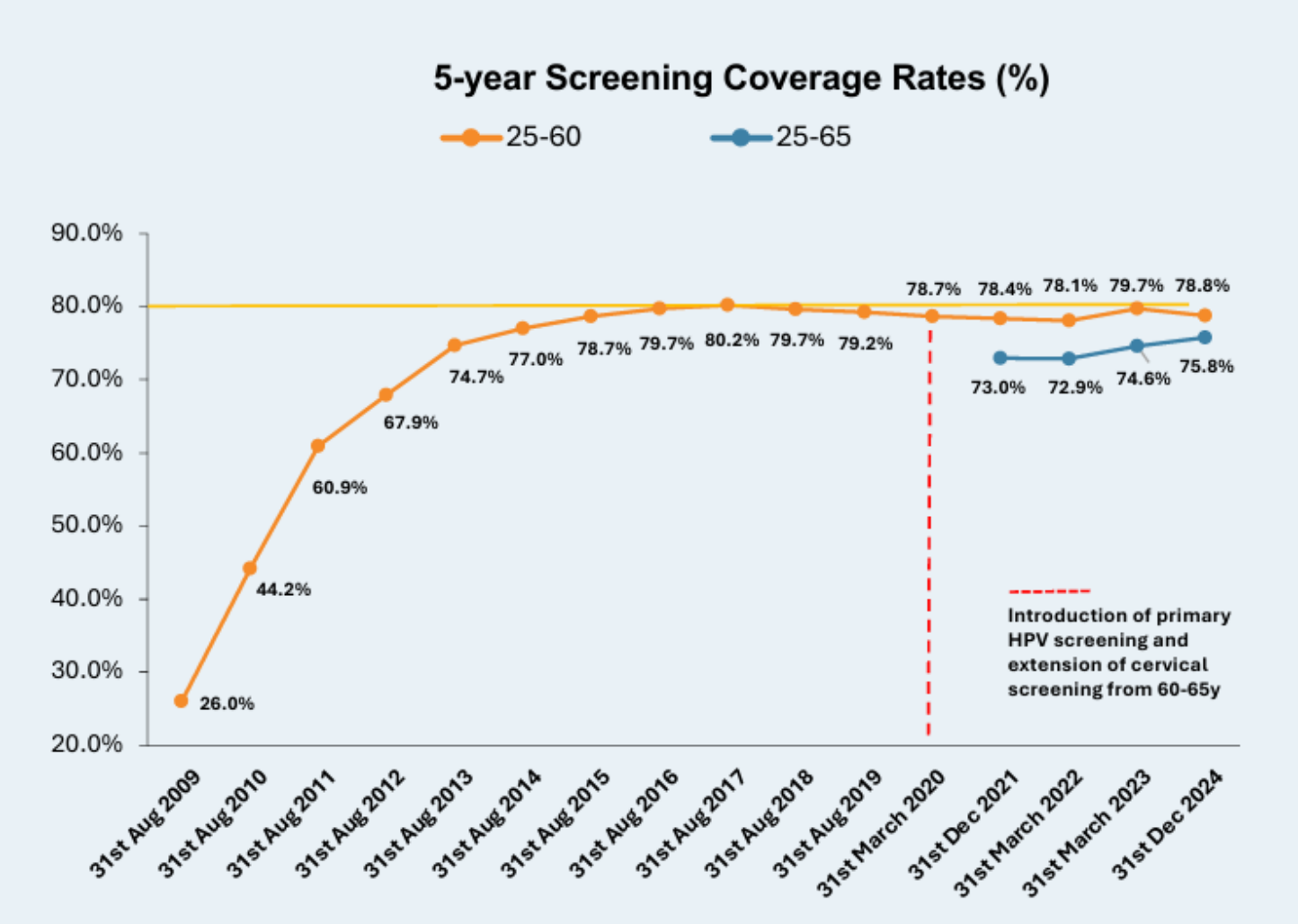
- The proportion of women within the defined screening population who have had at least one satisfactory screening test within the previous 5 years.
- Target 80%
- Achieved 75.8%

Coverage by age-group



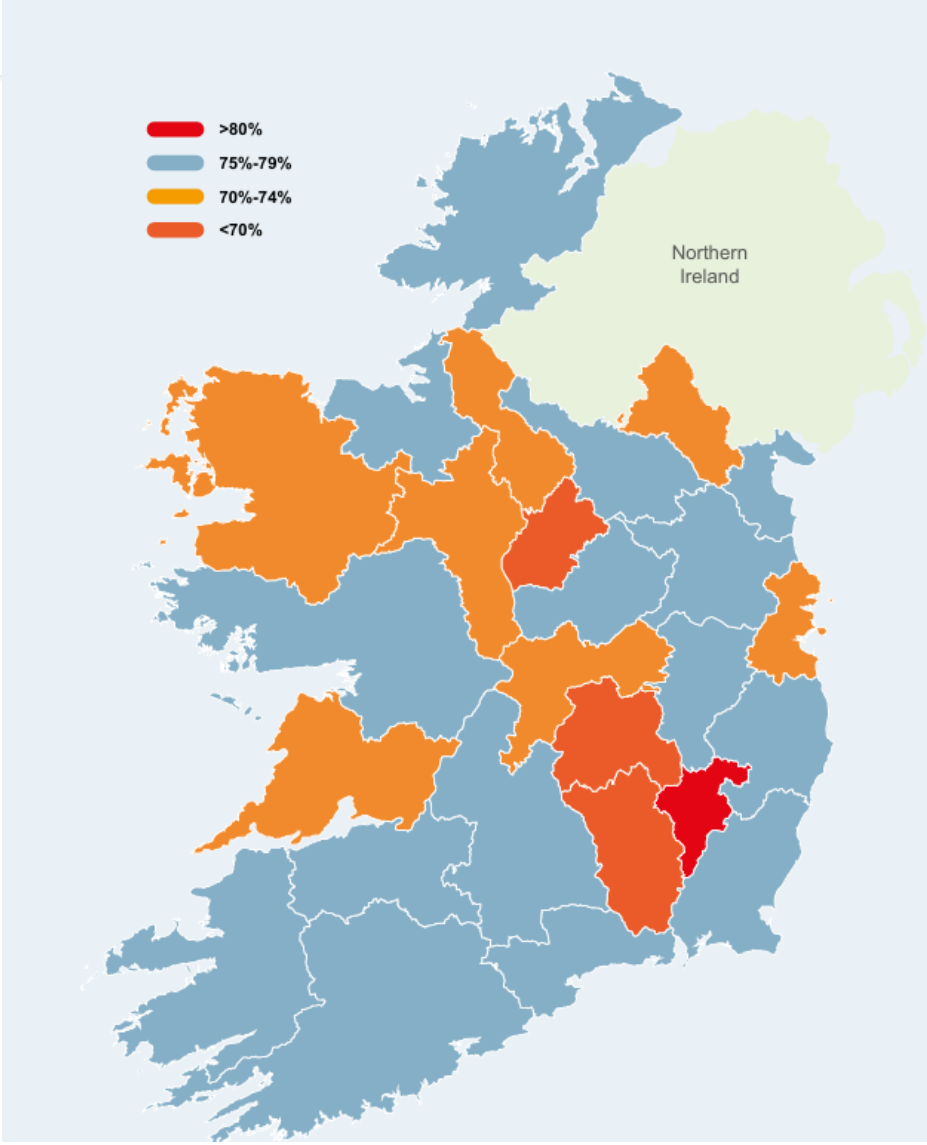
Trends in Coverage

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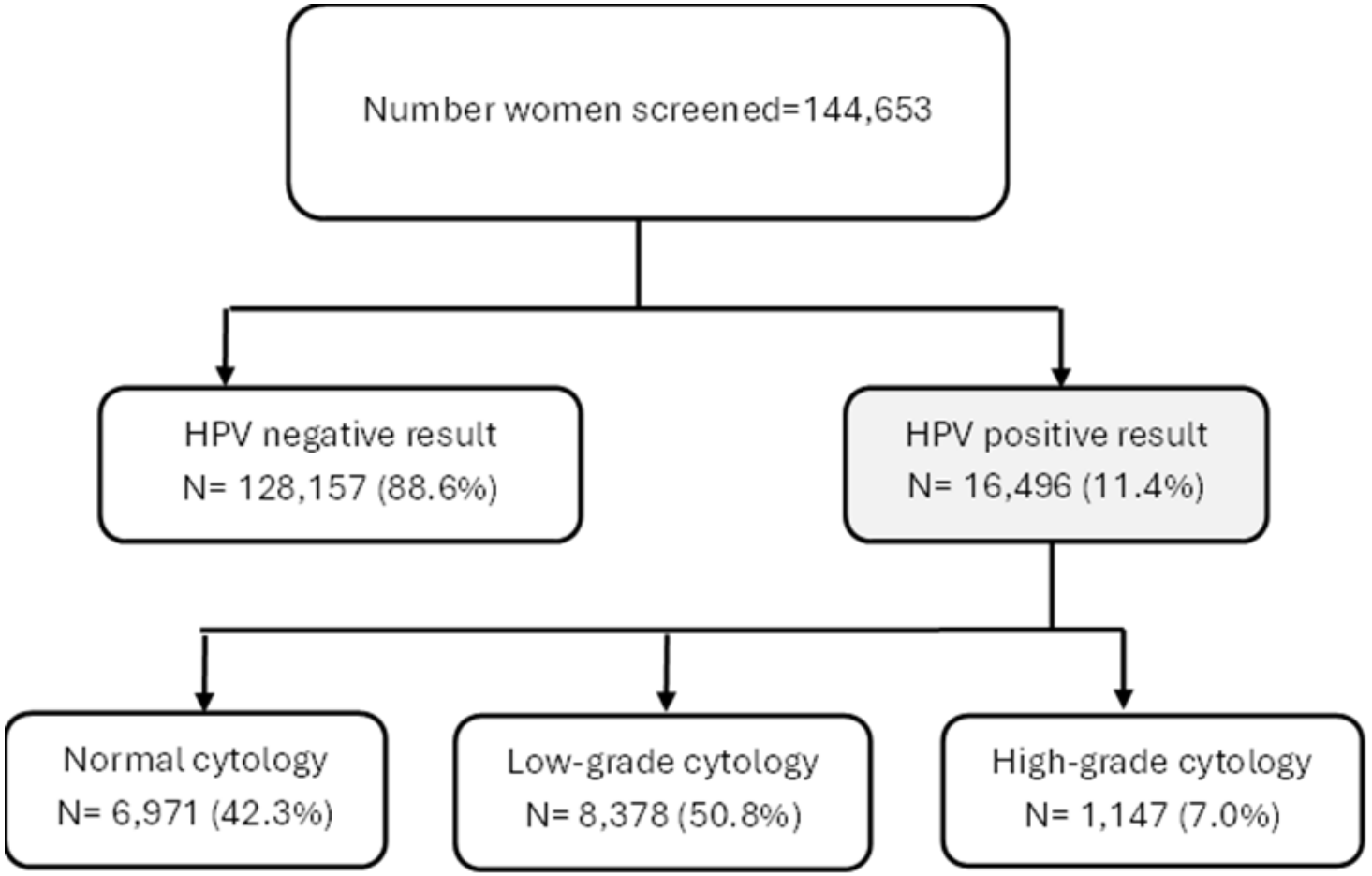


Geographical spread of coverage by county

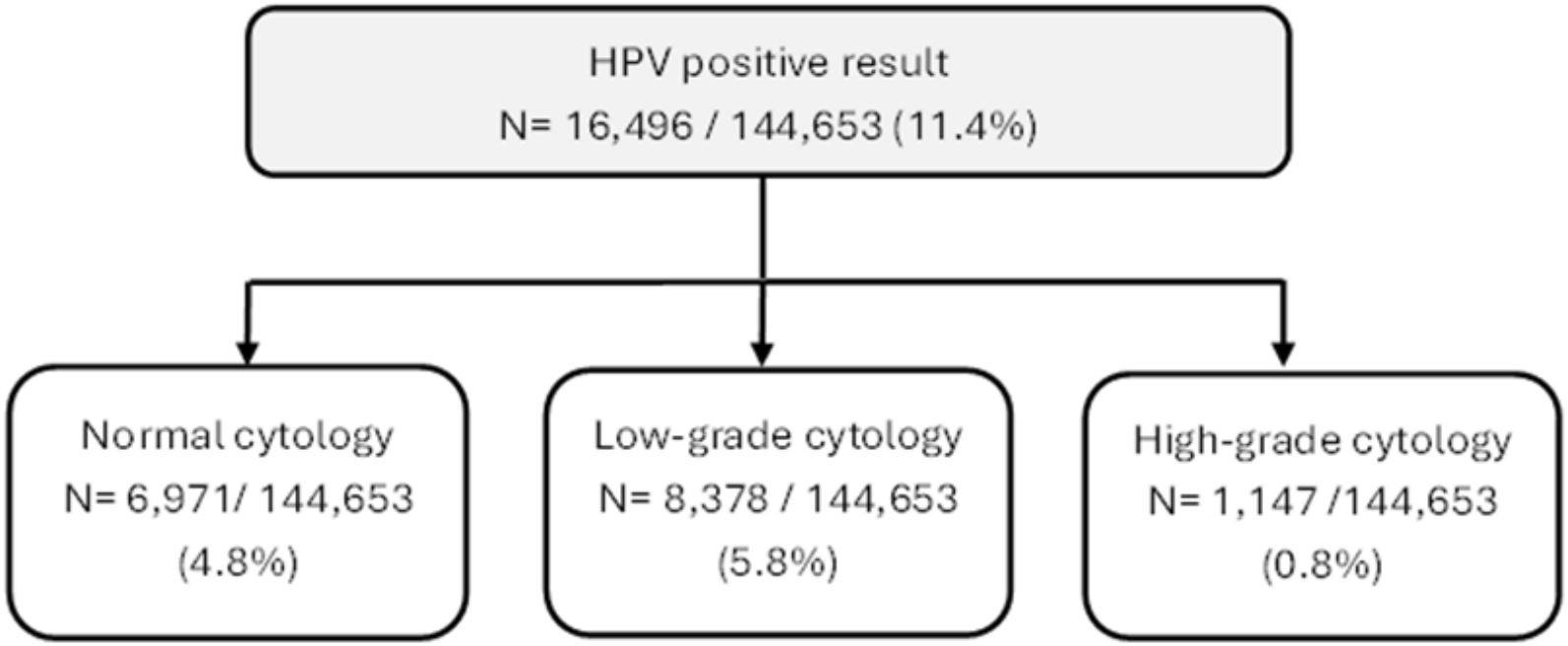
Women aged 25-65



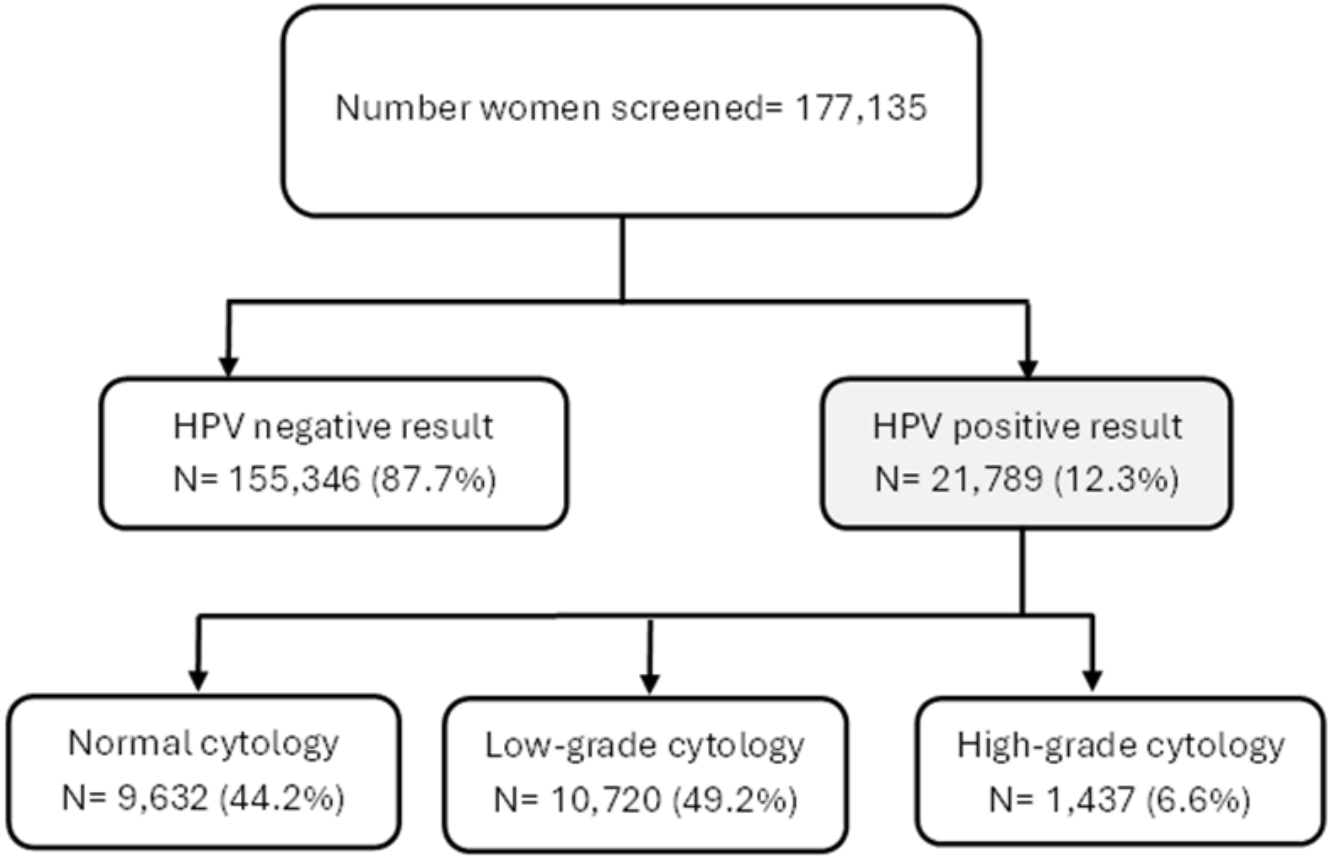
Primary screening results (HPV & cytology) for April -December 2023



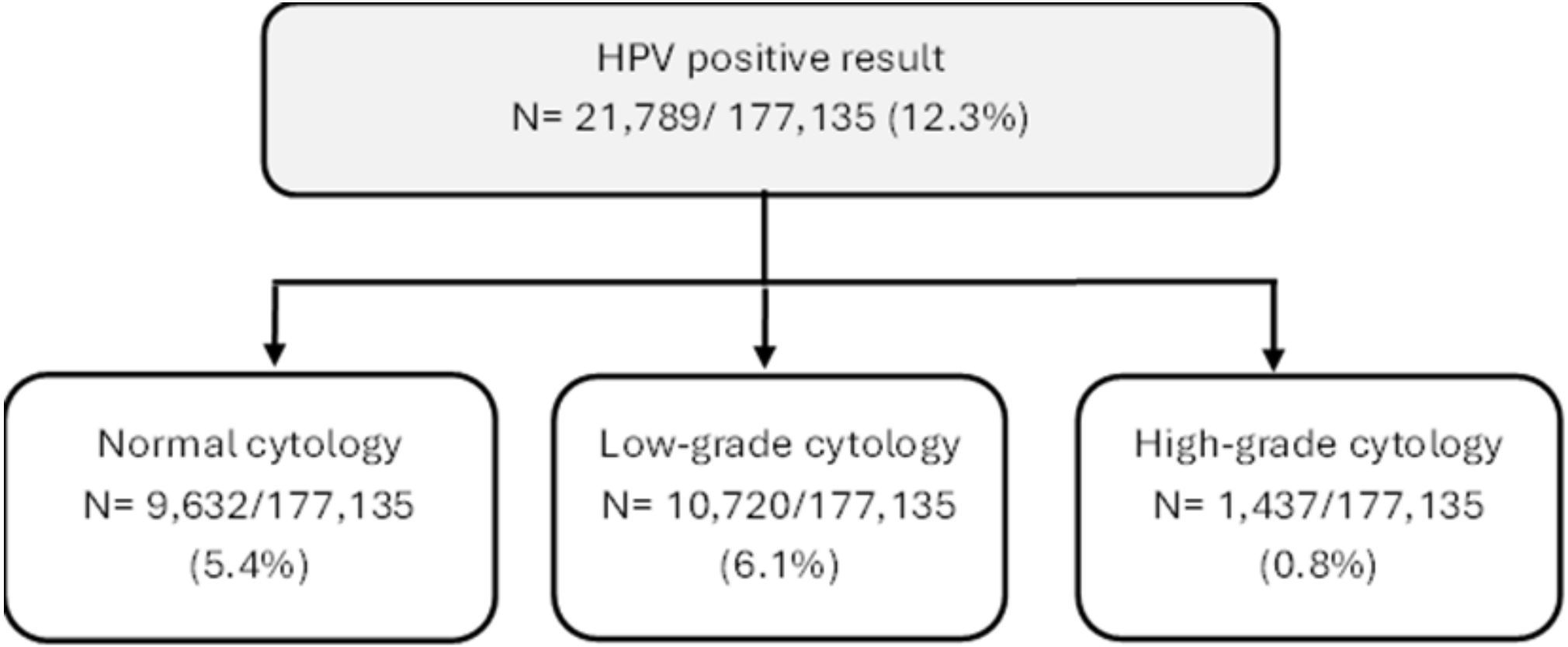
Cytology findings in HPV positive women in the screened population April- December 2023



Primary screening results* (HPV & cytology) in January – December 2024



Cytology findings in HPV positive women in the screened population January-December 2024



HPV prevalence in Ireland Trend

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Figure 1. HPV prevalence over the 5-year period

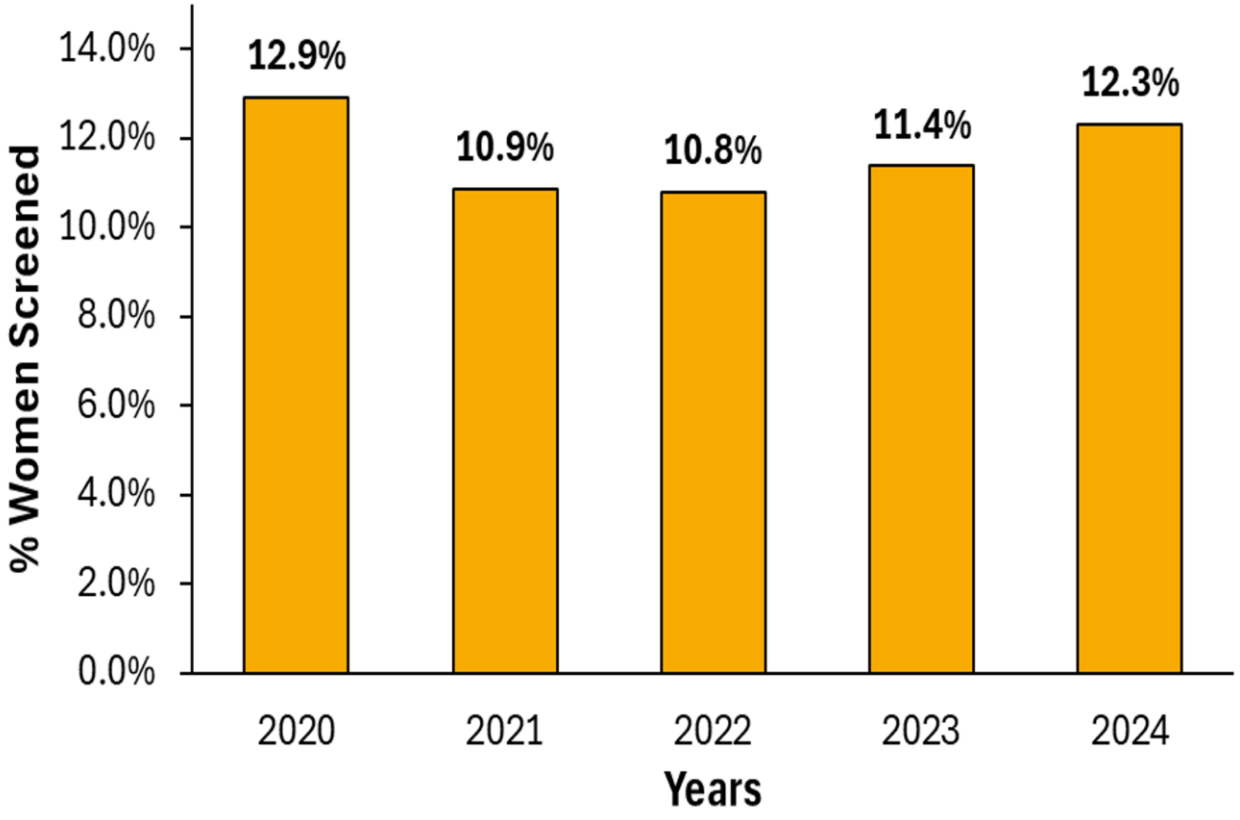
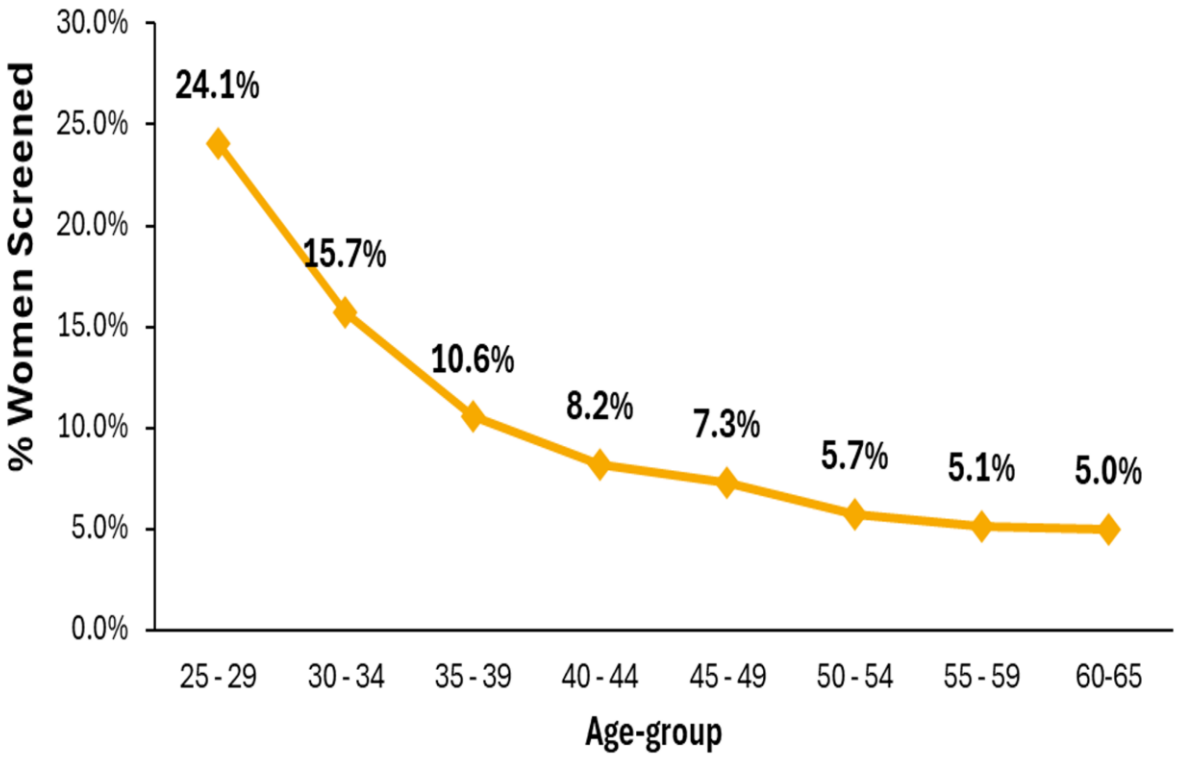


Figure 2. HPV prevalence by age-group over the 5-year period

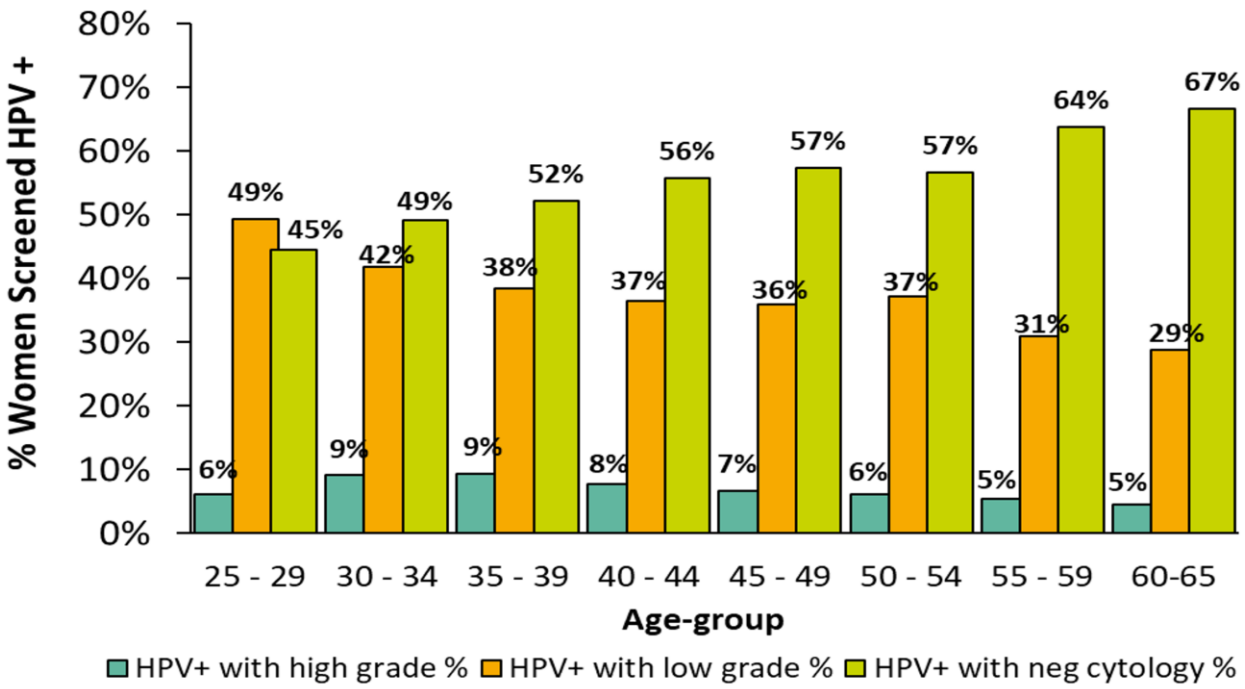


Cytology findings in HPV+ women

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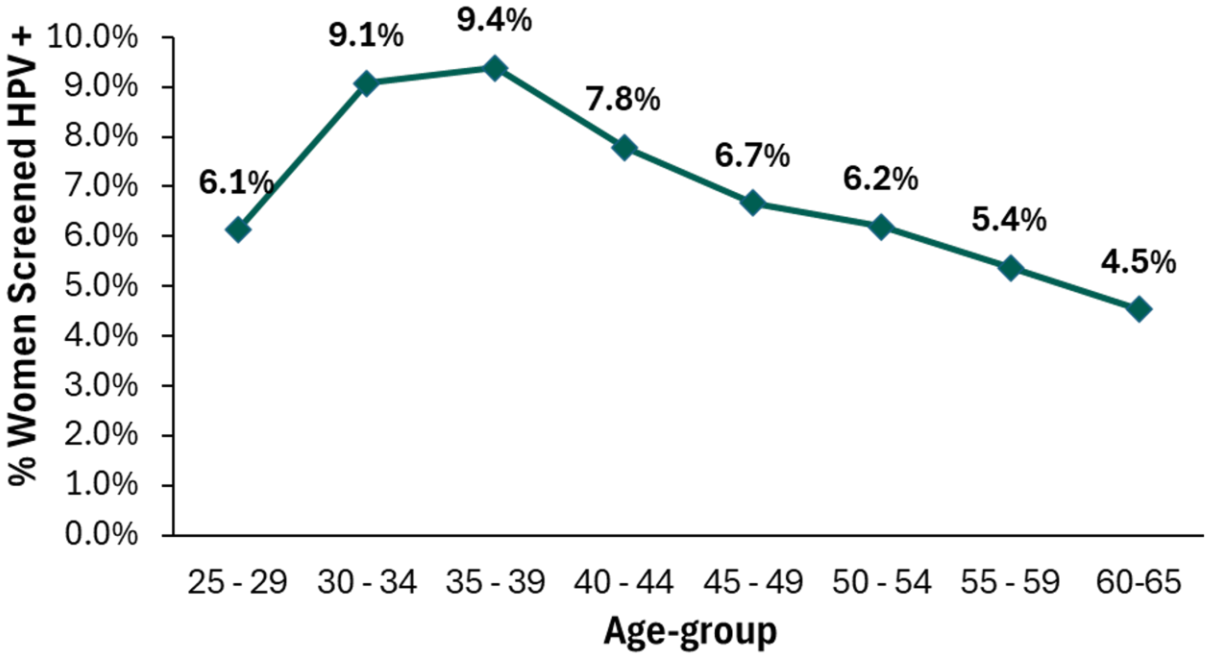
Overall outcomes

Figure 3. Cytology results among HPV+ women by age-group over the 5-year period

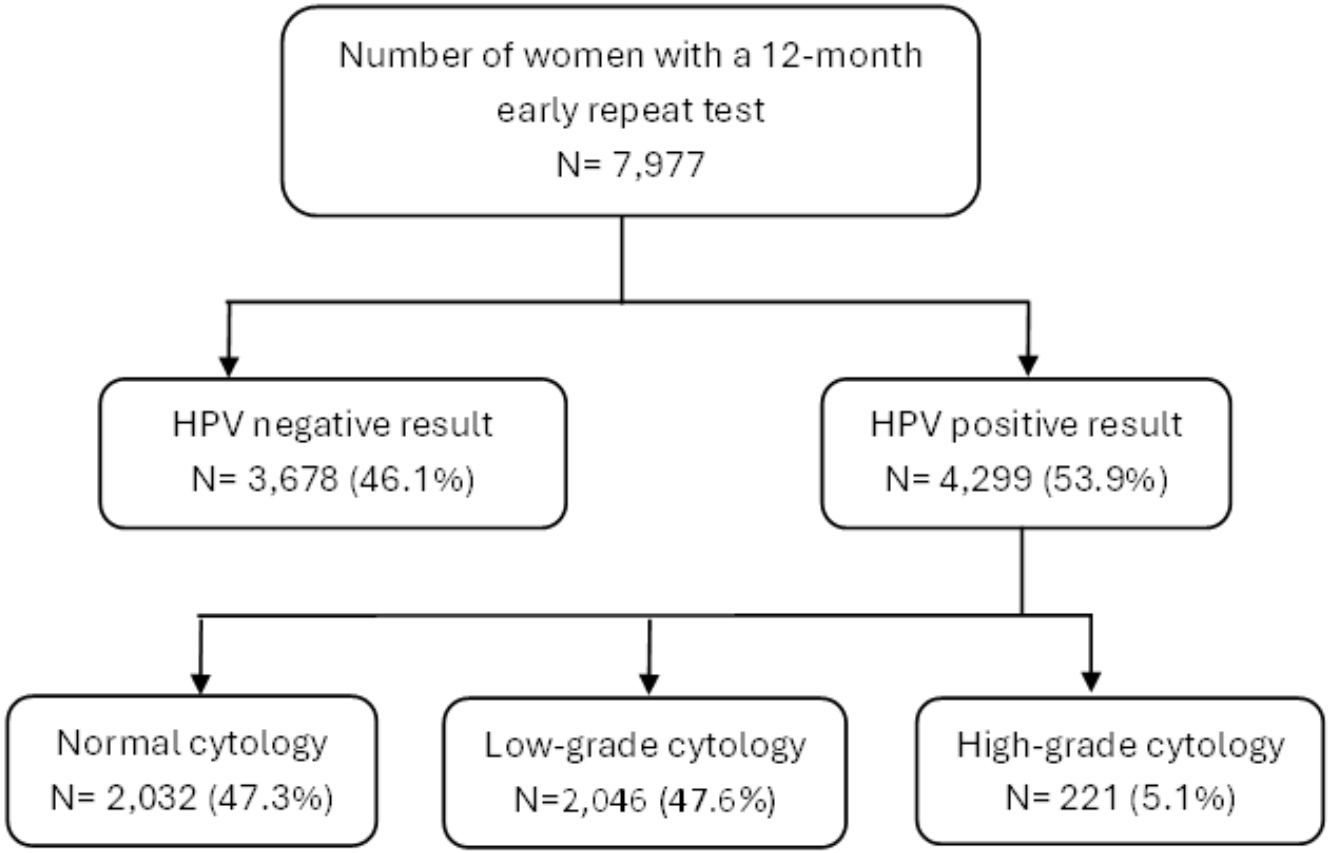


High grade results

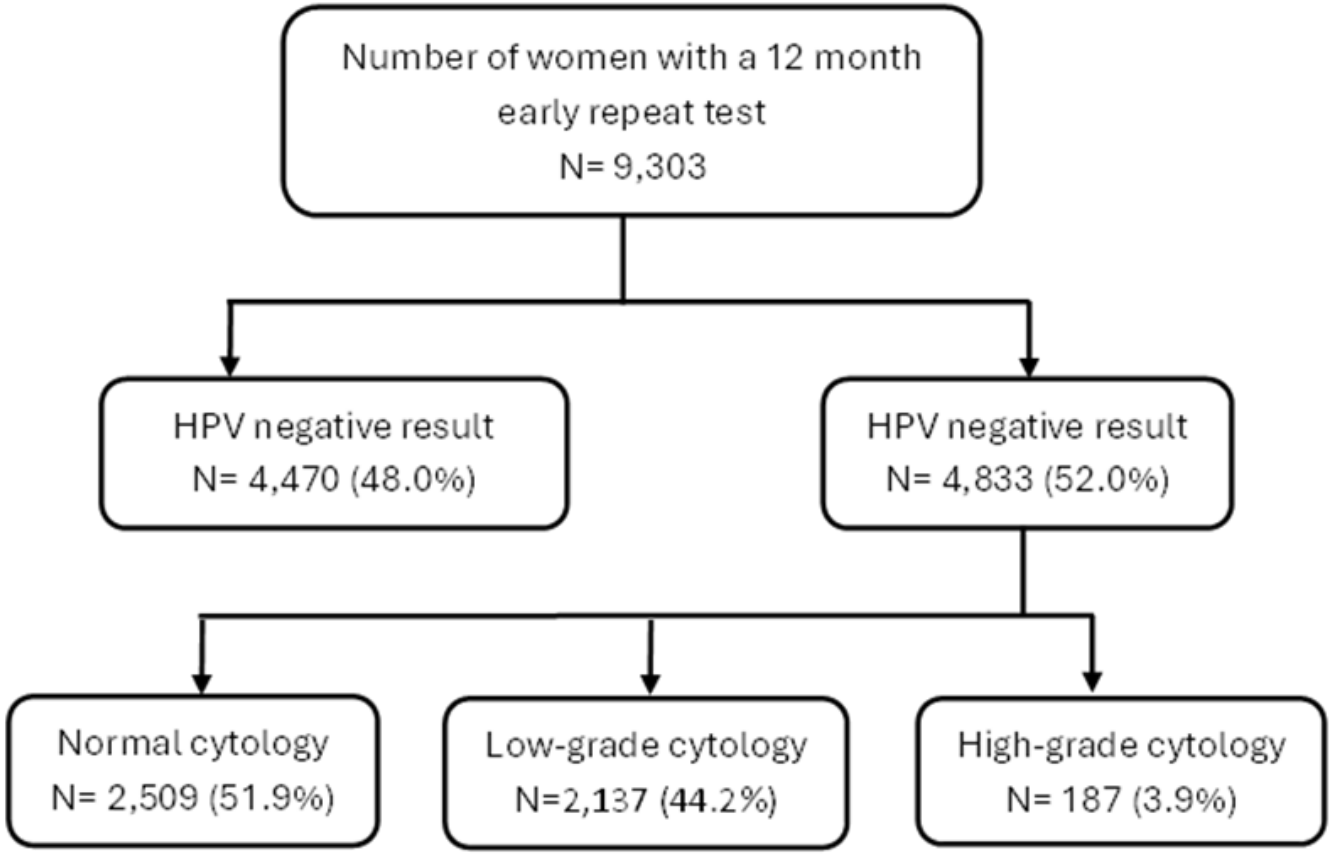
Figure 4. High grade cytology results among HPV+ women by age-group over the 5-year period



Follow-up screening result in early repeat cohort at 12 months (2023)



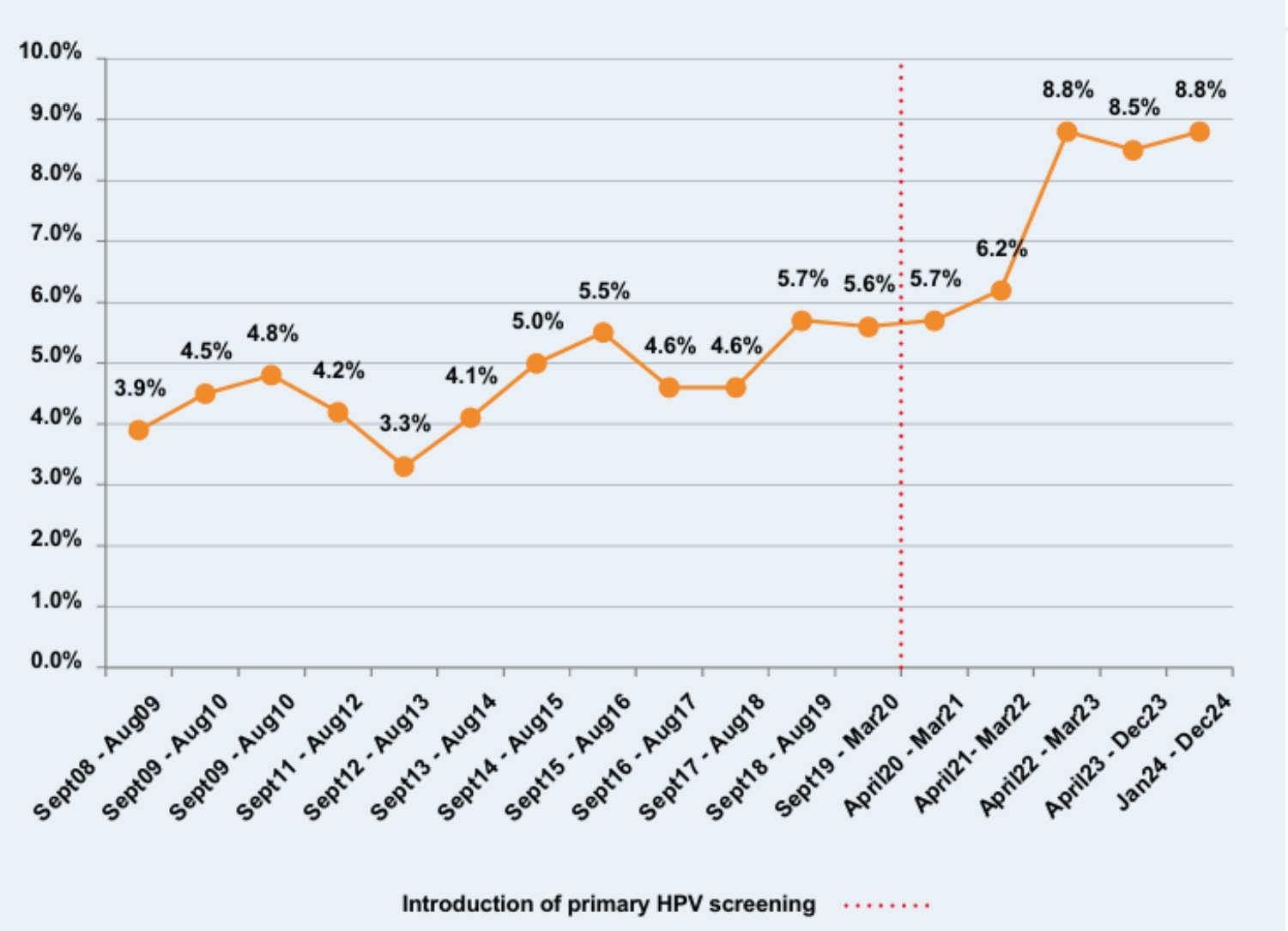
Follow-up screening result in early repeat cohort at 12 months (2024)



Referral to Colposcopy

Time period	Number of screening tests performed in primary screening locations resulting in a new referral to colposcopy
2023 (April – December)	14,127 (8.5%)
2024 (January – December)	17,496 (8.8%)

Referral to colposcopy rates September 2008 to December 2024



- Thank you
- Any questions?

The effect of HPV Vaccination on the rate of HG Referral Cytology in 25-Year-old women

Micheál Rourke

Data Analyst – Programme Evaluation Unit, NSS

Studies and acknowledgements

2 Irish studies that show the effect of the national HPV vaccination programme on HPV infection and abnormal cervical cell cytology

- **Study 1 - Ecological Study of High Grade Cytology set against background HPV vaccine uptake linked to age of participants**

Co-authors: Therese Mooney, Patricia Fitzpatrick, Caroline Mason Mohan, Laura Heavey, Cara Martin, Lucy Jessop, Noirin Russell.

- **Study 2 - Matched data study to examine effect of age at vaccination and HPV vaccine type on High Grade Cytology**

Co-authors: Patricia Fitzpatrick, Princy Bhatta,Therese Mooney, Quentin Le Cornu, Caroline Mason Mohan, Laura Heavey, Alan Smith, MaryJo Biggs, Noirin Russell.

Study 1 - Ecological Study of High Grade Cytology set against background HPV vaccine uptake linked to age of participants

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Introduction

- The Irish cervical screening programme commenced in 2008. For the first 11 years, screening was based on primary cytology.
- In April 2020, the programme transitioned to HPV screening with reflex cytology.
- In 2009/10 the national school-based vaccination programme for HPV was introduced for girls aged 12/13 with a 3-year catch-up commencing in 2011/12 for 17/18-year-olds. This first cohort started turning 25 in 2019 and began being invited into the Cervicalcheck screening programme to attend for screening.
- International evidence strongly suggests a reduction in the rate of High-Grade cytology in HPV vaccinated populations. This study aimed to see if there was a similar reduction in the Irish population.
- In 2023, we decided to investigate if the HPV vaccination programme in Ireland had any noticeable effects in the 25-year-old women who had began entering the program in 2020.

Method

- CervicalCheck cytology results were analysed from 2010 to 2022. Data was also obtained from the National Immunisation Office on the rates of HPV vaccinations in school going females from 2008 to 2022.

- The rates of **High Grade** (**HG)**, **Low Grade** (**LG)** and **NAD (No Abnormality Detected)** cytology were calculated against the baseline of the entire amount of cytology tests performed on 25-year-old females in those time periods to give a percentage for each category of cytology per year.

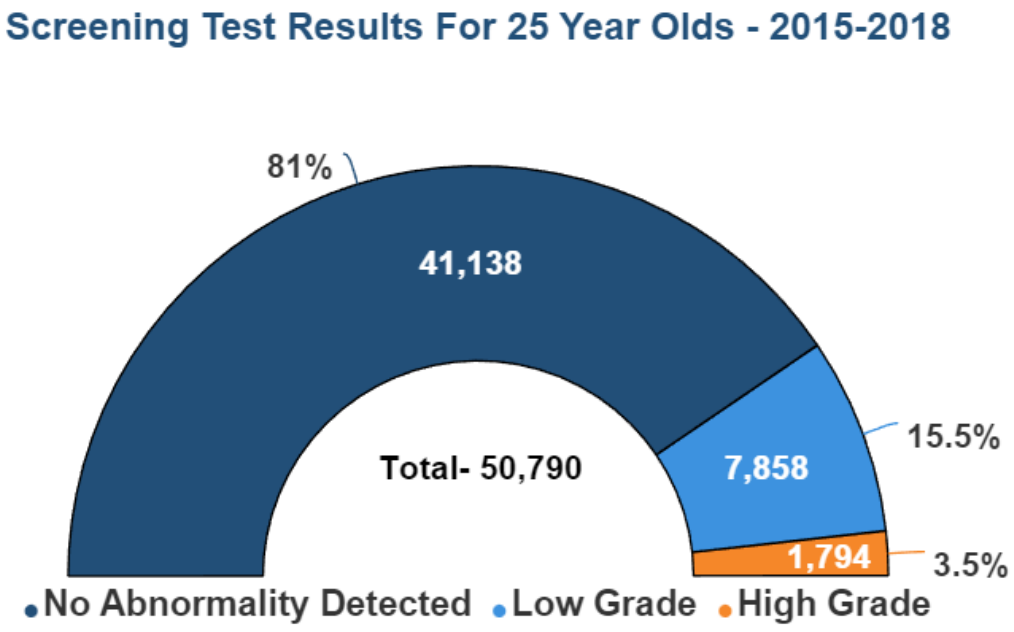
- The data for 2020 was split into two sections to account for the end of primary cytology and the beginning of HPV screening (Mar/April) for descriptive purposes.

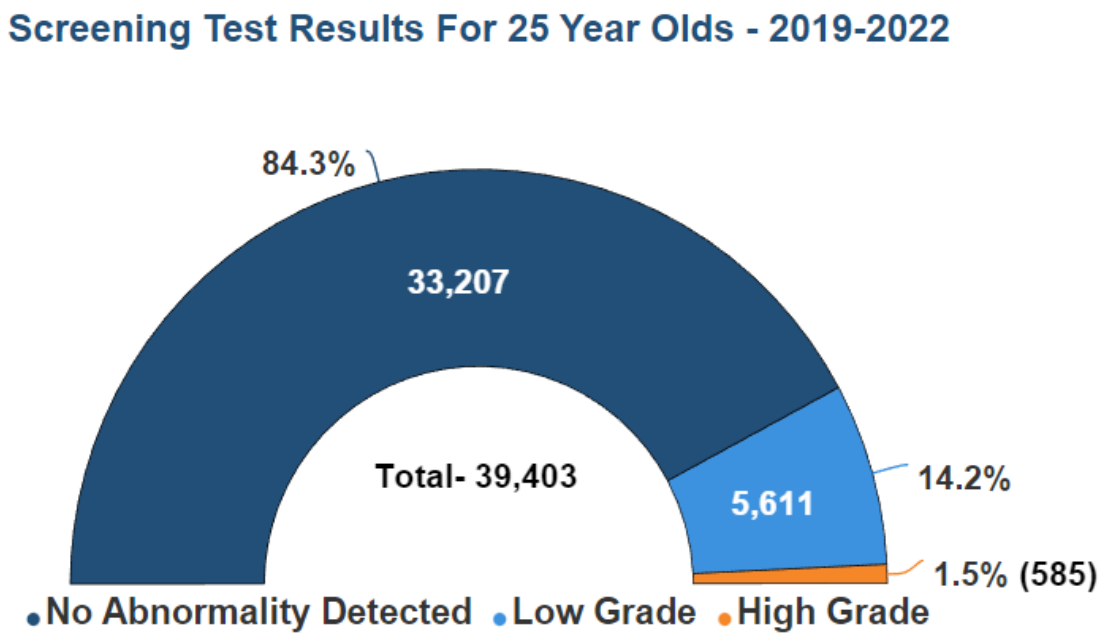
Results

- In Ireland, the girls who were offered HPV vaccination in 6th year of secondary school, as part of the initial catch-up campaign, would have turned 25 and become eligible for cervical screening in 2019.
- In the period before this cohort joined the programme the results show an increase in HG cytology in 25-year-olds from **2.7%** to **4.6%** in 2010-2014 followed by a reduction from **4.4%** to **2.3%** in 2015-2019.
- The reduction becomes steeper as further vaccinated cohorts become eligible in 2019-2022 (**2.3%** to **1.0%**). The fluctuation in vaccination rates (**44.8%** in 2021 and **81.9%** in 2022) reflects past vaccine hesitancy followed by a rebound in vaccine uptake.
- HG results are expressed as a percentage of total results for that cohort in the period. Inconclusive/unsatisfactory results were excluded. The percentages of HG cytology detected were overlaid with the vaccination rates in the catch-up programme for HPV vaccination.

Results

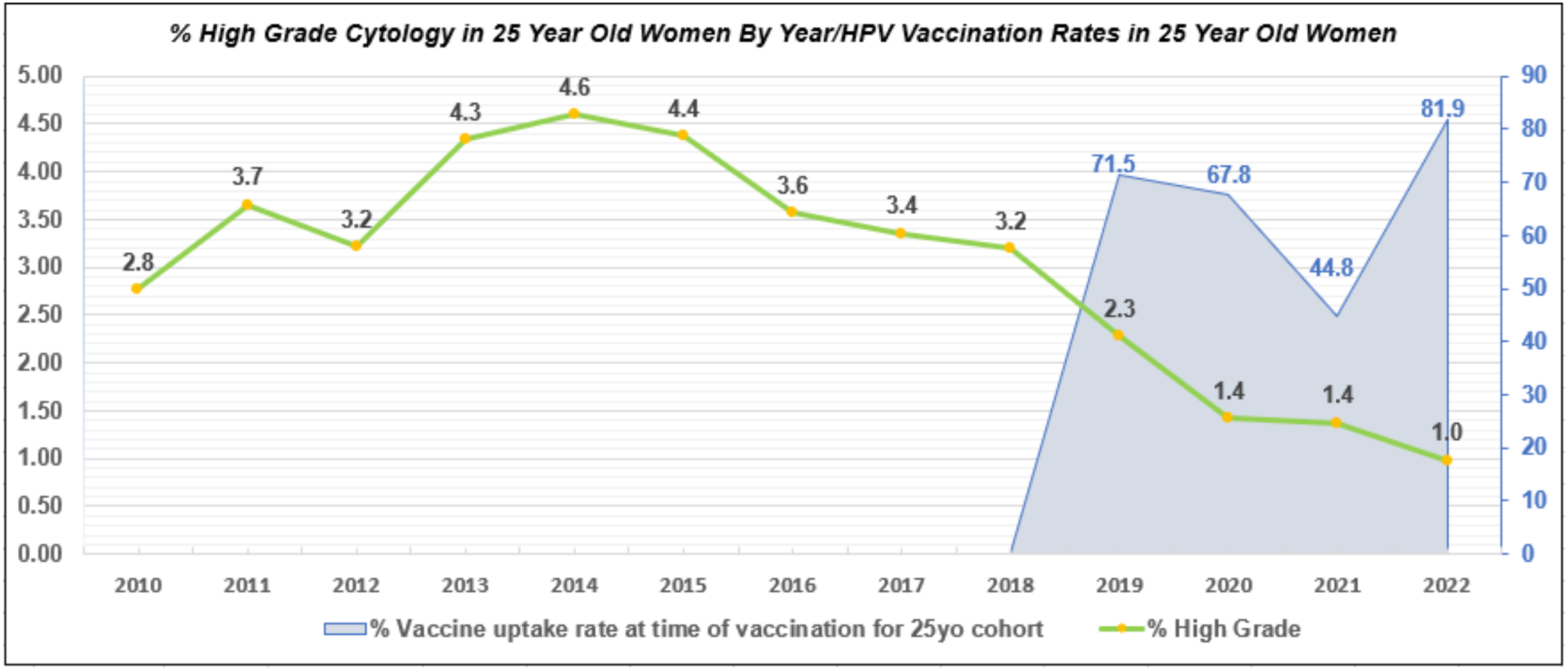
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A One-Way ANOVA was performed on the pre 2019 and post 2019 HG Cytology percentages. There was a statistically significant difference between vaccinated and unvaccinated 25-year-old females in that time period (f-ratio = 69.98; $p < .00001$).

Results

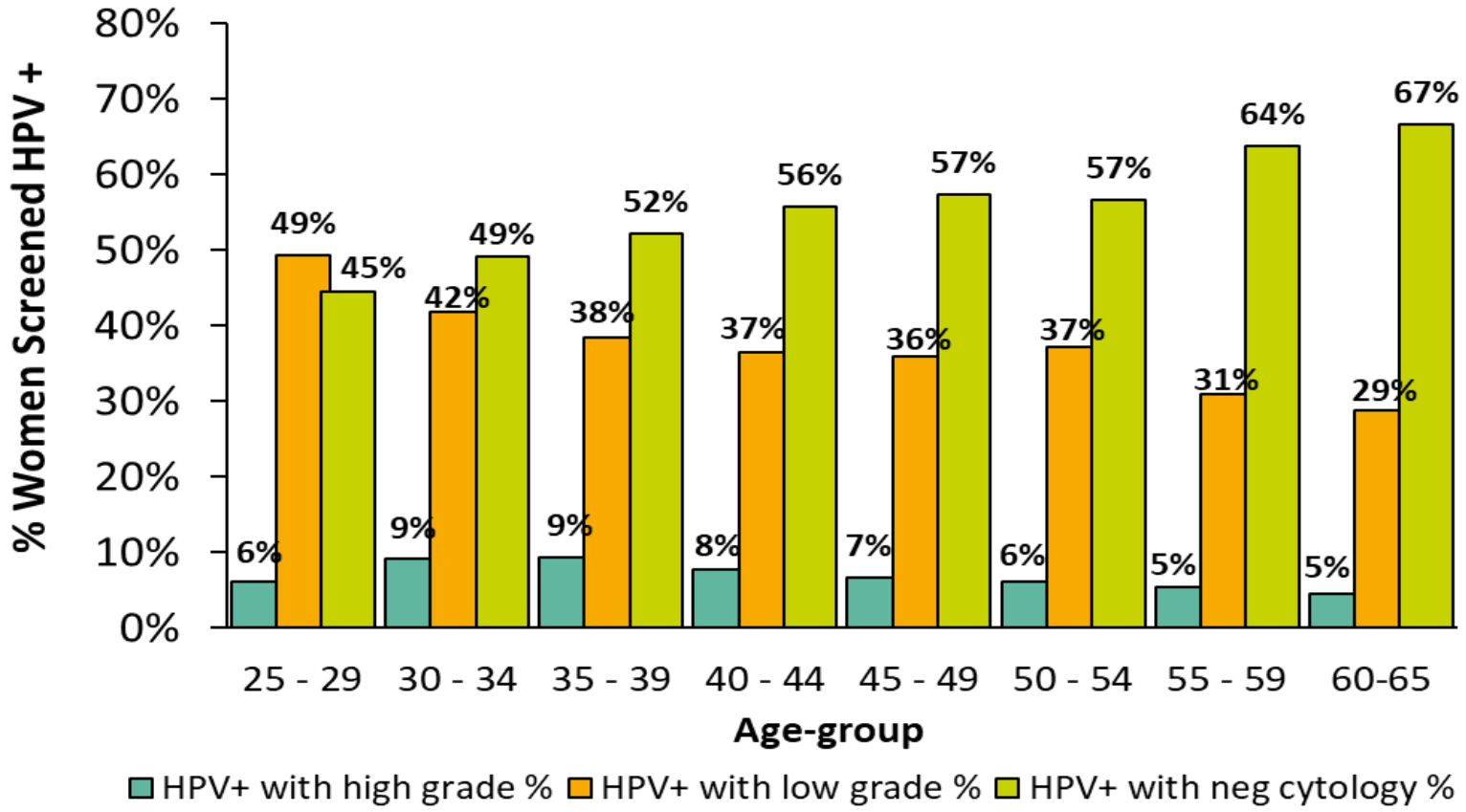


N.B – Since the study was conducted, there has been a consistent rate of approximately 1% of High Grade cytology in age 25-year old women who have been screened up to the end of 2025 (current reporting period)

Cytology results 2020-2025

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Figure 3. Cytology results among HPV+ women by age-group over the 5-year period



Study 2. Matched data study to examine effect of age at vaccination and HPV vaccine type on High Grade Cytology

- When the HPV vaccination was introduced in Ireland in 2010, it was using the quadrivalent vaccine (Gardasil-4), targeting girls aged 11-14 years, with a catch-up programme extending to older adolescents. Vaccine uptake in girls in 23/24 was 77%
- In 2020 the nonavalent vaccine (Gardasil-9) and gender-neutral vaccination strategies have been introduced and implemented, with “catch-up” vaccination offered to girls up to 26 years. Secondary school boys have also been offered the vaccine over the past few years.
- The aim of this study was to evaluate the association between both HPV positive screening test and cytology grade with vaccination type and age at vaccination, using a large population-based dataset with individual-level linkage

Methods

- **Study Population**: Women who underwent their first cervical screening test between 2020 and 2024 availble in the Cervical Screening register (CSR) which was linked to the individual HPV immunization records from the National Immunisation Office (NIO).

- The primary exposure variables were:
  - age at vaccination split as 11-14 years and 15 and over
  - the type of Gardasil vaccination
  - Gardasil-4 (quadrivalent) – administered between 2010 and 2019
  - Gardasil-9 (nonavalent) – administered between 2020 and 2023 (the end date of the study)

- multivariable logistic regression was used in the statistical analysis of the dataset.

Results

74,847 HPV vaccinated women

Mean age at vaccination was 14.5 years

58% were vaccinated between 11-14

Mean age at HPV screening was 25.8 years

99.7% received Gardasil-4 vaccine

Prevalence of HG cytology was 1%

Association of vaccination type and age with High Grade Cytology

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Variable	Category	Negative or Low-Grade Cytology (%)	High Grade Cytology (%)	Univariate OR [95%CI]	Multivariable OR [95%CI][1]	Adjusted p-value
Vaccination Type	Gardasil 4	73818 (98.96%)	774 (1.04%)	Ref	Ref	
	Gardasil 9	253 (99.22%)	2 (0.78%)	0.75 [0.12; 2.35]	0.65 [0.04; 2.77]	1.0
Age at vaccination	≥15	31213 (98.80%)	378 (1.20%)	Ref	Ref	
	10 to 14	42858 (99.08%)	398 (0.92%)	**0.77 [0.67; 0.88]**	**0.76 [0.63; 0.93]**	**0.001**

Conclusions & discussion

- Age at vaccination was not associated with HPV positivity
- Vaccination type (quadrivalent/nonavalent) was not significantly associated with high grade cytology

- However those vaccinated at a younger age (10-14) – the optimal age – had significantly lower rates of High Grade cytology after adjustment for vaccination type with an odds ratio of 0.76

- The key finding from this study is a 24% reduction in high-grade cytology outcomes among women vaccinated at the recommended age, and this association persisted after adjustment for vaccine type.

Conclusions

What does this mean for HPV Screening and Colposcopy services in Ireland?

- The effectiveness of the HPV vaccination programme which has been shown worldwide, has also been proven to work in Ireland.
- The rate of low-grade cytology detected in the vaccinated cohort remains unchanged from the start of the cervical screening programme – the HPV vaccination does not seem to effect low grade cytology cell changes.
- The 25-29 age group, which before the introduction of the national HPV vaccination programme, had the highest rates of High-grade cytology now has one of the lowest rates of all age groups, comparable to age 50+ women. This means that the amount of high-grade abnormal cytology detection and the corresponding referrals have been dropping since 2019 as more vaccinated cohorts enter the CervicalCheck screening programme.
- This data contributes to the CCE strategy for elimination in Ireland in 2040

European Guidance on HPV Screening

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European recommendations have long supported extended intervals, but they have grown more tailored to public health demographics over time with more data becoming available on the effectiveness of a national HPV vaccination programme:

- **Standard Framework:** Broad European guidelines state that the screening interval following a negative primary HPV test must be **at least 5 years**, and may be extended **up to 10 years** depending on the patient's age and screening history.

- **The 2026 Vaccinated Cohort Update:** Updated European recommendations presented by the International Agency for Research on Cancer (IARC) and the EC-CvC Expert Working Group introduce a "de-intensified" framework based on regional HPV vaccine uptake.

- **The 10-Year Extension Rule:** In birth cohorts where HPV vaccination coverage is **higher than 50%**, guidelines state screening intervals can be safely extended to **10 years** after a negative HPV test result. For regions with under 50% coverage, standard 5-year intervals remain the baseline.

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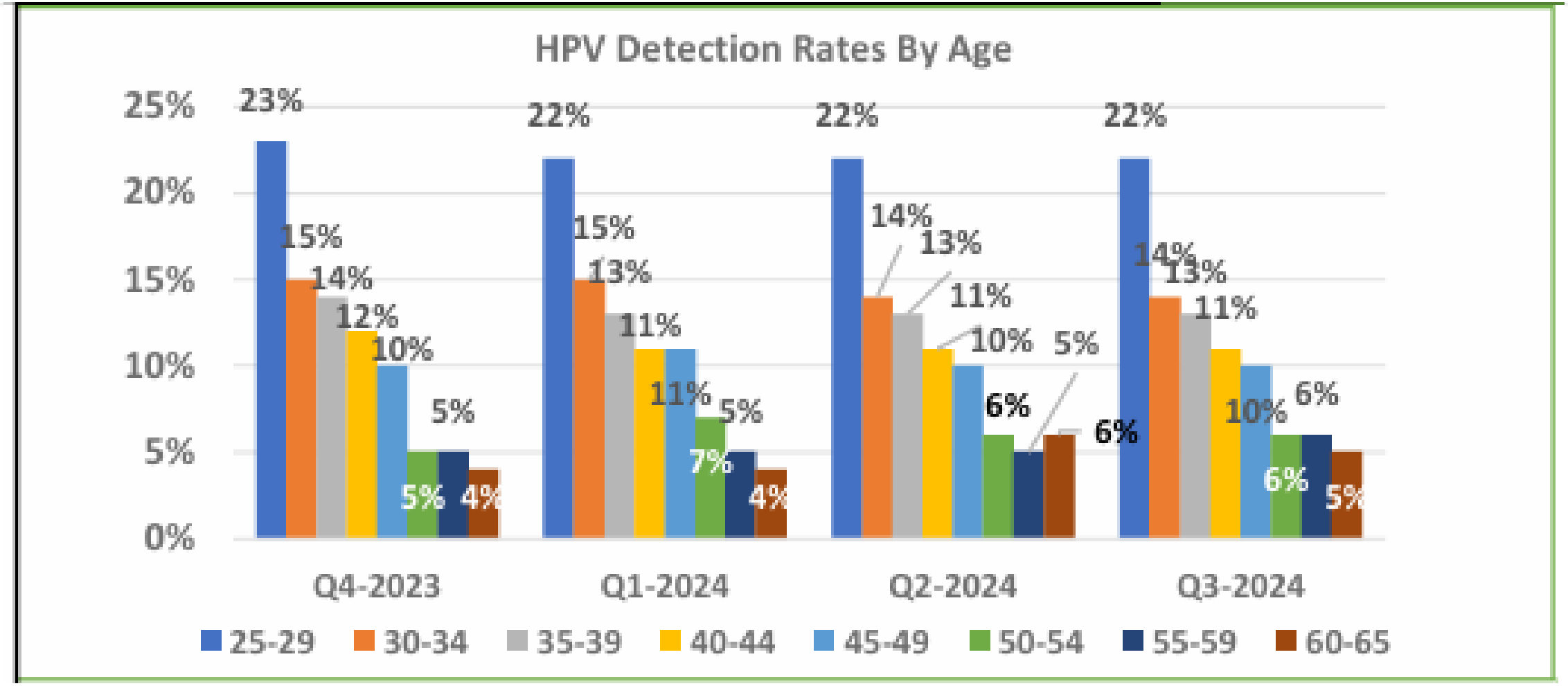
Thank You!



Who comes for screening?

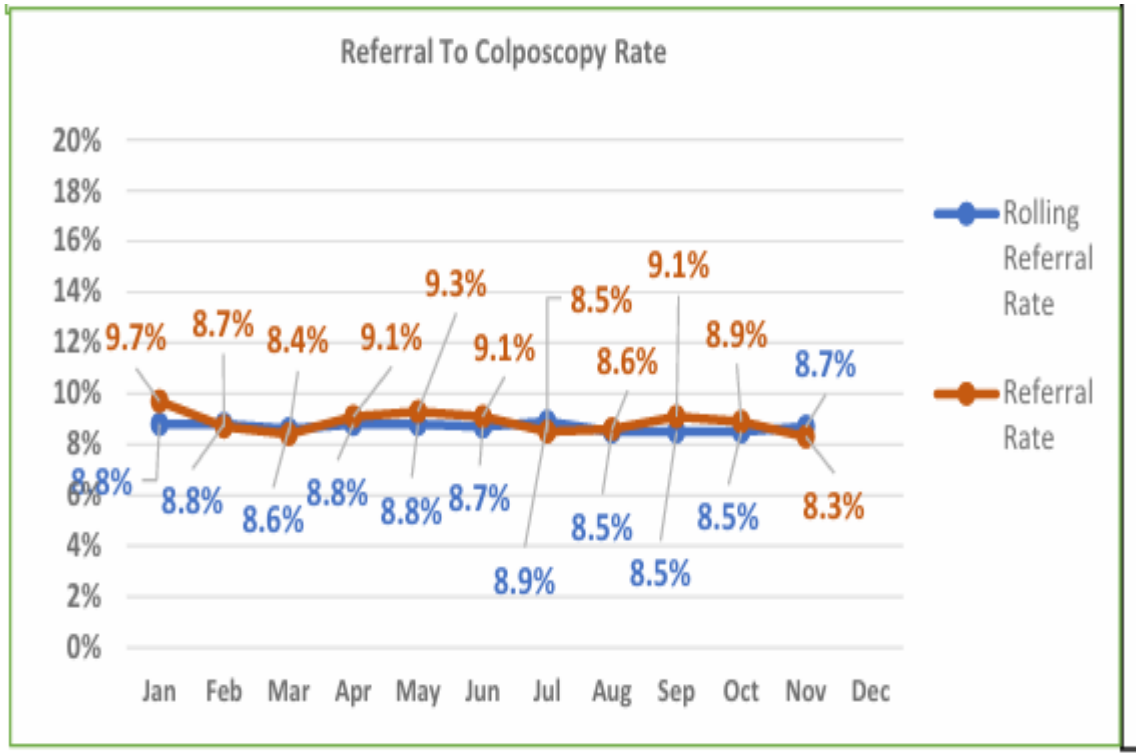
Age group	2023 (01 April- 31 December)		2024 (01 January-31 December)	
	N	%	N	%
<25	207*	0.1%	263*	0.1%
25 - 29	31,261	18.2%	43,110	20.7%
30 - 34	22,247	13.0%	36,371	17.5%
35 - 39	18,529	10.8%	23,845	11.5%
40 - 44	16,793	9.8%	21,210	10.2%
45 - 49	12,838	7.5%	16,278	7.8%
50 - 54	23,037	13.4%	25,046	12.0%
55 - 59	21,193	12.3%	19,647	9.4%
60	3,751	2.2%	3,352	1.6%
61-65	13,679	8.0%	12,007	5.8%
>65	8,137**	4.7%	6,931**	3.3%
Total	**171,672**	**100.0%**	**208,060**	**100.0%**

Quarterly National Data on HPV age based detection rates 2024

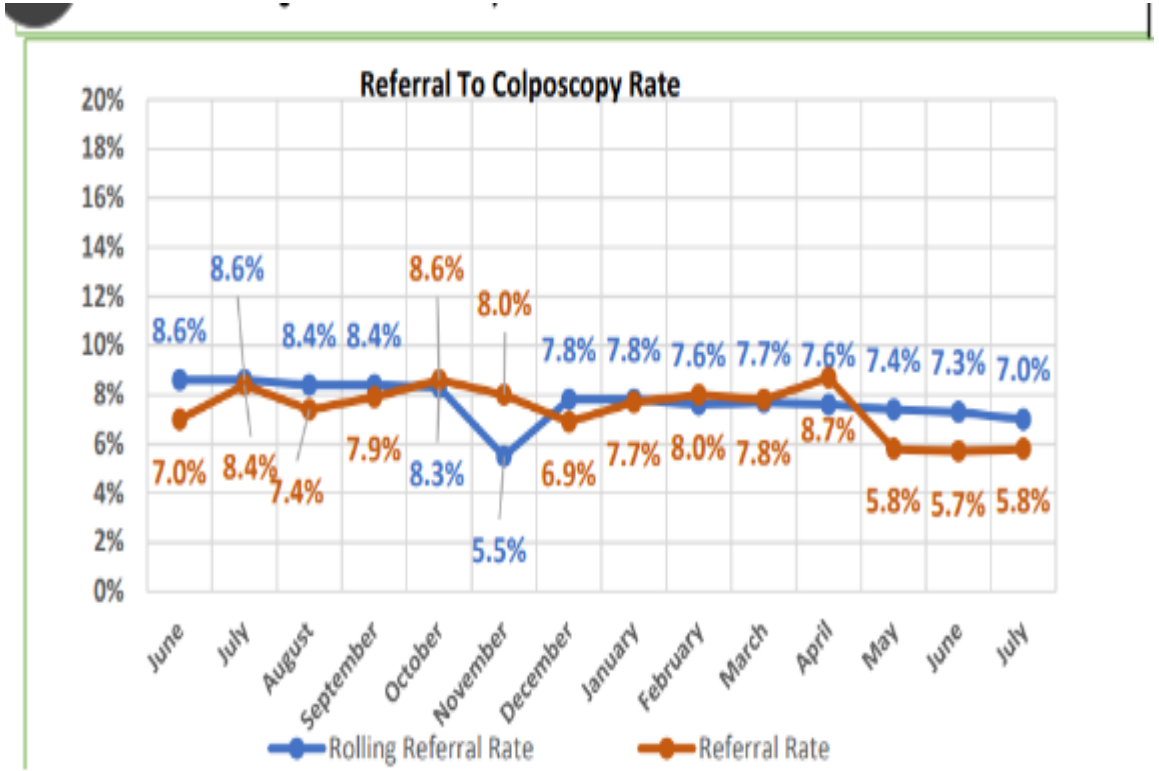


Referral to Colposcopy Trends

2024



2025/2026



Age of New Screen Referrals per Unit Data

	25-29		30-35		35-40		40-45		45-50		50-55		55-60		60-65	
CLONMEL	191	33%	104	18%	74	13%	54	9%	45	8%	39	7%	42	7%	33	6%
COOMBE	535	34%	326	21%	218	14%	159	10%	105	7%	91	6%	73	5%	59	4%
CORK	974	33%	590	20%	382	13%	345	12%	229	8%	187	6%	135	5%	110	4%
DROGHEDA	357	33%	217	20%	118	11%	115	11%	71	7%	91	8%	69	6%	51	5%
GALWAY	455	37%	256	21%	163	13%	92	7%	72	6%	95	8%	57	5%	42	3%
HOLLES ST	1011	37%	622	23%	359	13%	235	9%	156	6%	127	5%	107	4%	86	3%
L'KENNY	179	32%	101	18%	66	12%	69	12%	42	8%	40	7%	33	6%	29	5%
LIMERICK	609	34%	332	18%	245	14%	188	10%	147	8%	127	7%	94	5%	58	3%
MAYO	113	32%	69	19%	55	15%	43	12%	22	6%	18	5%	22	6%	14	4%
ROTUNDA	672	33%	467	23%	280	14%	210	10%	150	7%	139	7%	71	3%	73	4%
SLIGO	183	27%	133	20%	95	14%	77	11%	50	7%	63	9%	42	6%	36	5%
TALLAGHT	841	35%	539	22%	326	13%	238	10%	164	7%	161	7%	95	4%	67	3%
TRALEE	190	34%	91	16%	57	10%	54	10%	42	8%	45	8%	35	6%	43	8%
WATERFORD	424	35%	243	20%	158	13%	117	10%	88	7%	75	6%	56	5%	45	4%
WEXFORD	220	32%	135	20%	94	14%	81	12%	46	7%	46	7%	37	5%	31	4%
Grand Total	6954		4225		2690		2077		1429		1344		968		777	
	34%		21%		13%		10%		7%		7%		5%		4%	

HG Screen Referral – HG Histology Positive Predictive Value

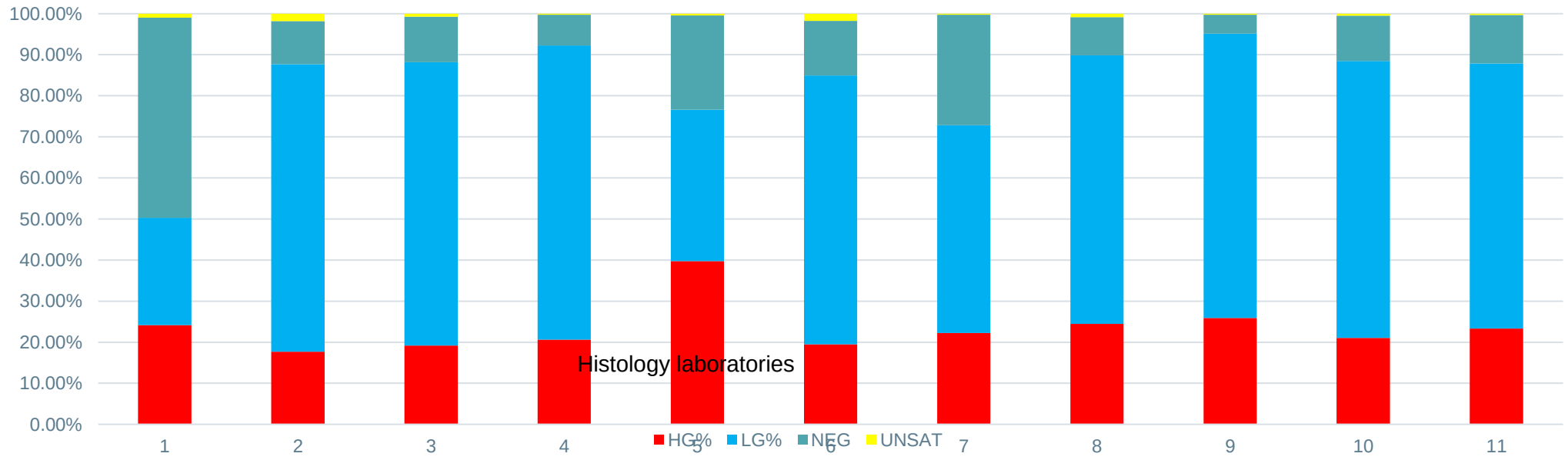
Row Labels	HG Result	LG/NAD Result	Total Referrals	% Referral PPV
CLONMEL	32	10	42	**76.2%**
COOMBE	69	25	94	**73.4%**
CORK	137	43	180	**76.1%**
DROGHEDA	61	14	75	**81.3%**
GALWAY	51	11	62	**82.3%**
HOLLES ST	138	24	162	**85.2%**
LETTERKENNY	19	10	29	**65.5%**
LIMERICK	85	22	107	**79.4%**
MAYO	13	4	17	**76.5%**
ROTUNDA	107	19	126	**84.9%**
SLIGO	24	19	43	**55.8%**
TALLAGHT	108	49	157	**68.8%**
TRALEE	26	5	31	**83.9%**
WATERFORD	45	23	68	**66.2%**
WEXFORD	31	15	46	**67.4%**
Grand Total	**946**	**293**	**1239**	**76.4%**

Low Grade HPV Referral – HG Histology Abnormal Predictive Value

Row Labels	Total Referrals	LG/NAD Result	HG Result	% Referral APV
CLONMEL	267	218	49	**18.4%**
COOMBE	1280	1040	240	**18.8%**
CORK	1264	946	318	**25.2%**
DROGHEDA	755	621	134	**17.7%**
GALWAY	1104	959	145	**13.1%**
HOLLES ST	1796	1094	702	**39.1%**
LETTERKENNY	398	336	62	**15.6%**
LIMERICK	1069	895	174	**16.3%**
MAYO	232	203	29	**12.5%**
ROTUNDA	1342	980	362	**27.0%**
SLIGO	250	226	24	**9.6%**
TALLAGHT	1105	932	173	**15.7%**
TRALEE	352	289	63	**17.9%**
WATERFORD	584	479	105	**18.0%**
WEXFORD	518	462	56	**10.8%**
Grand Total	**12316**	**9680**	**2636**	**21.4%**

Unit based Histology Data

High grade VS Low grade rates



Importance of Documentation of Colposcopy Findings

Key Features

- TZ Type
- Acetowhite – opacity, persistence, margins
- Mosaicism, punctation
- Number of Quadrants
- Iodine Uptake
- Features of Potential Invasion - umbilication, irregular surface, abnormal vessels, 4 quadrant disease

TZ type

- Key initial determinant
- **ALL** clinical pathways dependent on TZ type
- TZ Type 3 **CANNOT** be normal
- TZ type determines pathway of care
- Not always easy

TZ Type 3 Identification – New Patients

Clinic	TZ3	All TZ	%	TZ3	All TZ	%	TZ3	All TZ	%	%	Total
	<50 yrs old			>50 yrs old			>60 yrs old			all ages	
CLONMEL	4	413	1.0%	10	98	10.2%	6	31	19.4%	2.7%	**511**
COOMBE	78	1321	5.9%	83	208	39.9%	31	55	56.4%	10.5%	**1529**
CORK	108	2230	4.8%	145	365	39.7%	45	85	52.9%	9.7%	**2595**
DROGHEDA	37	875	4.2%	63	207	30.4%	12	49	24.5%	9.2%	**1082**
GALWAY	80	1026	7.8%	56	191	29.3%	13	42	31.0%	11.2%	**1217**
HOLLES ST	207	2362	8.8%	139	314	44.3%	38	84	45.2%	12.9%	**2676**
LETTERKENNY	28	412	6.8%	18	84	21.4%	9	26	34.6%	9.3%	**496**
LIMERICK	39	1368	2.9%	49	232	21.1%	15	45	33.3%	5.5%	**1600**
MAYO	16	293	5.5%	14	52	26.9%	4	13	30.8%	8.7%	**345**
ROTUNDA	32	1753	1.8%	67	280	23.9%	20	72	27.8%	4.9%	**2033**
SLIGO	3	446	0.7%	16	112	14.3%	2	29	6.9%	3.4%	**558**
TALLAGHT	46	2060	2.2%	55	314	17.5%	15	64	23.4%	4.3%	**2374**
TRALEE	13	409	3.2%	23	116	19.8%	12	41	29.3%	6.9%	**525**
WATERFORD	18	725	2.5%	72	129	55.8%	24	32	75.0%	10.5%	**854**
WEXFORD	45	555	8.1%	43	99	43.4%	13	26	50.0%	13.5%	**654**
Grand Total	**754**	**16248**	4.6%	**853**	**2801**	30.5%	**259**	**694**	37.3%	**8.4%**	**19049**
% All Referrals	**4.0%**			**4.5%**			**1.4%**				
Overall TZ 3 %	**8.4%**										

PPV of a HG Colp Impression with a Fully Visible TZ
All Screen Referrals

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Row Labels	Total HG	Low Grade CIN	No CIN	Grand Total	% Colp PPV
CLONMEL	73	32	3	**108**	**67.6%**
COOMBE	167	152	13	**332**	**50.3%**
CORK	155	55	99	**309**	**50.2%**
DROGHEDA	155	84	13	**252**	**61.5%**
GALWAY	182	79	16	**277**	**65.7%**
HOLLES ST	376	108	30	**514**	**73.2%**
L'KENNY	57	34	44	**135**	**42.2%**
LIMERICK	161	106	3	**270**	**59.6%**
MAYO	39	9	9	**57**	**68.4%**
ROTUNDA	340	256	15	**611**	**55.6%**
SLIGO	21	0	54	**75**	**28.0%**
TALLAGHT	178	171	5	**354**	**50.3%**
TRALEE	48	8	18	**74**	**64.9%**
W'FORD	104	88	16	**208**	**50.0%**
WEXFORD	48	41	47	**136**	**35.3%**
Grand Total	**2104**	**1223**	**385**	**3712**	**56.7%**

PPV

HG Grade HPV referral with HG Colp impression

TZ fully visible

Row Labels	Total Referrals	HG Histology Result	%
CLONMEL	28	27	**96.4%**
COOMBE	70	66	**94.3%**
CORK	89	88	**98.9%**
DROGHEDA	42	42	**100.0%**
GALWAY	44	44	**100.0%**
HOLLES ST	103	103	**100.0%**
LETTERKENNY	24	21	**87.5%**
LIMERICK	79	78	**98.7%**
MAYO	8	8	**100.0%**
ROTUNDA	85	84	**98.8%**
SLIGO	24	20	**83.3%**
TALLAGHT	94	94	**100.0%**
TRALEE	14	13	**92.9%**
WATERFORD	33	32	**97.0%**
WEXFORD	35	33	**94.3%**
Grand Total	**772**	**753**	**97.5%**

PPV

Low Grade HPV referral with HG Colp impression

TZ fully visible

Row Labels	Total Referrals	LG/NAD Result	HG Result	%
CLONMEL	18	12	6	**33.3%**
COOMBE	93	64	29	**31.2%**
CORK	105	67	38	**36.2%**
DROGHEDA	49	30	19	**38.8%**
GALWAY	63	34	29	**46.0%**
HOLLES ST	118	41	77	**65.3%**
LETTERKENNY	63	45	18	**28.6%**
LIMERICK	97	57	40	**41.2%**
MAYO	11	7	4	**36.4%**
ROTUNDA	182	104	78	**42.9%**
SLIGO	25	22	3	**12.0%**
TALLAGHT	126	91	35	**27.8%**
TRALEE	20	12	8	**40.0%**
WATERFORD	52	32	20	**38.5%**
WEXFORD	52	43	9	**17.3%**
Grand Total	**1074**	**661**	**413**	**38.5%**

Variations in Normal Colposcopic Impression with a Visible TZ and associated Biopsy Rate - 2024

	Referrals Total	Visible TZ Total	Visible TZ %	Normal Colp Impress		No Biopsy	Biopsy	Biopsy Rate
Positive HPV test	**19049**	**17380**	**91%**	**4852**	**28%**	**3572**	**1280**	**26%**
CLONMEL	**511**	497	97%	202	41%	161	41	20%
COOMBE	**1529**	1368	89%	131	10%	118	13	10%
CORK	**2595**	2342	90%	842	36%	747	95	11%
DROGHEDA	**1082**	982	91%	285	29%	187	98	34%
GALWAY	**1217**	1081	89%	141	13%	50	91	65%
HOLLES ST	**2676**	2330	87%	406	17%	364	42	10%
LETTERKENNY	**496**	450	91%	97	22%	19	78	80%
LIMERICK	**1600**	1512	95%	374	25%	230	144	39%
MAYO	**345**	315	91%	151	48%	70	81	54%
ROTUNDA	**2033**	1934	95%	534	28%	495	39	7%
SLIGO	**558**	539	97%	261	48%	226	35	13%
TALLAGHT	**2374**	2273	96%	750	33%	728	22	3%
TRALEE	**525**	489	93%	248	51%	67	181	73%
WATERFORD	**854**	702	82%	320	46%	93	227	71%
WEXFORD	**654**	566	87%	110	19%	17	93	85%

Value of a Normal Colposcopic Impression

HPV + referrals	Total screen referrals	Normal Colp Impression (%)	No biopsy (%)	Biopsy HG (%)	Biopsy LG (%)	Applying % HG in biopsy pop to no biopsy pop
Glandular	116	17 (15%)	3 (18%)	5 (36%)	9 (64%)	1
HG Sq	2009	99 (5%)	46 (46%)	14 (26%)	39 (74%)	12
LG/Unsatisfactory	15475	3402 (22%)	2484 (73%)	82 (9%)	836 (91%)	224
Normal Cytology	3537	1333 (38%)	1038 (78%)	10 (3%)	285 (97%)	31
Total	21137	4581 (23%)	3571 (74%)	111 (9%)	1169 (91%)	268

Risk of CIN2+ with Normal Cervix and Any Screen Referral

	No Biopsy	Biopsy	Grand Total	Biopsy Rate	Missed HG
Positive HPV test	**3572**	**1280**	**4852**	**26.4%**	**9.0%**
CLONMEL	161	41	202	**20.3%**	*14*
COOMBE	118	13	131	**9.9%**	*10*
CORK	747	95	842	**11.3%**	*65*
DROGHEDA	187	98	285	**34.4%**	*16*
GALWAY	50	91	141	**64.5%**	*4*
HOLLES ST	364	42	406	**10.3%**	*32*
LETTERKENNY	19	78	97	**80.4%**	*2*
LIMERICK	230	144	374	**38.5%**	*20*
MAYO	70	81	151	**53.6%**	*6*
ROTUNDA	495	39	534	**7.3%**	*43*
SLIGO	226	35	261	**13.4%**	*20*
TALLAGHT	728	22	750	**2.9%**	*63*
TRALEE	67	181	248	**73.0%**	*6*
WATERFORD	93	227	320	**70.9%**	*8*
WEXFORD	17	93	110	**84.5%**	*1*
					310

Referral Value to diagnose CIN 2 +

	HG Result	LG/NAD Result	Grand Total	Referral Value
CLONMEL	81	228	309	3.81
COOMBE	309	1065	1374	4.45
CORK	454	990	1444	3.18
DROGHEDA	195	635	830	4.26
GALWAY	196	970	1166	5.95
HOLLES ST	840	1118	1958	2.33
LETTERKENNY	80	346	426	5.33
LIMERICK	259	917	1176	4.54
MAYO	42	207	249	5.93
ROTUNDA	469	999	1468	3.13
SLIGO	48	244	292	6.08
TALLAGHT	281	981	1262	4.49
TRALEE	88	294	382	4.34
WATERFORD	150	502	652	4.35
WEXFORD	87	477	564	6.48
Grand Total	3579	9973	13552	3.79

RV only includes those biopsied - not numbers reviewed. Total new referrals 23,291 (RV =6.5)

Summary

Unit Variations

8.4% of screen referrals have TZ Type 3

Unit variation of between 2.7% and 13.5%

28% Normal Colp Impression in TZ 1 & TZ 2

Unit variation of between 10% and 48%

26% biopsy rate of normal cervices

Unit variation of between 3% and 85%

CIN2+ with a normal colposcopy

111 HG Histo results from normal colposcopies

(out of 1280 biopsies)

19/111 from HG referrals

(28% of HG referrals)

82 /111 from LG referrals

(9% of LG referrals)

10/111 from Neg Cyto/HPV+ referrals

(3% all neg/+ referrals)

Potential 268 HG results from those not biopsied

Summary

TZ Type 3

8.4% of Screen Referrals

4% of screen referrals under 50 with TZ 3

4.5% of screen referrals over 50 with TZ 3

1.4% of screen referrals over 60 with TZ 3

TZ Type 3 rate by age

4.6% Under 50

30.5% Over 50

37.3% Over 60

Summary

PPV for HG Cytology

76.4%

APV for LG Cytology

21.4%

PPV of HG Colposcopy

in association with

Any screen referral

56.7%

HG screen referral

97.5%

LG screen referral

38.5%

Questions?

Table 4-5. Average annual incidence and mortality, cancers in females, percent and age-specific rate: 2019-2023

CANCER	AGE	INCIDENCE CASES	%	RATE	MORTALITY DEATHS	%	RATE
C50 breast							
	0–14	0	0.0%	0.0	-	0.0%	-
	15–39	210	5.6%	12.6	17	2.2%	1.0
	40–54	1,162	31.0%	105.2	115	15.3%	10.4
	55–69	1,289	34.4%	160.1	191	25.5%	23.8
	70–84	890	23.7%	202.9	286	38.1%	65.1
	85+	201	5.4%	251.8	142	18.9%	177.6
C53 cervix uteri							
	0–14	-	0.0%	-	-	0.0%	-
	15–39	76	29.1%	4.6	9	10.8%	0.6
	40–54	95	36.4%	8.6	24	28.2%	2.2
	55–69	59	22.6%	7.4	26	31.1%	3.3
	70–84	27	10.3%	6.2	20	23.1%	4.5
	85+	4	1.6%	5.3	6	6.8%	7.3
C54 corpus uteri							
	0–14	-	0.0%	-	-	0.0%	-
	15–39	11	1.8%	0.6	0	0.2%	0.0
	40–54	93	16.0%	8.4	7	6.0%	0.6
	55–69	273	46.9%	33.8	33	28.0%	4.1
	70–84	178	30.6%	40.5	56	47.6%	12.7
	85+	27	4.6%	33.9	21	18.3%	26.8
C56 ovary							
	0–14	2	0.4%	0.2	0	0.1%	0.0
	15–39	24	6.2%	1.5	5	1.8%	0.3
	40–54	78	20.0%	7.1	31	10.6%	2.8
	55–69	137	34.9%	17.0	92	31.1%	11.4
	70–84	121	31.0%	27.7	127	43.1%	29.0
	85+	30	7.6%	37.1	39	13.3%	49.2

rate (per 100,000)

Figure 6-3. Five-year net survival (2019-2023), by cancer site and stage: number and percentage at time 0

cancer	stage	No. at time 0	[%]	5-yr net survival [%]
C50 breast	unstaged	964	5%	69%
	IV	1,040	6%	37%
	III	2,276	13%	80%
	II	7,020	40%	95%
	I	6,459	36%	100%
C53 cervix uteri	unstaged	104	8%	59%
	IV	173	14%	21%
	III	268	21%	63%
	II	182	14%	84%
	I	529	42%	95%
C54 corpus uteri	unstaged	208	8%	47%
	IV	194	8%	19%
	III	327	13%	51%
	II	113	4%	77%
	I	1,729	67%	96%
C56 ovary	unstaged	212	12%	40%
	IV	369	21%	18%
	III	535	31%	27%
	II	123	7%	49%
	I	488	28%	88%
C61 prostate	unstaged	2,663	13%	88%
	IV	2,026	10%	52%
	III	3,242	16%	102%
	II	3,850	19%	105%
	I	8,274	41%	104%
C62 testis	unstaged	45	5%	76%
	III	69	8%	87%
	II	93	11%	94%
	I	633	75%	100%
C64 kidney	unstaged	191	6%	54%
	IV	527	18%	16%

Breast (C50)
Most breast cancers were diagnosed at early stage (stages I–II accounted for over three-quarters of cases). Five-year net survival was extremely high for stage I (100%) and stage II (95%), declining with advancing stage but remaining relatively favourable even for stage III (80%). Stage IV survival was substantially lower (37%) (Figure 6-3).

Cervix uteri (C53)
Cervical cancer was most commonly diagnosed at stage I. Five-year net survival was very high for stage I (95%) and for stage II (84%) but dropped for stage III (63%) and stage IV (21%) disease (Figure 6-3).

Corpus uteri (C54)
Most corpus uteri cancers were diagnosed at stage I. Five-year net survival was very high for stage I (96%), with progressively poorer survival at more advanced stages, particularly stage IV (19%) (Figure 6-3).

Ovary (C56)
Ovarian cancer showed a less favourable stage distribution, with many cases diagnosed at stage III or IV. Five-year net survival was high for stage I (88%) but fell sharply for stage III (27%) and stage IV (18%) disease, reflecting late diagnosis and poorer prognosis (Figure 6-3).

cancer	sex	stage	No. at time 0 period	%	‡ 5-yr net survival %	lower 95%CI	upper 95%CI
C50 breast	F	all stage	17,637	100%	90.3%	89.6%	90.9%
C50 breast	F	I	6,436	36%	100.0%	100.0%	100.0%
C50 breast	F	II	6,968	40%	94.6%	93.4%	95.5%
C50 breast	F	III	2,251	13%	79.8%	77.5%	81.8%
C50 breast	F	IV	1,024	6%	37.1%	33.9%	40.3%
C50 breast	F	unstaged	958	5%	69.4%	59.2%	77.5%
C53 cervix uteri	F	all stage	1,256	100%	74.0%	71.3%	76.4%
C53 cervix uteri	F	I	529	42%	94.9%	92.6%	96.6%
C53 cervix uteri	F	II	182	14%	83.6%	76.3%	88.9%
C53 cervix uteri	F	III	268	21%	63.3%	57.1%	68.8%
C53 cervix uteri	F	IV	173	14%	20.6%	14.9%	26.8%
C53 cervix uteri	F	unstaged	104	8%	58.5%	39.1%	73.7%

Cervical Histology in the Era of HPV testing

Dr. Sine Phelan

Consultant Histopathologist, GUH & Laboratory Adviser CervicalCheck

Back to basics:

- **Squamous Intraepithelial Lesion/ Cervical Intraepithelial Neoplasia**

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Low grade

- LSIL (CIN1/HPV)
- Transient/infective

High Grade

- HSIL (CIN2/CIN3)
- Precancerous
- Viral oncogene overexpression, clonal expansion

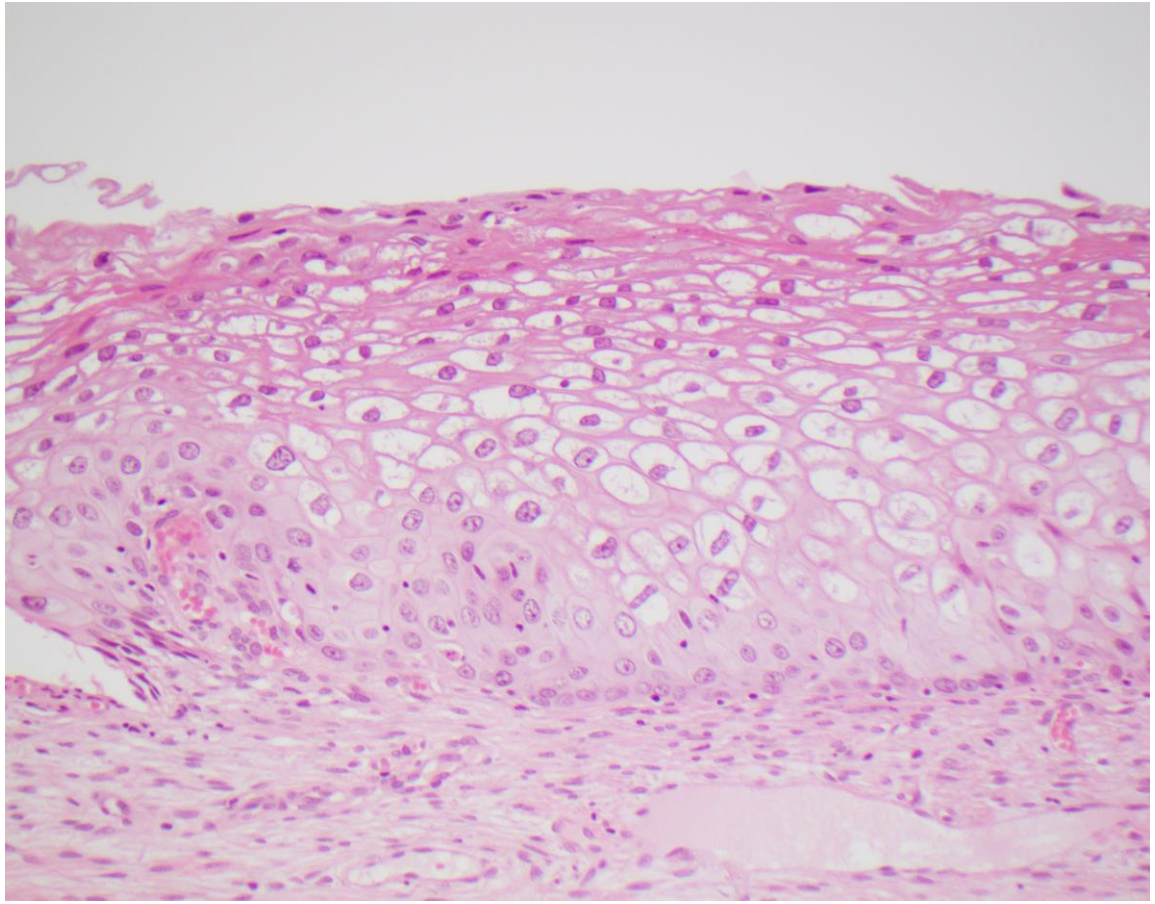
CIN1

- Basal/parabasal atypia
- Basal/Suprabasal mitoses – not atypical
- Viral atypia in superficial layers – nuclear enlargement but preservation of N:C ratio

Benign Mimics:

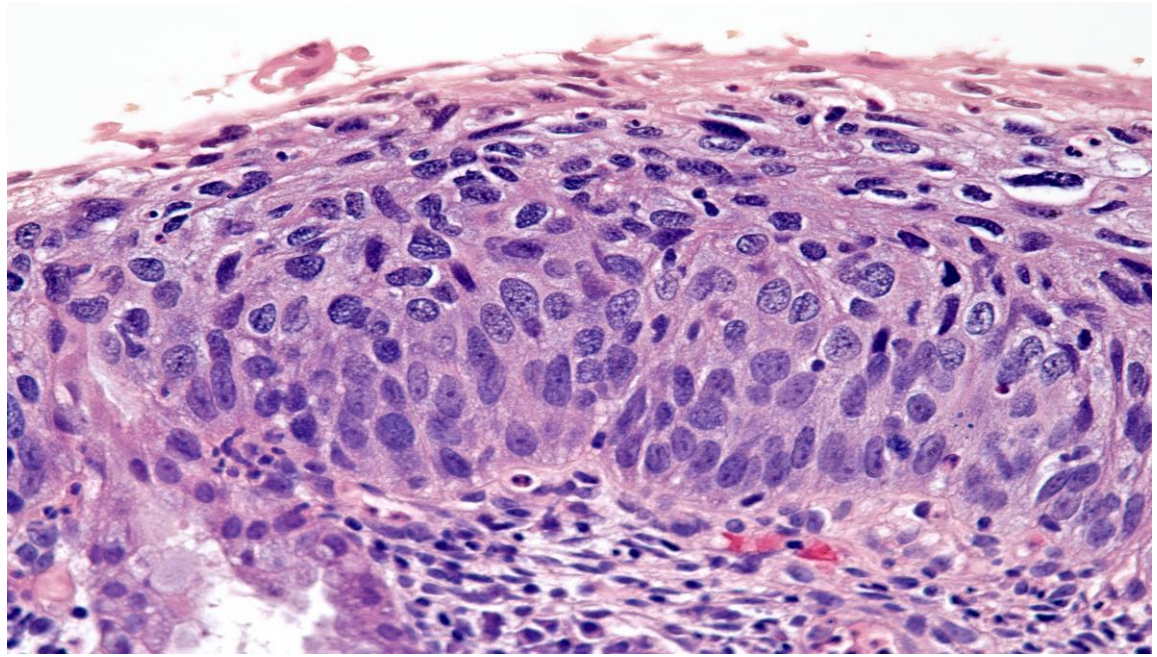
Atrophy, metaplasia, repair

Atypical mitoses = HSIL



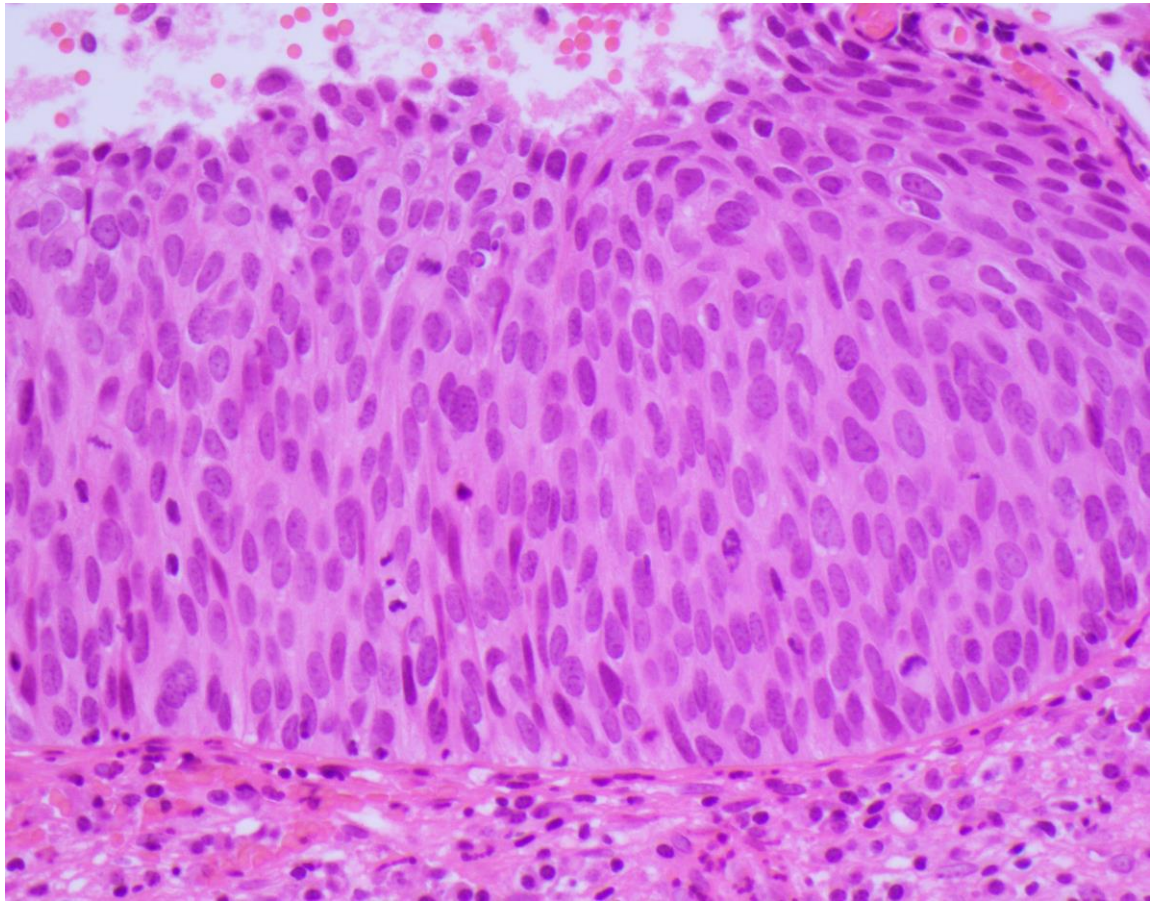
CIN2

- Full-thickness nuclear abnormalities (hyperchromasia, coarse chromatin, irregular membranes)
- Increased N:C ratio, and mitotic activity, the lower two thirds of the epithelium,
- But with accumulation of cytoplasm in the uppermost cell layers.



CIN3

- Full thickness, no maturation
- Variants - Thin, keratinising, Papillary



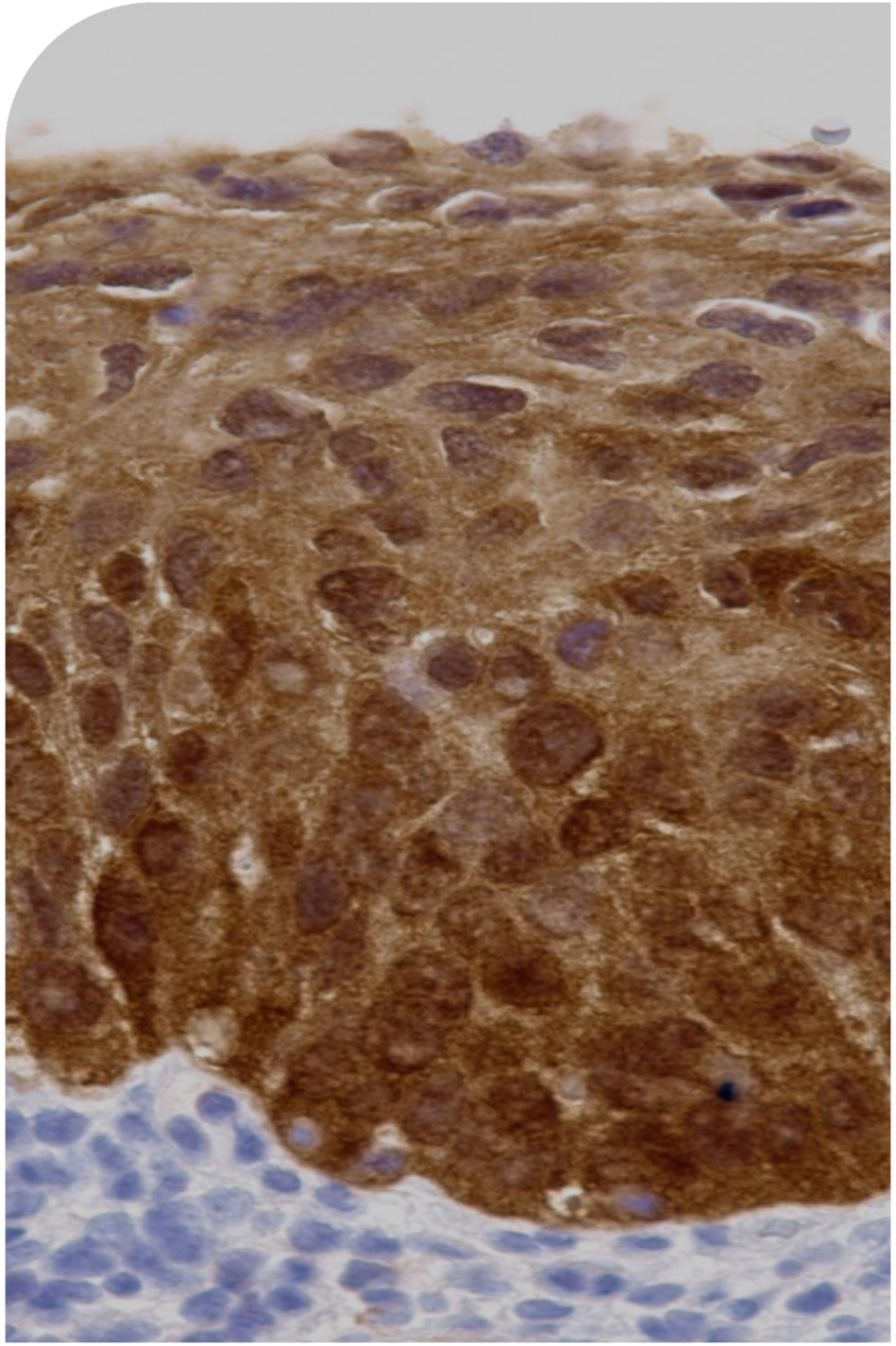
- Interobserver agreement measured by kappa statistics for intermediate or lower-grade CIN lesions frequently falls in the poor-to-fair range (often ranging from $\kappa = 0.20$ to 0.54),
- Different pathologists examining the same slide often reach different conclusions.

- Pathologists achieve substantially higher consistency and reproducibility when diagnosing CIN3 compared to CIN2

- Because CIN2 is traditionally used as a clinical threshold for excisional treatment in many age groups, diagnostic variability can lead to potential over-treatment of transient lesions or under-treatment of severe ones

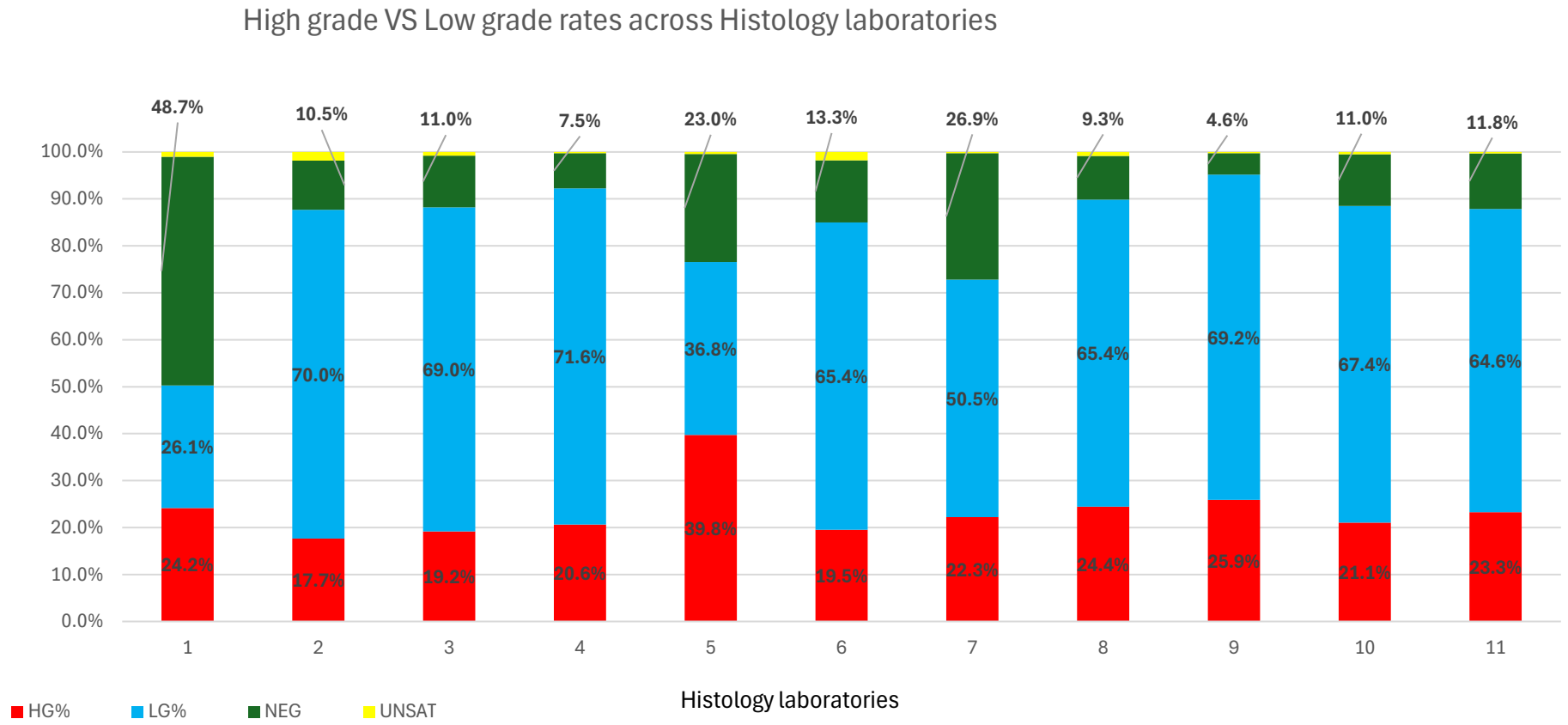
Biomarkers – P16

1. Morphological Differential diagnosis between precancer & benign mimic (repair)
2. Borderline CIN1/CIN2 (but up to 20% of CIN1 can be P16 positive)
3. Adjudication in professional disagreement
4. Biopsy low grade but considered high risk for high grade disease (high grade cytology)
5. Not recommended routinely in cases of CIN1 or CIN3
6. Audit of use of P16 – rate and indication useful



Histology Data – Ireland (2024)

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Scope of histology demand in the CervicalCheck HPV programme - Project

- Is histology being used appropriately?
- Can we reduce unnecessary biopsy?

Jan-Dec 2024	No of Biopsies	Highest grade
No CIN	4,764	24.3%
Low grade CIN	10,122	51.7%
High grade CIN	4,562	23.3%
Cancer	119	0.6%
Total	**19,567**	**100%**

Histological Biopsies taken in colposcopy clinics

Project Aim:

This project aimed to carry out a retrospective review of CervicalCheck data from 2022 to 2023 to assess the following:

- The histology outcomes for biopsies taken at first visit in colposcopy, from women with a positive HR HPV test with an adequately visualised and normal cervix (TZ1 or TZ2)

- First visit colposcopy procedures and outcomes, from women with a positive HR HPV test and negative cytology with an adequately visualised and normal cervix (TZ1 or TZ2)

A total of 5189 women referred to colposcopy with a positive HPV test and any cytology result had a normal cervix at colposcopy and:

- 1684 (29%) underwent a biopsy.
- 1618 biopsy results were available.
- More than 98% of biopsies were adequate for evaluation

Histology result	Total	Percentage
AIS/CGIN	6	0.4%
High Grade CIN	161	10%
Low Grade CIN	777	48%
No CIN on biopsy	665	41.1%
Non-cervical diagnosis	9	0.6%
Total	**1618**	**100%**

Histology outcome for women referred to colposcopy with a positive HPV test and any cytology result who had a normal cervix appearance at first visit in colposcopy

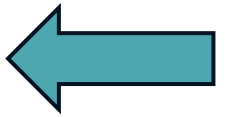
Positive HPV test/Referral Cytology	No Biopsy	Biopsy	Total	Biopsy Rate	# histology CIN 2+	% histology CIN 2+
Glandular cytology 'Borderline'	0	3	3	100%	2	67%
Glandular cytology	14	8	22	36%	2	25%
High grade cytology	33	35	68	51%	18	51%
ASCH cytology	42	45	87	52%	10	22%
Low grade cytology	2267	949	3216	30%	96	10%
Normal Cytology	1758	639	2397	27%	38	6%
Unsat Cytology	9	5	14	36%	1	20%
Not Recorded	12		12	0%		
Total	**4135**	**1684**	**5819**	**29%**	**167**	**10%**

Biopsy rate and incidence of high-grade histology for biopsies taken at first visit in colposcopy, from women with an adequately visualised and normal cervix (TZ1 or TZ2). Stratified by referral cytology result.

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Clinic	# Biopsy taken	# Women HPV +/Cyt- colp normal	Biopsy rate
A	19	123	15%
B	15	67	22%
C	58	423	14%
D	40	134	30%
E	93	129	72%
F	27	129	21%
G	54	74	73%
H	118	200	59%
I	17	92	18%
J	18	227	8%
K	29	118	25%
L	5	363	1%
M	15	130	12%
N	78	125	62%
O	53	61	87%
Total	**639**	**2395***	**27%**

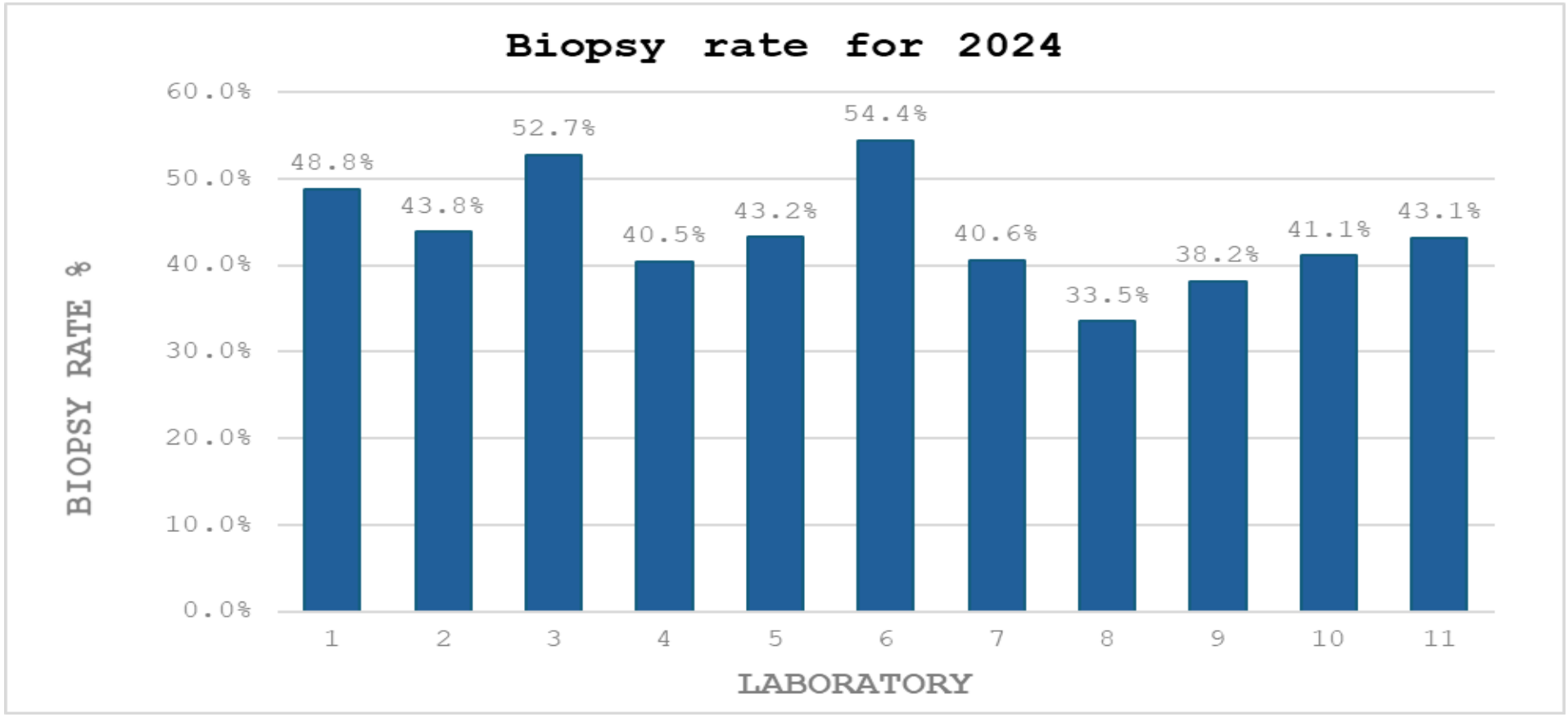




Biopsy rate by clinic and nationally for women who were referred to colposcopy with a positive HPV test and negative cytology with an adequately visualised and normal cervix (TZ1 or TZ2) between March 2022 and April 2023.

Overall biopsy rates per unit - 2024

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Key Points

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For colposcopy:

- Interpret biopsy in the context of cytology and clinical findings
- Be aware of the limitations of punch biopsy
- Is a biopsy necessary?
- Will the results of a small punch biopsy alter management?
- What is driving the variation in practice?

For pathologists:

- Implement strategies to minimise diagnostic variation
- Intra-departmental review of CIN2
- Internal audit
- Real-time review

HPV Self-sampling:
An update from the Irish perspective

Dr Aoife McEvoy

Fellow in Obstetrics & Gynaecology, CervicalCheck

MD Student, University College Cork

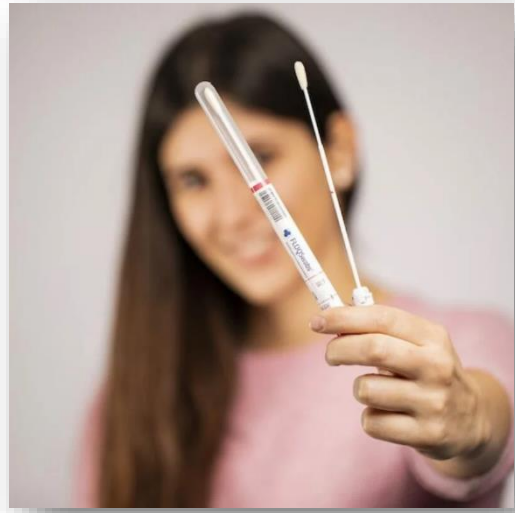
aoife.mcevoy@screeningservice.ie



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National Screening Service

HPV self-sampling background



- WHO recommends offering HPV self-sampling as an additional method for cervical screening for women aged 30-60 years
- HPV self-sampling introduced in 6 European countries with pilots in many other countries
- 2018 meta-analysis, when polymerase chain reaction (PCR) assay used for self-samples,
  - relative ***sensitivity*** for detection of CIN2+ compared to clinician-collected samples is 0.99 (95% CI 0.97–1.02).
  - relative ***specificity*** for detection of CIN2+ compared to clinician-collected samples is 0.96 (95% CI 0.93-0.98) [Arbyn et al - https://www.bmj.com/content/363/bmj.k4823]
- Since 2018, multiple meta-analyses have been carried out on HPV SS with relative sensitivity for detection of CIN 2+ compared to CC sampling ranging from 0.91-0.99 and relative specificity ranging from 0.96-1.00 when a PCR assay is used
- When cervical screening non-attenders are offered self-sampling uptake varies from ~8-17%
- HPV self-sampling can be offered in different ways – postal kit to all "opt out", postal invite to order kit "opt-in", offer SS kit in healthcare settings

Global adoption of HPV self-sampling

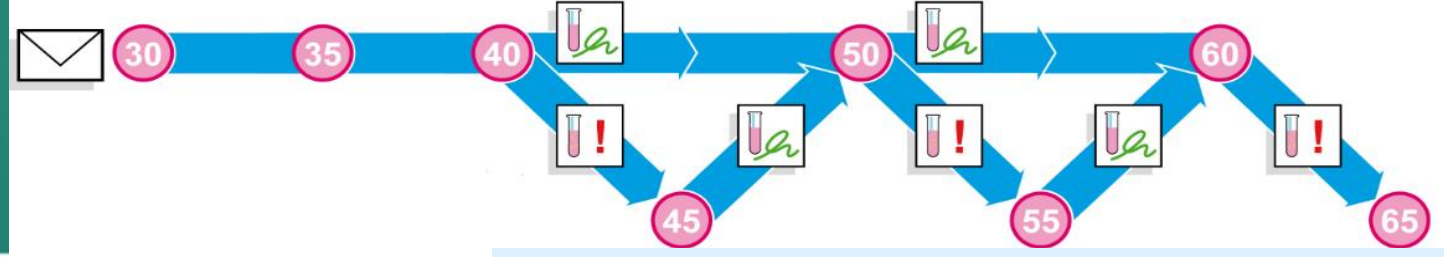
- A 2022 global review identified 48 countries worldwide recommending HPV based sampling
- 17 of those countries with self-sampling in national programmes or guidelines
  - 8 for under-screened women: Argentina, Australia, Denmark, Ecuador, Finland, France, Myanmar, Sweden
  - 9 as primary screening option: Albania, Kenya, Guatemala, Honduras, Malaysia, Netherlands, Peru, Rwanda, Uganda

However since this review there have been significant changes:

- Australia (2022) and New Zealand (2023) offer universal HPV self-sampling to everyone
- Canada – British Columbia offer province-wide HPV SS screening in 2024
- England – August, 2026 – rollout ongoing for under-screened – mail out



Netherlands



- Aged 30-65, 5-10 yearly screening
- hrHPV-based screening and self-sampling introduced in 2017
- Changes in the invitation policy – invites were sent by screening organisations rather than GPs, women had to attend GP with screening letter or had the option to order self-sampling kits
- Noted decline in participation following introduction
  - dropped from between 64.4%-66.2% to 57.4% in 2017
  - initially uptake of SS at 8%, however it rose to 25% with COVID
- 2019 – IMPROVE study showed 76.5% of women preferred self-sampling
- 2023 – self-sampling kits are automatically sent to all individuals at age 30 if they have not participated within 12 weeks of being eligible – "opt-out"
- Increase in participation rates and faster response to screening in that cohort – 42.1% to 49.9%
- Decline in reflex cytology participation in that cohort - -5.7 percentage points
- Overall, self-sampling has not increased participation rates in the screening programme

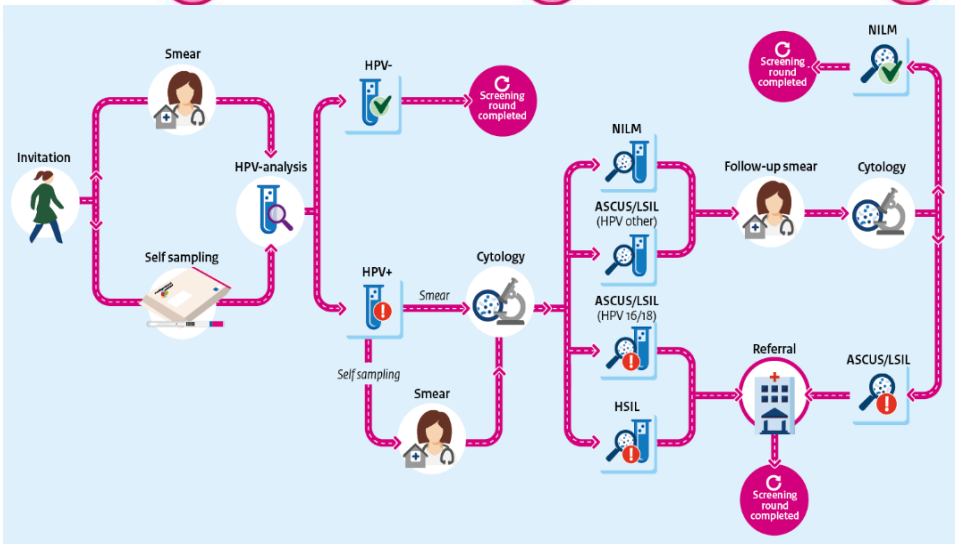
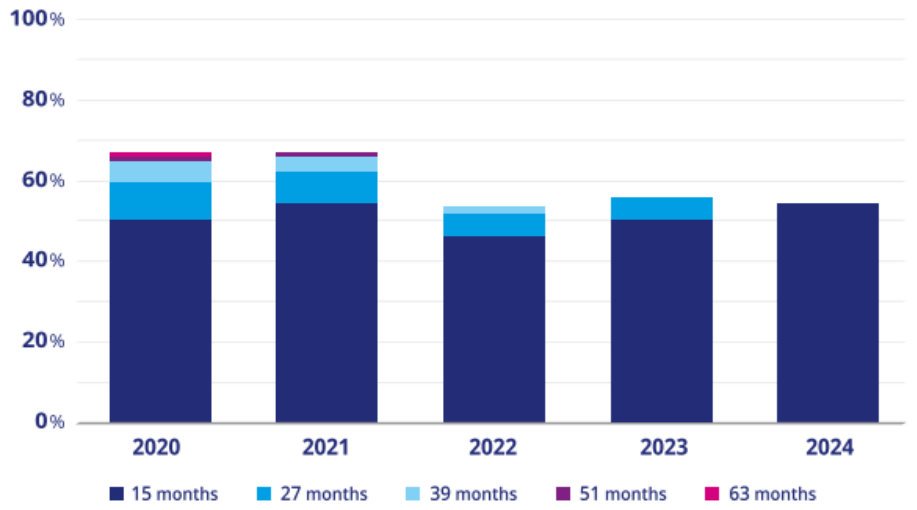


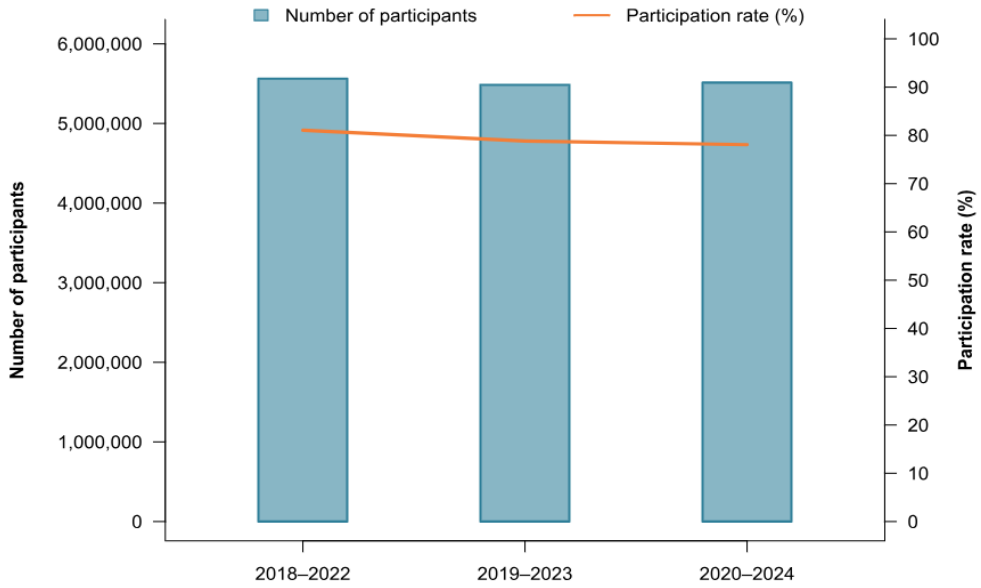
Figure 4 / **Participation rate primary test*** by reference period and year (source: BVO NL)



* See table 2 for written out percentages of the participation rate measured in the following year (15-month reference period) and 2024 (most recent reference date).

Australia

- Aged 25-74, 5 yearly screening
- HPV test with partial genotyping and LBC triage – HPV 16/18 direct colposcopy referral, HPV other – LBC triage
- Self-sampling offered to under/ never screened since 2017 and offered to all 2022
- Self-sample must be ordered by a clinician – responsible for:
  - access to sample
  - return of sample
  - communicating results of sample
- If HPV 16/18 detected – referral directly to colposcopy
- If HPV (not 16/18) detected – clinician collected sample – LBC only
- Coverage from 2020-2025 was 77.9% - unchanged since intro of self-sampling
- Uptake of self-sampling increased from 1.2% in 2022 to 26.9% by the end of 2023
- Uptake was highest in those who were more than 10 years overdue, those living in remote areas, those in disadvantaged areas, and aged 70-74



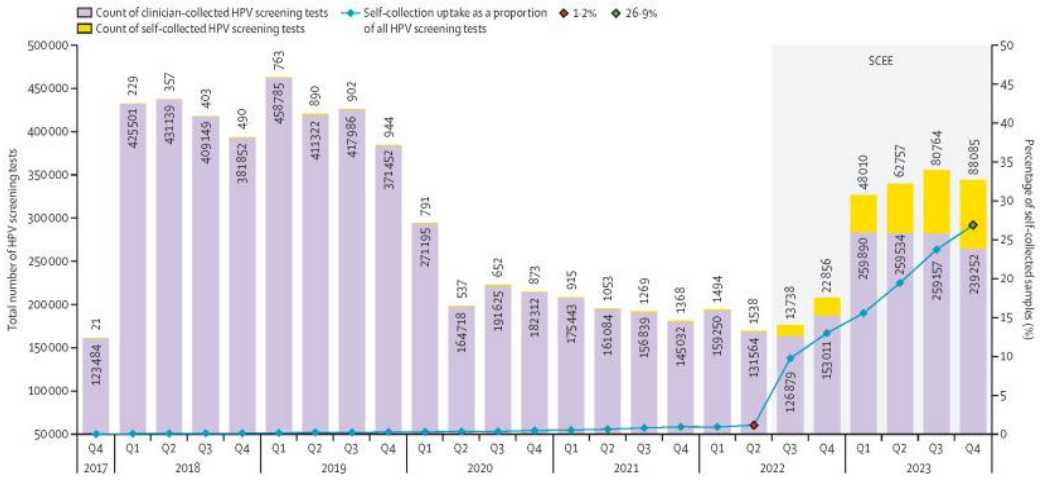


Figure 1 Uptake of self-collected samples for HPV testing in each quarter between Dec 1, 2017, and Dec 31, 2023

CervicalCheck cervical screening programme

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National Screening Service

- Eligible population – 1.4 million women* aged 25-65
- Organised screening programme with 75% coverage
- Model of care
  - >95% screening done by primary care
  - Programme commissions 2 screening laboratories and 12 histology labs and sets QA standards
  - Programme commissions 15 colposcopy clinics and sets QA standards
- Approx 250 women diagnosed with cervical cancer per annum
- 80 women die of cervical cancer per annum
- Modelled date for elimination of cervical cancer in Ireland: **2040**
- **NCRI data**
  - Cervical cancer presents at Stage 1 for 80% of our screened population
  - 66% present at ≥ Stage 2 in under-screened women

* Women and people with a cervix

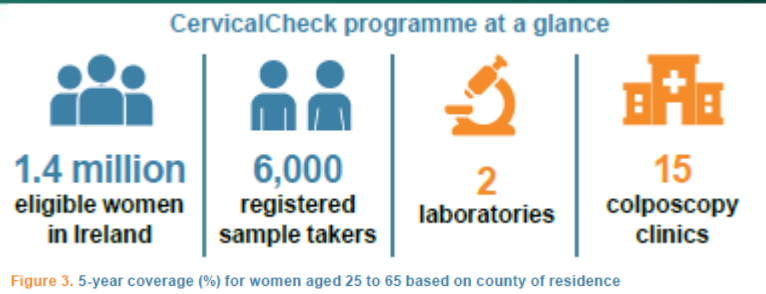
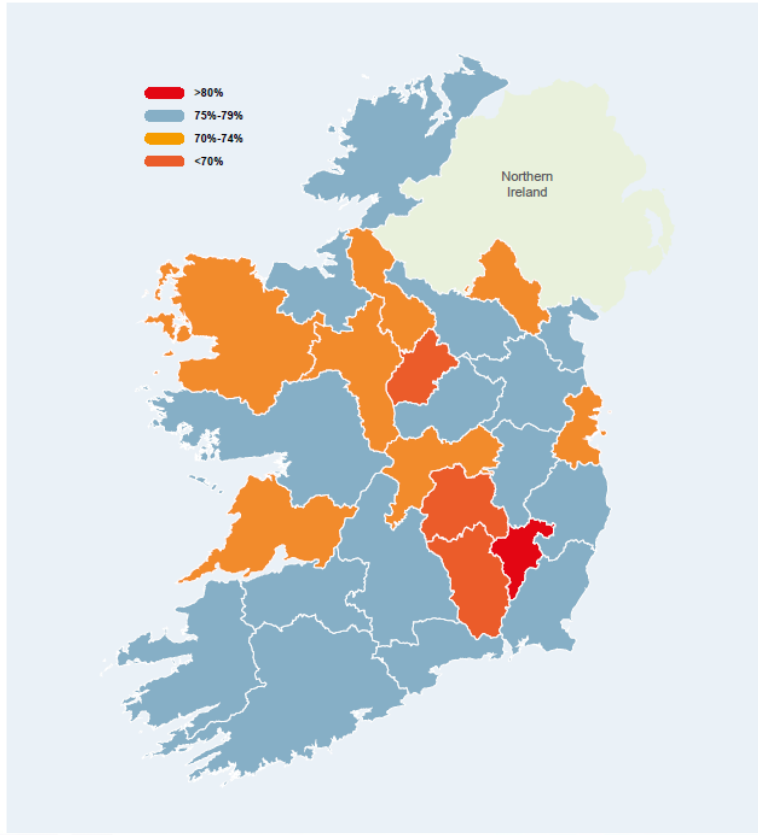


Figure 3. 5-year coverage (%) for women aged 25 to 65 based on county of residence



Irish research to date

- **2023, Market research survey of Irish population of 2000 women aged 20-65 years** https://www2.healthservice.hse.ie/organisation/nss/news/gps-practice-nurses-support-introduction-of-hpv-self-sampling-in-cervical-screening-new-research/
  - Of those who would choose some form of cervical screening in future, 56% would chose HPV self-sampling.
  - Participants who were never screened more likely to prefer HPV self-sampling over clinician sampling
  - Non-heterosexual people more likely to prefer self-sampling, compared to those who identify as heterosexual
- **2023, CervicalCheck survey of sample takers: A cross-sectional survey of sample takers' views on HPV self-sampling for cervical screening in Ireland** https://journals.sagepub.com/doi/10.1177/0969141326146046
  - Two-thirds of respondents (n=134, 67%) agreed that HPV self-sampling should be introduced as an additional screening method for cervical screening in Ireland due to:
    - its potential to increase uptake
    - possible better participant experience
  - Those opposed were concerned self-sampling would represent a missed opportunity to
    - examine the cervix
    - counsel patients about screening
    - discuss other health concerns
  - A minority reported concerns about the accuracy of self-sampled tests

Irish research to date

- **2026, Systematic review: What are the views and experiences of human papillomavirus (HPV) self-sampling for cervical screening in high-income countries? A qualitative systematic review using the Theoretical Domains Framework** https://pubmed.ncbi.nlm.nih.gov/42277744/
  - Self-sampling was generally viewed positively and considered an acceptable alternative
  - A lack of knowledge about the availability HPV self-sampling was common
  - The review highlighted the importance of clear, simple, accessible instructions and information
  - Concerns about the reliability and accuracy of self-sampling could act as barriers
  - Convenience, privacy and greater personal autonomy were major advantages
  - Confidence in performing the test correctly was a key concern
  - Social and cultural factors influenced people's views and intentions
  - How self-sampling is implemented matters

HPV-Self: A pilot implementation study of offering self-collected HPV samples in general practice as part of the CervicalCheck cervical screening programme

To examine the acceptability and feasibility of offering HPV self-sampling within general practice in the Irish national cervical screening programme (CervicalCheck)

Research question 1:

What are the acceptability and preferences of eligible women regarding HPV self-sampling, carried out in a general practice setting?

Research question 2:

What is the feasibility of HPV self-sampling implementation in general practice from the perspectives of GPs and GP nurses?

Research question 3:

What are the acceptability and feasibility of implementing HPV self-sampling as a part of the cervical screening programme from the perspectives of the laboratory staff?

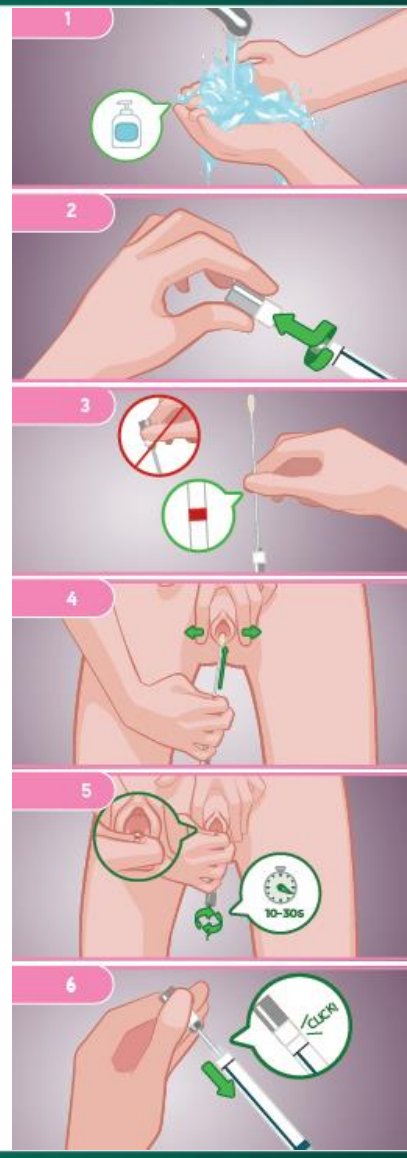
Study design

- 100 women recruited through 5 general practices in counties served by NCSL
- Women due and eligible for cervical screening
- Copan FLOQSwab taken by participant prior to routine screening – no patient identifiers
- Routine screening test then taken by nurse or GP
- Patients fills out a questionnaire
- Mixed methods study
  - Acceptability: participant & laboratory questionnaires
  - Feasibility: process evaluation interviews with participants, GPs, laboratory staff

Results of HCP taken test will be sent to patient & GP

- **All management and further care based on result of routine screening test**

Paired SS and HCP samples will then be anonymised and used for lab validation purposes only – patient and research team will NOT receive SS result



Laboratory & sample management



- Both samples transported to NCSL
- Clinician-collected sample processed as routine in NCSL
- Result entered on LIMS and reported as normal to women and sample takers
- Clinician-collected sample and self-sample paired, anonymised and given a study number as a pair
- Samples from then on will only be used for lab validation purposes
- **It will be impossible at that stage to trace self-samples back to participants**
- NCSL will send on a batched results sheet of HPV samples and clinician collected sample pairs to researchers
- Data collected on a password protected Excel file:
  - the unique laboratory number
  - time and date of sample collection and time and date of sample receipt in the laboratory
  - sample result (detected, not detected, invalid or not processed)
  - time and date of the sample suspension
  - if a sample is not processed the reason for same
  - the number of times samples were tested to generate a valid result (1 to 3 times) and any comments

Outcomes

Primary outcome: Acceptability and feasibility of offering HPV self-sampling in a general practice setting

Secondary outcomes

Women-focused

- Women's acceptability and experience of HPV self-sampling i.e. comfort, ease of use, coherence of information provided
- Women's understanding about what a positive HPV self-sample means for the next steps in their care
- Assessed via online or paper-based anonymous questionnaire (adapted version of the HPValidate study patient questionnaire) - completed after HPV self-sample clinician consultation

Healthcare system-focused

- Acceptability, feasibility, logistics and resource implications for the laboratory of adding HPV self-sampling to CervicalCheck
- Assessed via online questionnaires administered to participating laboratory staff at the end of the study (a simple acceptability questionnaire created as no appropriate existing questionnaires in the literature)

Qualitative interviews – process evaluation

- The perceptions and experiences of women, general practice staff and laboratory staff participating in this HPV self-sampling pilot implementation study, assessed via online interviews

Implications for CervicalCheck programme

- This study will give insight into offering HPV self-sampling in GP practices in Ireland
- Insight into acceptability for HPV self-sampling in GP practice for women
- Determines if information in PIL on HPV self-sampling is coherent and appropriate
- Uncovers any challenges in GP setting on counselling women and supporting HPV SS
- Gains feedback from NCSL on sample processing/ workflow challenges encountered

Future considerations for CervicalCheck programme prior to implementation:

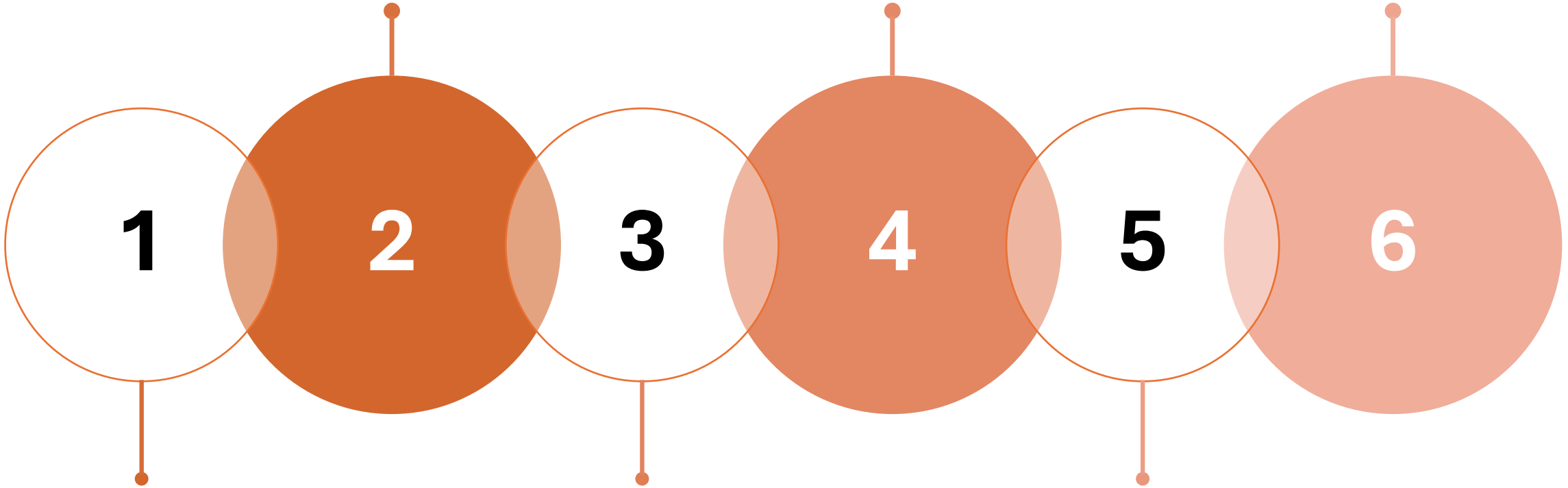
- Management plan for women with positive HPV self-samples – clinical algorithm
- What will happen with HPV self-sample results in future when being entered into register?

Recruitment – audit activity

- GP practice staff carry out an audit to find women who are eligible for the study
- Inclusion criteria:
  - Women aged 25-65 years who are eligible and due for cervical screening
  - Women who are happy to attend a GP practice participating in the study.
  - Women must have capacity to consent to the study and be able to independently use the self-sampling kit.
  - Women should be able to read and understand English.
- Exclusion criteria:
  - Women who are not eligible for cervical screening e.g.:
    - History of total hysterectomy
    - Women known to be pregnant
    - Women less than 3 months postpartum
    - An inadequate or indeterminate HPV result in the last 6 months, attending for a repeat cervical sample
  - Symptomatic women e.g. presenting with PV bleeding
- Practice nurse calls women and discuss study briefly with them – with the aid of the script/ FAQ page
- Send out a text or email with a link to REDCap Expression of Interest form – woman to complete

Consent process workflow

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Initial contact

GP staff contact woman to discuss study – if interested, sends a registration link

Registration of interest

Woman fills in details on REDCap – study PIL/ ICF/ DPN sent via email

Consent by researcher

Dr Aoife McEvoy contacts patient within 48hrs of registration, counsels & consents woman

Confirmation of consent & appointment

Signed consent form is forwarded to GP practice and patient by Dr Aoife McEvoy.

GP staff contact woman with appointment

Patient appointment

30-min apt – self-sample and routine cervical screening.

Anonymous paper or QR code questionnaire filled by woman

Interview

GP staff, lab staff and a number of women will be contacted to participate in 30 minute interviews for a process evaluation

Thank you