National HPV immunisation surveillance update

May 2023

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Public Health Scotland

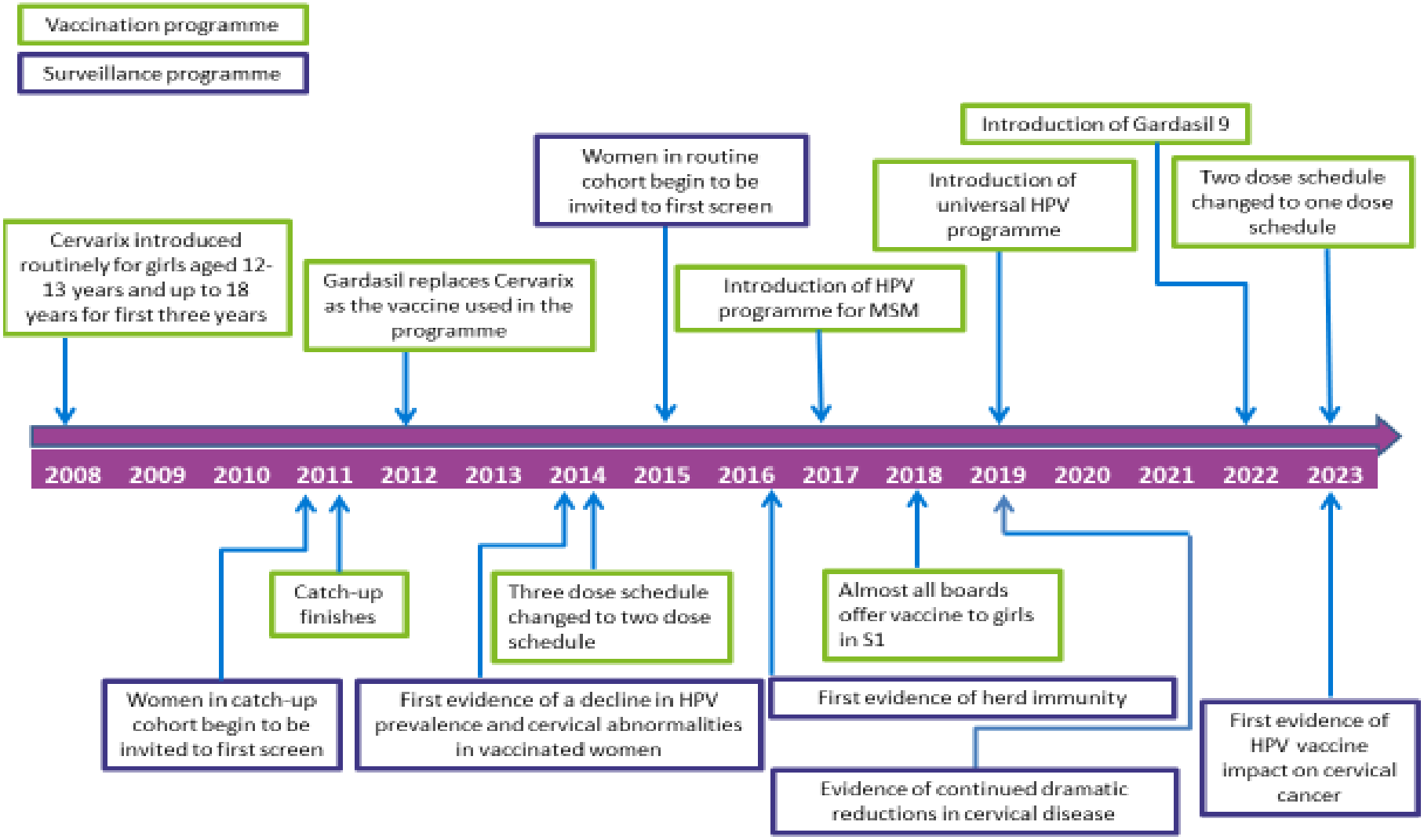
Overview

- Timeline

- Evaluation of HPV immunisation surveillance
  - Objectives of original plan
  - Achievements
  - Gaps and limitations

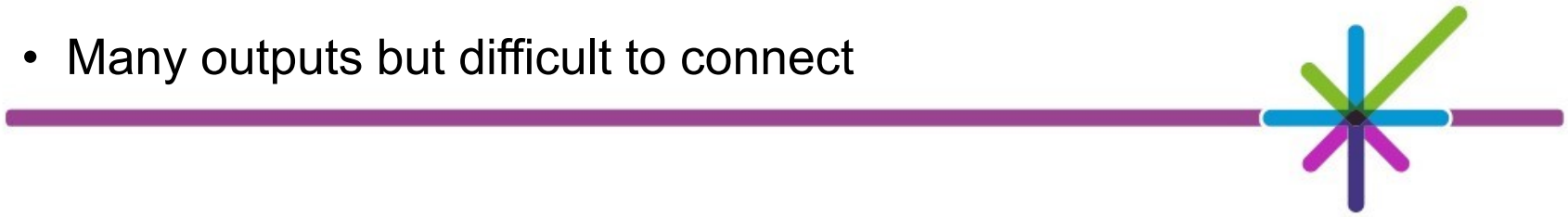
- Future of HPV surveillance
  - HPV infection surveillance
  - HPV related disease surveillance
  - Cervical Cancer Elimination Strategy

Timeline of milestones of the HPV immunisation and surveillance programme, 2008-2023



Why do an evaluation?

- National HPV surveillance plan had not been evaluated in the 10 years it has existed
- Approach to surveillance has evolved over time which hadn't been captured
- HPV vaccination policy has significantly changed over the years
- Extension of the programme:
  - GBMSM (other risk groups)
  - introduction of universal programme
- Many outputs but difficult to connect



The evaluation objectives

- 1. To describe the surveillance system established and any expansion thereafter
- 2. To determine if the National HPV surveillance programme established in 2008 has met its goals and objectives
- 3. To identify gaps/needs moving forward given MSM and universal vaccination programme

Human Papillomavirus (HPV) Vaccine

GOVERNANCE DIAGRAM

As at 23.01.09

(1.0) NATIONAL STEERING GROUP

Chair: Dr Allan Gunning (NHS A&A)

Dr Andrew Riley (SGHD)
Carol Colquhoun (NSS, NSD)
Prof Heather Cubie (NHS Lothian)
Jane Liddell (North Lanarkshire Council, Schools)
Jane Walker (SGHD, Primary Care)

Jemma Payne (NSS, HPS)
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Lesley Douglas (Scottish Council Independent Schools)
Liz Breckenridge (Patient Focus, Public Involvement)
Dr Lorna Willocks (IC – East, NHS Lothian)
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OBSERVERS: *Dr Martin Donaghy (NSS, HPS) / Shirley McLean (NSS, HPS) / Jacqueline Campbell (SGHD) / Gareth Brown (SGHD) / Julia Mackay (NSS, CPO)*

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Margaret Somerville (NHS Lothian)
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Ruth Thomson (NSS, HPS)
Scott Hall (NSS, NISG)
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(6.0) PUBLIC & PROFESSIONAL COMMUNICATIONS & EDUCATION

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Gareth Brown (SGHD, Policy)
Gillian Stobo (Scot Council Indep Schools)
Helen Tissington (NHS Highland)
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Dr Jennifer Darnborough (NHS Lanarkshire)
Jessica Sweeney (Scottish Youth Parliament)
Kat Hasler (Health Scotland)
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PROFESSIONAL

- Health
- Education
- Stakeholders

PUBLIC

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Dr Theresa Carswell

NHS Borders
Dr Tim Patterson

NHS Dumfries & Galloway
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Mary Waugh

NHS Fife
Dr Charles Saunders

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Dr Janet Stephenson

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Maggie Mitchell

NHS Shetland
Dr Susan Laidlaw /
Dr Sarah Taylor

NHS Tayside
Dr Chris McGuigan /
Dr Julie Cavanagh

NHS Western Isles
Dr Sara Bartram /
Dr Sheila Scott

Surveillance system objectives

Objective 1: To evaluate the effect of the HPV immunisation programme on HPV-related cervical disease and on the frequency of vaccine-type and non-vaccine type HPV infections in women in the birth cohorts targeted for vaccination, either as part of the routine immunisation programme or as part of the catch-up campaign, and in males and females not eligible for HPV vaccination.

Objective 2. To measure vaccine effectiveness against vaccine-type HPV infections and HPV-related disease.

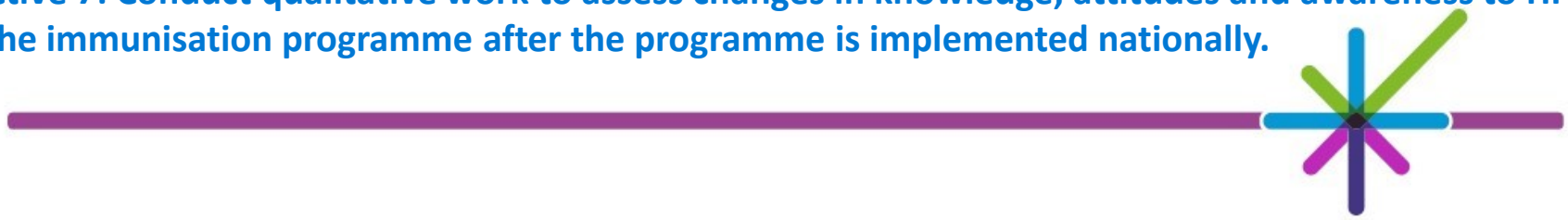
Objective 3: To be prepared to investigate risk factors for, and mechanisms of, vaccine failure

Objective 4: Monitor the uptake of the routine and catch-up immunisation programmes and determine the characteristics of those who do not avail of the vaccine

Objective 5: Relate the uptake of the vaccine to any changes in the uptake of cervical screening amongst those targeted for vaccination and monitor those who default on screening and immunisation and who may therefore be at increased risk of developing cervical cancer.

Objective 6: Monitor the rate of adverse events and other untoward consequences associated with the programme

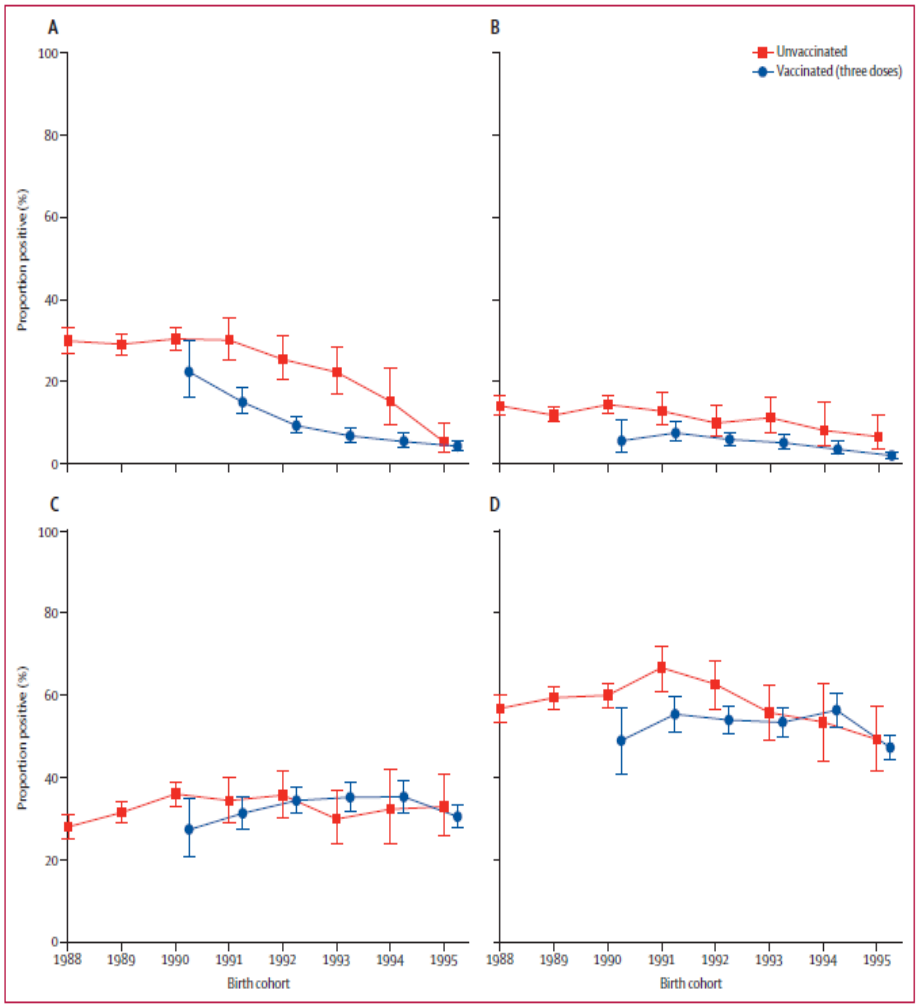
Objective 7: Conduct qualitative work to assess changes in knowledge, attitudes and awareness to HPV and the immunisation programme after the programme is implemented nationally.



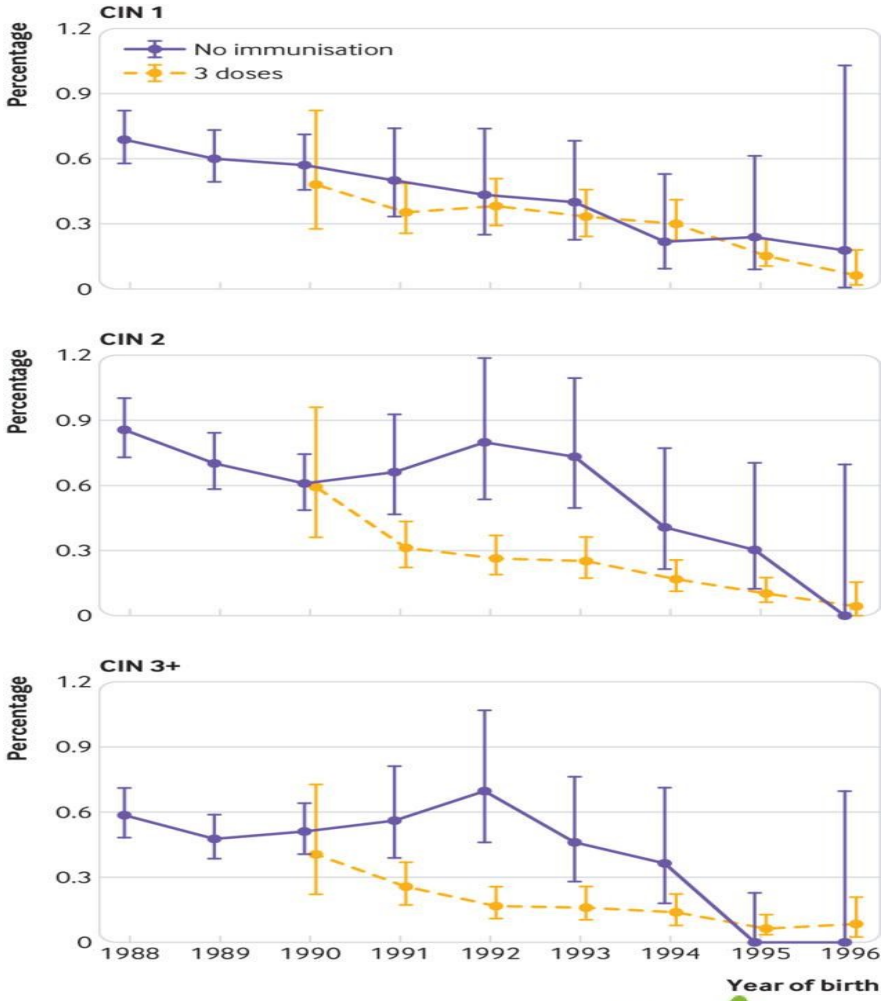
Main achievements in meeting objectives

- The system in place to monitor vaccine uptake is well established and robust and can identify drops in uptake which can then be addressed. Continued high vaccine uptake
- Clear and continuing evidence for beneficial vaccine effect on vaccine type and cross protective HPV infections and cervical disease including herd immunity in unvaccinated girls.
- HPV typing performed on a sample of 500 CIN2+ biopsies on a biennial basis from 2011 to 2017 and HPV typing of all cervical cancer biopsies has allowed surveillance of potential HPV type replacement and possible vaccine failures.
- Data published which showed that cervical screening uptake is higher in vaccinated women. Immunisation status is now routinely in SCCRS.
- The UK wide MHRA Yellow Card Scheme is in place and used for continued adverse event monitoring. System in Scotland that can be used to augment the Yellow Card Scheme.
- A number of qualitative studies were performed when the vaccine was first introduced and informed the communications strategy and the development of informational materials.

Impact of vaccination on the prevalence of HPV by birth cohort 1988-1995



Histological abnormality (% of women screened) by year of birth and immunisation status



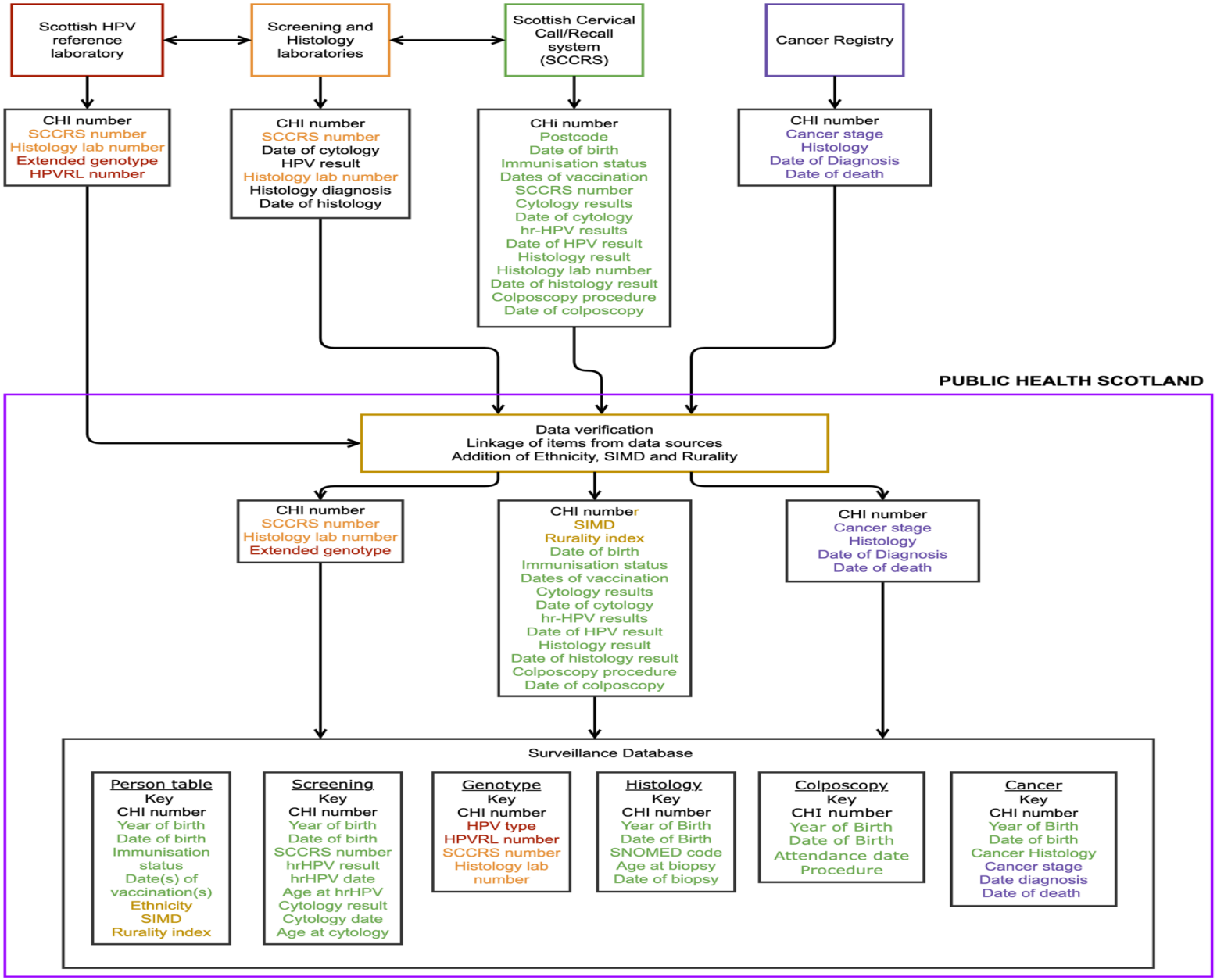
A: HPV 16 or 18, B: HPV 31, 33 and 45, C: Other HR types, D: Any HPV

Main limitations and gaps in meeting objectives

- Surveillance of HPV incidence and cervical abnormalities based on a screened population which is not fully representative for the whole population. Little data on males and unscreened populations.
- Unlikely to be able to confirm a vaccine failure as this requires a known negative HPV test before vaccination
- No system is in place which routinely collects information on those girls that decline vaccination.
- No extensive qualitative work has been undertaken since the introduction of the vaccine in Scotland.

Plans for the future of HPV immunisation surveillance

- HPV vaccination coverage monitoring will continue under SVIP
- Monitoring HPV prevalence including HPV type prevalence
- Monitoring HPV related disease
- Vaccine effectiveness
- WHO Cervical Cancer Elimination Strategy



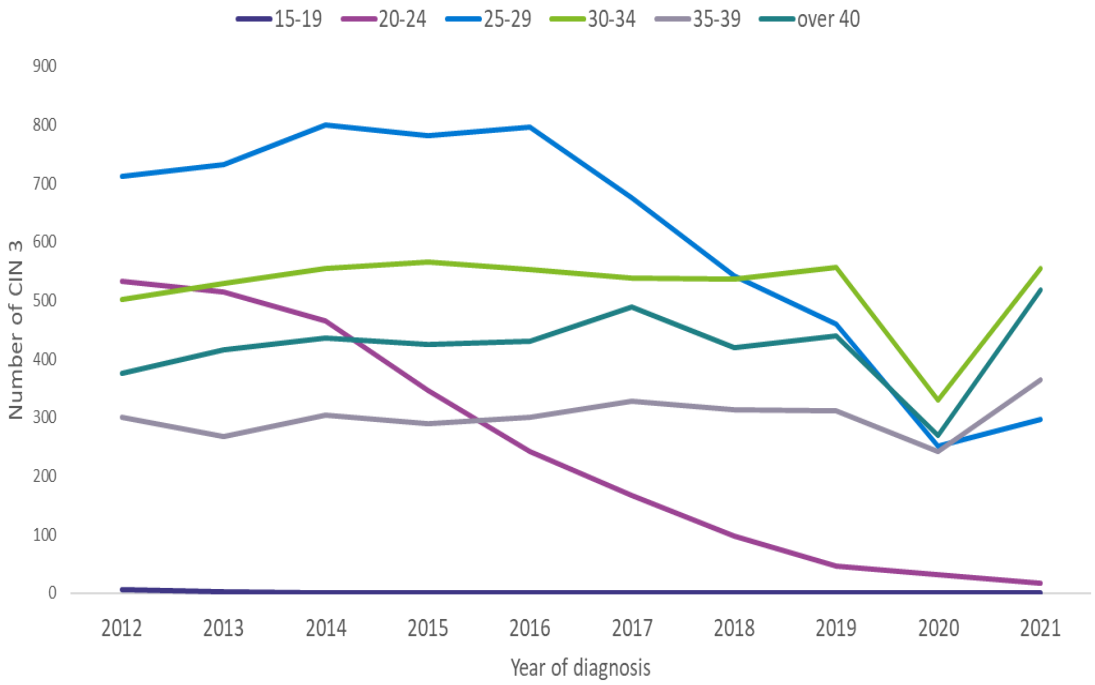
NOTE:
The extent of the PHS is indicated by the purple boundary. All confidential and sensitive data for analyis is kept within PHS.
Border colour of box links to text colour to identify source of data item.
Data items in black are used for internal checking/verification/linking and are retained within the safe safe haven and/or the relevant laboratory.
The Key in each of the final database tables is generated when each table is created.
The CHI allows linkage of data from the same person in each of the tables.
Arrows denote main direction of flow of data.

Monitoring HPV prevalence

- Presence of HR-HPV in women attending for cervical screening (SCCRS)
  - HPV typing
- Exploring HPV infection surveillance in screening non-attenders
- HPV typing of CIN 2+ samples
  - Cervarix and Gardasil cohorts
- HPV typing of residual rectal swabs

Monitoring HPV related disease

- Monitoring uptake of cervical screening, CIN 2+ and cervical cancer incidence
- Incidence of non-cervical HPV related cancers
- Trends in prescriptions for genital warts



Vaccine effectiveness

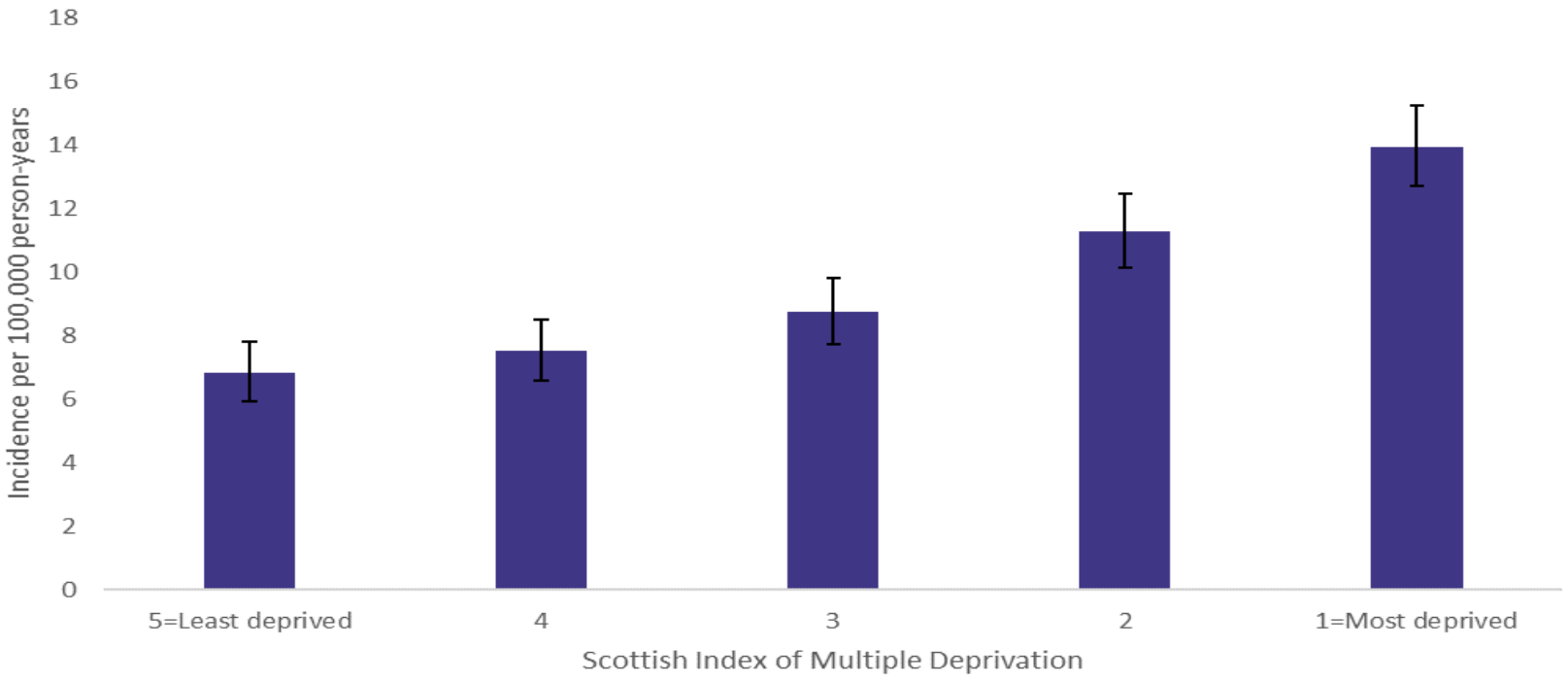
- Vaccine impact on
  - HPV prevalence
  - Cervical disease
  - Cervical cancer –first data to be published soon

Combined vaccine status and age at vaccination	Denominator	Cases of disease Weighted (Unweighted)	Person years follow up Weighted (Unweighted)	Incidence rate per 100,000	Incidence rate 95% CI	Adjusted VE*	Adjusted VE* 95% CI	p-value
Unvaccinated	294221	195.7 (210)	2337136.3 (2739122.6)	8.4	(7.2, 9.6)	..	..	..
12-13 Incomplete	411	0.0 (0)	1847.9 (1968.9)	0.0	(0.0, 199.6)	100**	..	..
12-13 Complete	29144	0 (0)	134299.8 (140081.7)	0.0	(0.0, 2.7)	100**	..	..
14 plus Incomplete	14234	6.8 (8)	103627.4 (110146.3)	6.5	(2.6, 13.6)	40.0	(-22.8, 70.7)	0.162
14 plus Complete	109835	20.4 (21)	754122.3 (796571.6)	2.7	(1.7, 4.2)	73.8	(58.9, 83.4)	<0.0001

Cervical cancer elimination

- Overall incidence of cervical cancer in Scotland is 8.9 per 100,000
- Incidence in most deprived is 2x higher than least deprived
- Difference in mortality is even higher

World age standardised incidence of cervical cancer by SIMD, 2015-2019



Cervical cancer elimination strategy

WHO indicator	Data available in Scotland?	Target met?	Future considerations
90% of girls fully vaccinated with HPV vaccine by the age of 15	**Yes**	Partially Full course vaccination uptake historically > 90% overall. In recent years uptake has fallen below 90% other than in girls in SIMD 5.	Addressing the inequity in uptake. Ensuring that opportunities to receive vaccine are maximised. The indicator will change with the move to a one dose schedule.
70% of women screened using a high-performance test by the age of 35, and again by the age of 45	**Yes** but in defined age bands	**Partially** 70% uptake in women aged 35-44 and 45-49 Screening uptake is <70% in younger age groups and in women in the two most deprived SIMD quintiles.	Targeted promotion of cervical screening, including self-sampling, in younger (unvaccinated) women and those from more deprived communities is likely to be key to achieving this target. Devise routine reporting from SCCRS to monitor adequacy of screening based on the WHO indicators including by ethnicity
Treatment: 90% of women with pre-cancer treated and 90% of women with invasive cancer managed	Treatment data are available but IT development will be required to fully evaluate against the target	**Not currently assessable** It is likely that cervical pre-cancer and cancer are treated timely in Scotland due to well established systems and infrastructure.	Developments around available data sources will be crucial to assess this target in addition to aligning with other UK countries.

Summary

•Many of the objectives of the surveillance plan have been achieved

•Impact of Cervarix clearly demonstrated while maintaining vaccine uptake and trust

•Gaps either where the original plan was not pursued or the surveillance system no longer reflects vaccination policy

•New plan in progress to meet identified gaps and to reflect changing landscape

- Impact of other vaccines
- Impact of schedule changes
- Long term impact
- Impact on other populations

Thank you!

Proposed surveillance system in 2008