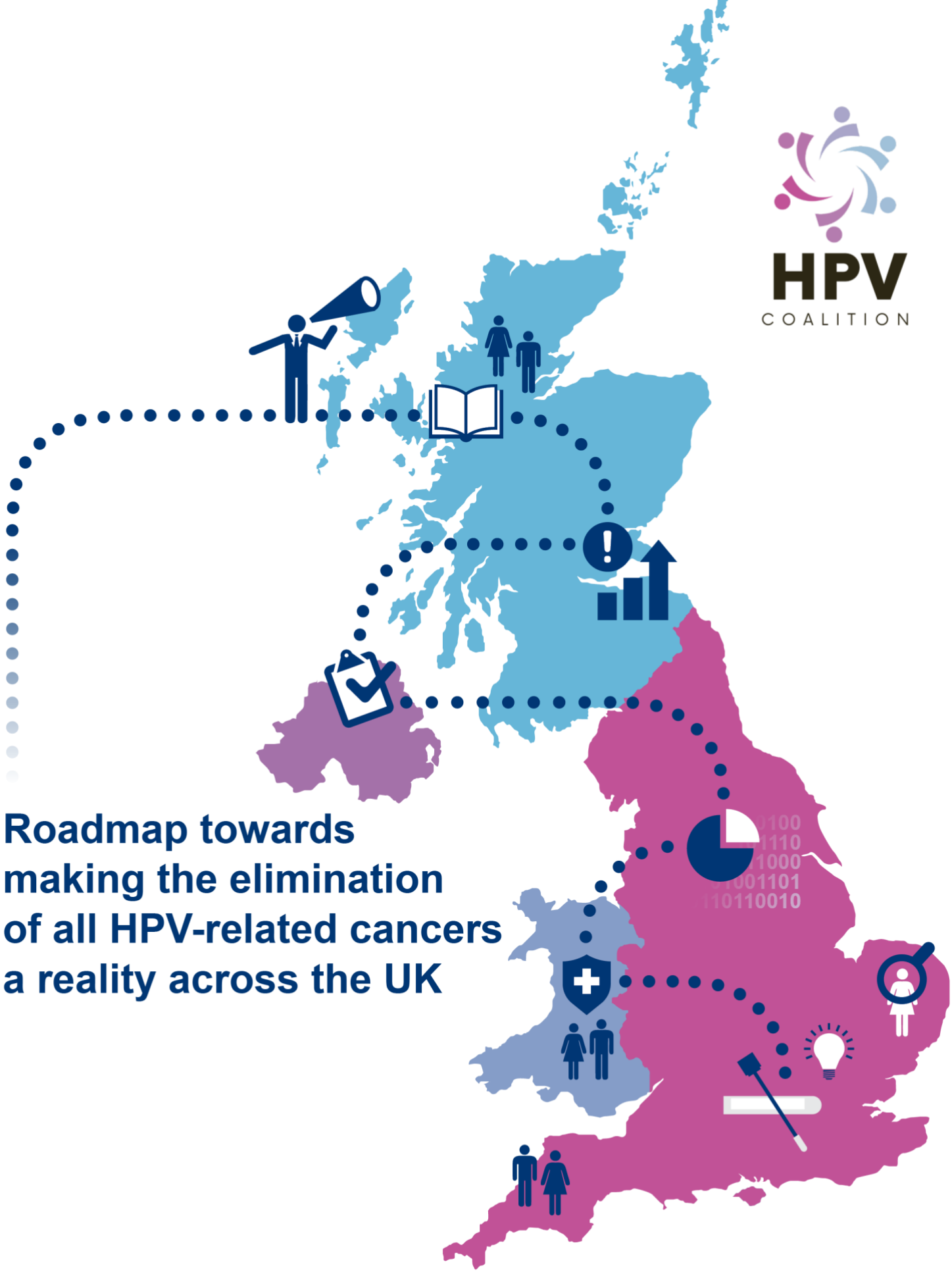
HPV COALITION



Roadmap towards making the elimination of all HPV-related cancers a reality across the UK

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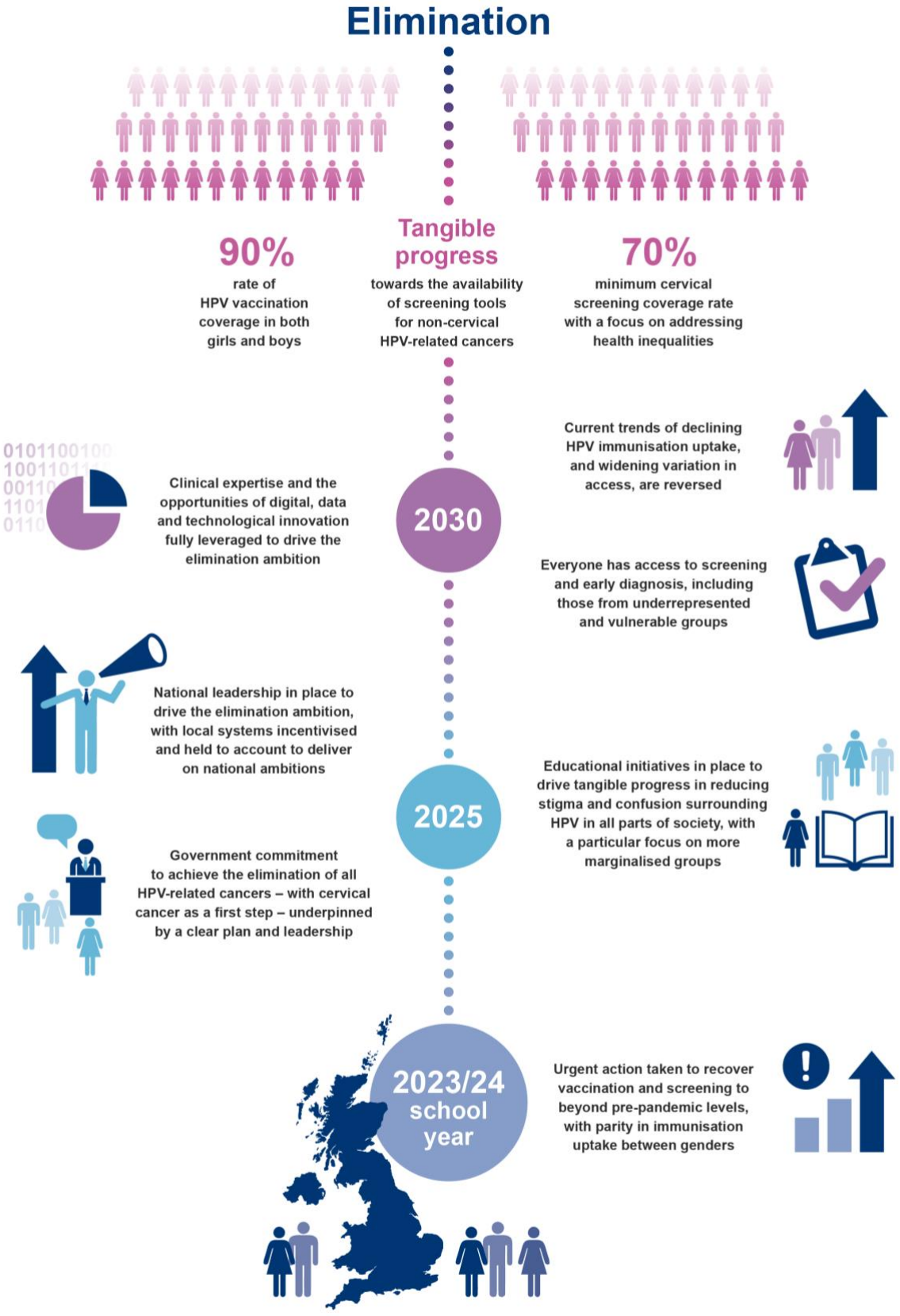
Our Roadmap: Summary of ambitions



Introduction

Background

The HPV Coalition, established in 2022, is an expert advisory group of leading patient groups, professional groups, clinicians and expert individuals who have come together to inform and advance the UK's journey towards the elimination of HPV-related cancers.

The UK has historically been a world-leader in the prevention of HPV-related diseases, implementing an HPV national immunisation programme (NIP) for girls in 2008 which was subsequently extended to adolescent boys in 2019.[1] As a signatory to the World Health Organisation (WHO)'s cervical cancer elimination ambition in 2020, the foundations were laid for the UK to continue to set the international benchmark in HPV prevention. However, significant challenges in recent years have put this progress in jeopardy, and there is a real risk that thousands of people across the UK will suffer the consequences of this missed opportunity.

It is set against this background that the HPV Coalition has developed this roadmap, outlining why the UK – as a whole – needs a concrete plan for elimination, and the steps that can make this a reality. Utilising the wealth of member knowledge at our disposal, this roadmap marks the first step of concerted, but crucially collaborative, action towards making the elimination of all HPV-related cancers in the UK a reality.

We owe it to young people, parents and future generations across England, Scotland, Wales and Northern Ireland to ensure this opportunity is grasped without delay.

Case for change

HPV is one of the most common viral infections – it is estimated that around 80% of people will be infected at some point in their lifetime.[2] The majority of those infected with HPV will suffer no ill effects, however a number of HPV types can cause much more serious disease, including genital warts, recurrent respiratory papillomatosis (RRP) and a range of cancers. The UK has made significant progress in reducing the prevalence of HPV-related cancers in recent years. Nevertheless, there are still far too many people, and their families, impacted by these cancers today.

Cervical cancer has historically been the focus of HPV prevention interventions, with nearly all cases attributed to HPV infection. In the UK:

- About 3,197 new cervical cancer cases are diagnosed annually across the UK[3] – ranking as the 12th leading cause of female cancer overall[4]
- Currently cervical cancer disproportionately affects younger women – it is the second most common female cancer in women aged 15 to 44[2]
- While cervical cancer can affect women of all backgrounds, there are apparent inequalities in its prevalence – incidence rates in England are 65% higher in women from the most deprived quintile compared with the least,[5] meaning it is increasingly becoming a disease of disadvantage
- 853 cervical cancer deaths occur annually in the UK[6] – that's **more than two women every day**
- Treating a patient with stage II or later cervical cancer will cost the NHS £19,261 on average, with a financial burden of £1,102 per month on the patient[7]

Other cancers – which may not have received the same level of attention as cervical cancer – are caused by HPV,[8] including 80-90% of anal cancers, 50% of penile cancer cases and 40% of vulva cancer cases.[9]

- 1,519 new cases of anal cancer are diagnosed each year, and results in 444 deaths a year[10]
- Annually, 1,372 new cases of vulva cancer will be diagnosed, and there are around 470 deaths in the UK every year[11]
- Nearly 700 cases of penile cancer are diagnosed in the UK every year, with rates projected to rise by 9% over the next 15 years[12]

Though some of these cancers exclusively affect either men or women, HPV is also a cause of head and neck cancers which are present in all genders. Although head and neck cancers are not exclusively associated with HPV infection – the majority are caused by high tobacco and alcohol consumption – the split in incidence between genders is particularly notable; head and neck cancers are diagnosed in men at a 3:1 ratio compared with women.[13] In the UK, the incidence of oropharyngeal cancer in men has now surpassed that of cervical cancer in women.[14] Prevention strategies that encompass the full range of HPV-related cancers are therefore crucial to maximise the protection offered to future generations.

We have some of the tools available to prevent HPV-related cancers now – 99.8% of cervical cancer cases are preventable,[4] as are 91% of anal cancer cases.[15] In recent years the opportunity to eliminate this group of cancers has become increasingly recognised:

- The **WHO** adopted a *Global Strategy for cervical cancer elimination* in August 2020. This landmark ambition aims to eliminate cervical cancer as a public health problem globally, and sets three key targets for countries to achieve by 2030 to set themselves on the path towards achieving it:
  - **Vaccination:** 90% of girls fully vaccinated by the HPV vaccine by the age of 15
  - **Screening:** 70% of women screened using a high-performance test by the age of 35, and again by the age of 45
  - **Treatment:** 90% of women with pre-cancer treated and 90% of women with invasive cancer managed
- Going one step further, in 2021 the **European Commission's** *Beating Cancer Plan* – the bloc's new plan for cancer prevention, treatment and care – set a flagship initiative to extend routine vaccination against HPV in girls and boys in order to eliminate cervical cancer **and other cancers caused by HPV**
  - The initiative sets an objective of vaccinating at least 90% of the EU target population of girls, and to significantly increase the vaccination of boys by 2030

The UK must now follow suit, seizing the effective tools already available to us to make elimination a reality.

What do we mean by elimination?

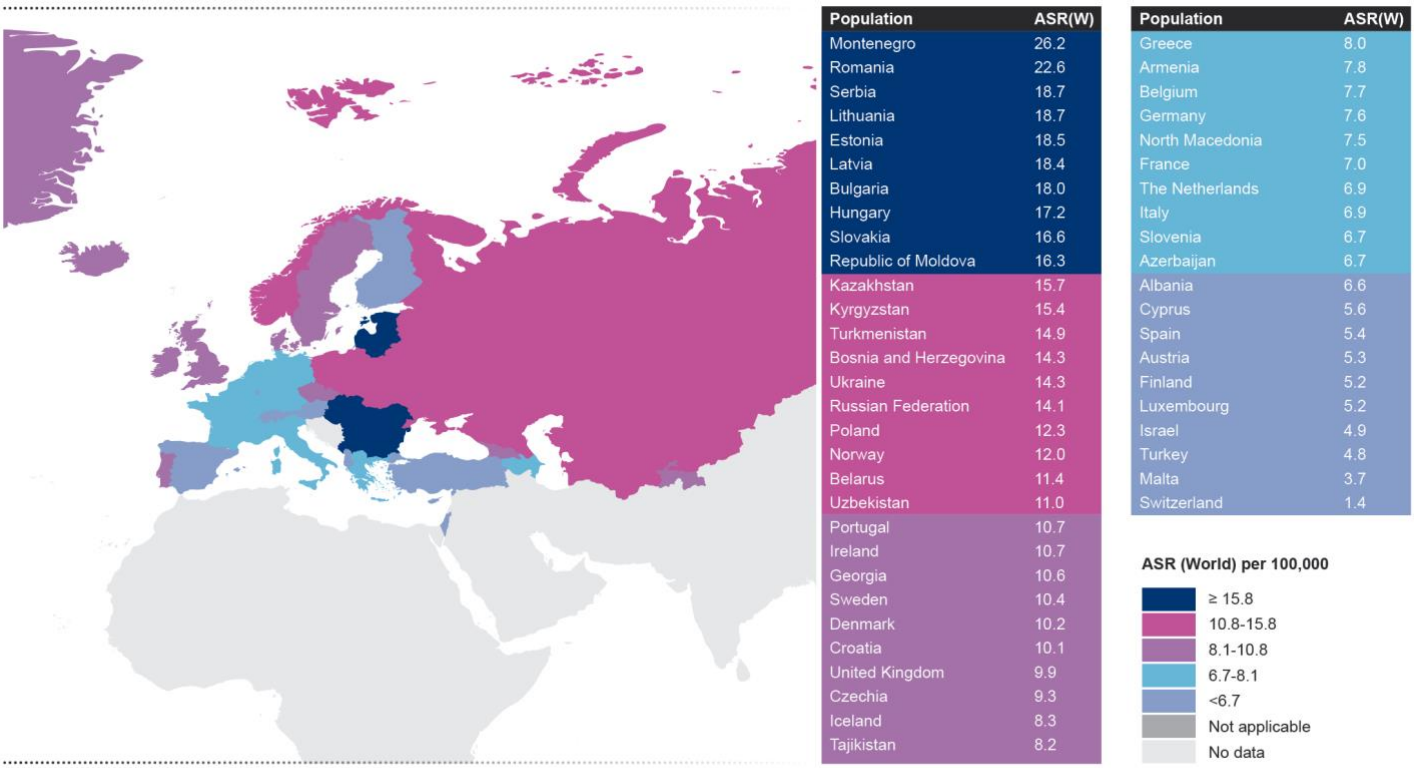
The HPV Coalition recognises that – outside of cervical cancer – the elimination of other HPV-related cancers is not well defined. The WHO's cervical cancer ambition considered established definitions of rare cancers, epidemiological data, and the results of an expert consultation in the development of the Initiative, to define the "elimination" of cervical cancer as a public health threat as reducing incidence rates below 4 per 100,000 women. Achieving this would require systems to reach the targets set for vaccination, screening and treatment by 2030, and maintaining these at high levels for decades. The WHO projects that this would avert 62 million cervical cancer deaths by 2120.[16]

For the purposes of this roadmap, we have focussed on key milestones and intermediate goals that would drive similar significant reductions in incidence and mortality equitably across all HPV-related cancers. While we recognise it may be difficult to directly correlate a pure-numbers elimination threshold across all HPV-related cancers, increasing HPV prevention will eventually eliminate HPV-related cancers **as a public health threat.**[17]

The challenge – where we are now

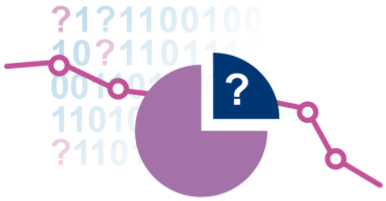
It is becoming increasingly clear that the UK's grip on its world leading status in HPV prevention has slipped following the pandemic. While all healthcare systems across the globe struggled to continue to deliver HPV prevention measures due to increased infection control measures, what is particularly notable about the UK is its slow recovery to pre-pandemic levels. Other countries have continued trending towards elimination – for example, Australia remains on target to become the first country in the world to eliminate cervical cancer[18] – while the UK has slipped back.

Figure 1 – Estimated age-standardised incidence rates in 2020, cervix uteri, all ages.



WHO European Region. Roadmap to accelerate the elimination of cervical cancer as a public health problem in the WHO European Region 2022-2030. 2022. Available at: https://apps.who.int/iris/bitstream/handle/10665/362396/72bg17e-Roadmap-CervicalCancer.pdf?sequence=1&isAllowed=y Accessed February 2023

Even prior to the pandemic, there was already significant work to do across the country to improve HPV prevention:



Inconsistency and underutilisation of data

Regional variation (in both screening and vaccination)

Inequalities in access to preventative measures

As will be reflected throughout the roadmap, it is vital that post-pandemic decline is reversed as soon as possible. While taking action to rebuild our HPV prevention model, we must grasp the opportunity to create refreshed services.

Building blocks

The overarching goal of this roadmap – and the HPV Coalition more broadly – is simple: ***Make the elimination of all HPV-related cancers a reality across the UK*.**

Achievement of this goal is to be measured against the following milestones:

- By 2030 – through implementation of recommendations across our six themes – we hope to see:
    - HPV vaccine coverage rates of 90%, in both girls and boys
    - Cervical screening coverage rates at a minimum of 70%, with specific focus paid to addressing health inequalities – with an ambition of going further and exceeding current national targets of 80% coverage
    - Tangible progress towards the availability of screening tools for non-cervical HPV-related cancers

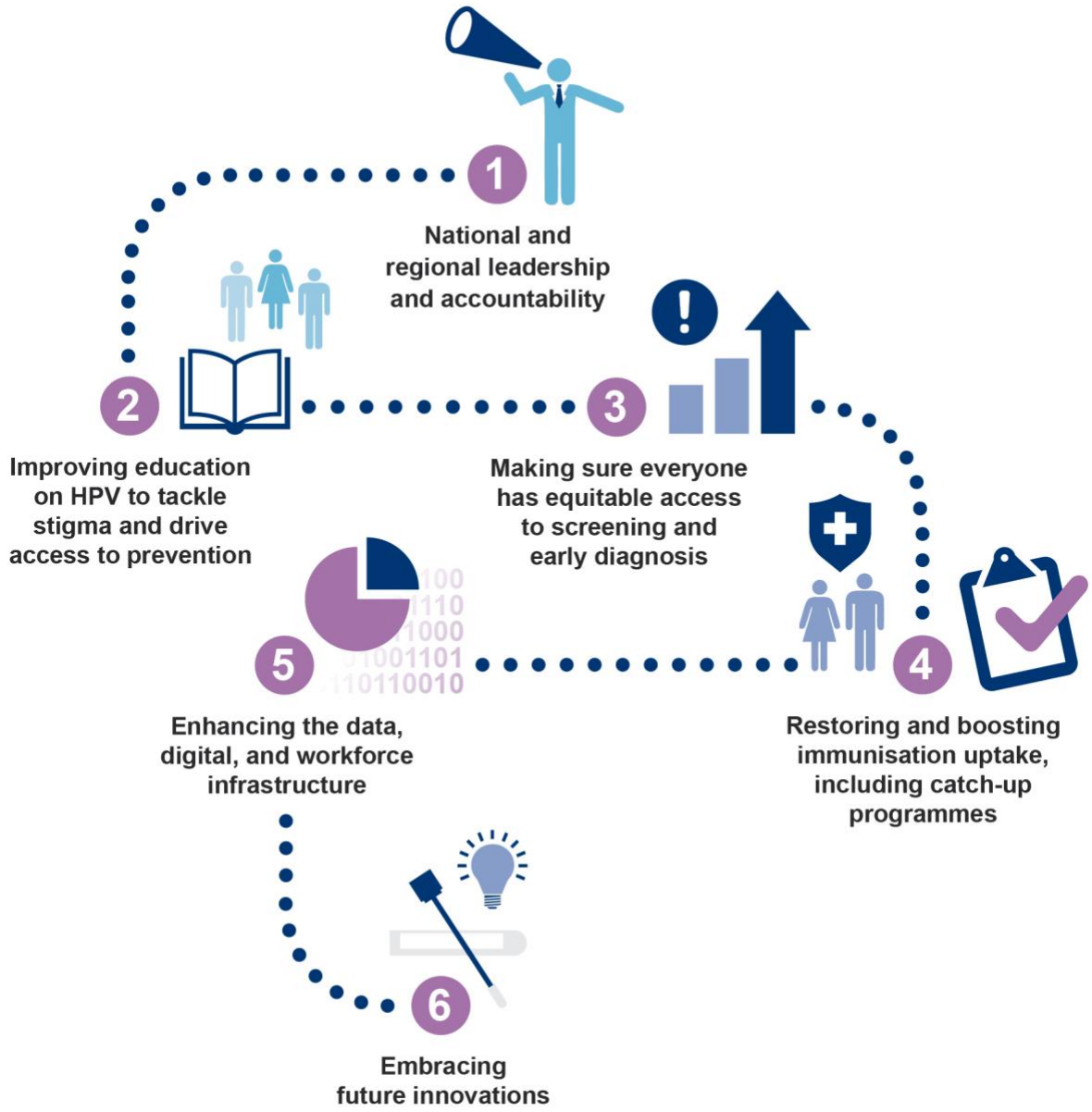
The biggest indicator of success is reduction of HPV-related cancer incidence and mortality as a result of this.

While these long-term milestones are important for securing reductions in HPV-related cancers and future elimination, we recognise that measures are needed now to protect teenagers and young adults in light of the challenges posed by our continued recovery from the pandemic. The HPV Coalition is therefore setting further intermediate goals to aid recovery and rapidly progress towards elimination:

1. **Urgent action to recover vaccination and screening to beyond pre-pandemic levels by the end of 2023/24**
2. **Government commitment to achieve the elimination of all HPV-related cancers – with cervical cancer as a first step – underpinned by a clear plan and leadership, by 2025**

In order to achieve elimination, we must ensure foundations are strengthened across the UK. This roadmap is therefore made up by a number of building blocks – set out in further detail throughout the document and underpinned by an overarching goal and the actions (immediate and long-term)

required to achieve it. These key building blocks have been developed in consultation with the Coalition's expert membership, and are:



A commitment to continued research – made by Government, academia and industry stakeholders – will be vital to ensure we progress along this roadmap, both now and in the future. While recommendations within each building block may not specifically reference research, an overarching commitment needs to be made to research across all of these topics. This will ensure that as the UK works to achieve elimination targets – and in the years following – people across the country continue to benefit from innovations in this space.

More often than not, opportunities to make these recommendations a reality already exist with the UK's prevention agenda, and beyond. This roadmap also looks to highlight the relevance of these opportunities.

National and regional leadership and accountability

The importance of leadership and accountability, at the national and local level, in the elimination of complex and multifaceted diseases cannot be overstated.

By 2025, national leadership must be in place to drive the elimination ambition, with local systems incentivised and held to account to deliver on national ambitions.

Why does it matter?

Consistency in approach, uniformity in delivery, and steadfastness in the face of challenges are all essential for the UK and its constituent countries to eliminate HPV-related cancers and can only be achieved through accountable leadership at each of these levels.

However, in spite of international examples of leadership towards elimination, the UK Government has yet to commit to achieving this goal or provide a pathway towards elimination. Furthermore, the Department for Health and Social Care (DHSC) recently commented that "*there is currently no intention to publish a plan"* for the elimination of cervical cancer in the UK,[19] indicating that further work is required to demonstrate the opportunity available and urgent need to develop such a plan to senior politicians and government stakeholders.

What needs to happen?

In order for a national plan for the elimination of HPV-related cancers to be effective, leadership is required at each level of government that holds responsibility for producing action plans and for the delivery of health programmes required to achieve elimination.

- **National leadership:** Under the leadership of the national elimination lead in each country, a framework for elimination must be developed, outlining the actions that local systems should be taking and providing incentives, tools and resources to support development of local plans

- **Devolved leadership**: In each of the four administrations, an elimination lead must be appointed to spearhead the development and delivery of action plans – with the four nations working closely together to drive equal progress across the UK – as well as ensuring momentum is maintained once key goals are achieved

- **Local leadership:** Local systems must appoint an accountable lead for elimination, working across the NHS, public health and voluntary sector organisations to deliver on the national plan for elimination. They must be accountable for local access to and uptake of HPV screening and HPV vaccination (including in-school programmes and catch-up programmes). In England, this could be taken up through Integrated Care Systems (ICSs), which provide an ideal vehicle for fostering collaboration between the different parts of the system involved in protecting populations from HPV-related cancer

Communication and collaboration between national, regional, and local governments will be essential to achieving elimination across the UK and to avoid deepening regional inequalities in access to HPV care. Routinely collected vaccine uptake and screening data should be monitored in tandem to facilitate accountability and identify areas for improvement or examples of best practice, and further investigation should be undertaken into the effectiveness of, and gaps present in, existing mechanisms for preventing the full spectrum of HPV-related cancers.

Improving education about HPV to tackle stigma and drive access to prevention

Evidence-based education and information is vital to tackling misinformation and stigma surrounding HPV, and empowering current and future generations to take up their offer of HPV immunisation and screening.

By 2025, educational initiatives should be in place to drive tangible progress in reducing stigma and confusion surrounding HPV in all parts of society, with a particular focus on more marginalised groups.

"I felt like it was my fault, that I had done something wrong, because I had HPV… It seems that relatively little has changed in regards to HPV - the level of knowledge, how it is viewed, and how it is spoken about."

Jess Phillips MP

Why does it matter?

As the HPV virus is transmitted through close skin-to-skin contact – most often during sex – HPV is subject to significant stigma and taboo. This can put people off attending services such as cervical screening and contributes to pervasive misunderstanding throughout society. A survey completed in 2019 found that while 70% of women would be scared to hear they have HPV and 40% would be worried about what people thought of them, only 15% realised it is a commonplace virus.[20]

Although 80% of us are likely to contract HPV at some point in our lives,[21] it continues to be mistakenly perceived as a largely female-specific virus, associated primarily with cervical cancer: this places a disproportionate burden of HPV control on women and risks reducing men's access to prevention.[22]

For some communities, cultural factors can further embed stigma surrounding HPV. For example, research has found that for some young Muslims, religious norms may drive fears around "promiscuity", contributing to parental disapproval of HPV immunisation and potential stigmatisation of those families who do consent to vaccination.[23]

What needs to happen?

Education and information about HPV must take a life-course approach, allowing everyone, of all ages, to easily access up-to-date and accurate information.

- **School years:** Taken together, relationships and sex education (RSE) and school-based immunisation services must shift the conversation around HPV, ensuring that teenagers – and their parents – do not see HPV merely as a sexually transmitted disease, but as a preventable infection, which directly causes cancer in both males and females. Education should also illustrate the value of both immunisation and screening as a dual approach to prevention. RSE curricula should draw on best practice materials already available – such as the EDUCATE resources for Year 8 pupils, developed by the University of Bristol and London School of Hygiene and Tropical Medicine and endorsed by the PSHE Association[24]

- **Adulthood:** Targeted awareness campaigns – driven by the NHS and public health bodies in each administration – should be commissioned to drive understanding around HPV in each part of society and across all genders. Crucially, awareness campaigns should aim to destigmatise and defeminise HPV, highlight the role in HPV across the range of HPV-related cancers, and illustrate the effectiveness of HPV immunisation and cervical screening. Information should be available in a range of formats and languages, for example through

dedicated areas on the NHS website, and through leaflets offered in physical health settings

- **Marginalised communities:** Sitting alongside universal awareness-raising, there should be a concerted effort to listen to marginalised groups, to understand the root cause of HPV stigma, and co-create solutions to address this. Any action taken will need to be underpinned by a focus on ensuring that information is developed and disseminated in a way that best reaches and meets the needs of different communities

Success will rely on teachers and healthcare professionals themselves being confident in their own knowledge around HPV and prepared to proactively deliver education to people of all ages. HPV should be fully integrated into training for RSE teachers and healthcare professionals and supplemented by additional materials such as online resources.

Making sure everyone has equitable access to screening and early diagnosis

Despite advancements in prevention, significant inequalities still exist in the cervical screening uptake and diagnosis of other HPV-related cancers in the UK, particularly in certain regions or among certain demographic groups.

By 2030, uptake of cervical screening across all countries of the UK, and amongst underrepresented and vulnerable groups, should be elevated to meet elimination targets.

Why does it matter?

- England, Wales and Scotland have all set screening target standards at 80%.[25,26,27] However, cervical screening rates have been steadily declining, and in England rates sit well below this target – the proportion of women not screened for cervical cancer is currently at a 10-year high.[28]

There is a clear need to hasten action to recover screening rates to reach, at a minimum, the WHO's 70% target for elimination before setting sights on achieving the 80% standard across all nations. Our ambition should not however stop at 80% - a number of countries in Europe are demonstrating that we can go further in protecting women from HPV-related disease,[29] and Canada has gone further still in its own elimination action plan:

Case study: Canada's screening target

In 2020, Canada set the goal to eliminate cervical cancer by 2040 (based on the WHO's definition of cervical cancer elimination). One of the key priorities of the action plan was focused on screening, which Canada have set the following targets for by 2030:

- 90% of eligible individuals have been screened with an HPV test
- 90% of eligible individuals are up to date with cervical screening
- No less than 80% of eligible individuals in any identifiable group are up to date with cervical screening

The country recognises that its goals are an ambitious step-up from the WHO's 70% target and that, if they are to be achieved, work must begin immediately and build on the success of the screening programmes already in place. [30]

Data further demonstrates that women from certain ethnic minority groups are less likely to attend cervical screenings. Additionally, women who live in the most deprived groups of the UK are less likely to attend cervical screening and are more likely to have high-risk HPV, with mortality rates at least double for these women compared to those living in the least deprived areas:[31] this has made cervical cancer a disease that adversely affects the poorest in society.

Case study: Innovative projects launched across England to improve sexual health outcomes

In the beginning of 2023, a series of projects were launched to raise awareness of sexual health risks and to offer services, including vaccinations, in non-clinical settings such as pubs and festivals, with the aim of reducing sexual health inequalities in the underserved LGBT+ communities. One project example is the Brunswick Centre in Kirklees, which will work in partnership with a local sexual health group to deliver three pop-up community-based clinics providing a range of services, including HPV vaccinations.[32]

Looking beyond cervical cancer, there are no national screening programmes in place for other HPV-related cancers, or for males generally, leaving a gap in the current potential for elimination. More research is needed into potential screening programmes for the non-cervical HPV-caused cancers, as currently available tests are yet to clearly establish benefits.[33] In the meantime, the best way of achieving early diagnosis is through building greater public awareness of symptoms and training for the medical workforce.

What needs to happen?

- **National and local data review:** There should be better collection of demographic data and regular review of national and local datasets to ensure sufficient identification of and communication with those individuals missing out on preventative measures; and to identify trends among certain groups, communities, and locations, which can help influence future communications and campaigns to increase uptake and adherence to preventative measures among certain demographics[34]

- **Research into inequalities:** Further research and analysis should be conducted into the drivers of the inequalities seen in screening uptake among certain groups, communities, and locations, so that effective strategies can be instated to close the inequality gaps

- **Training for the workforce on identifying other HPV-related cancers:** Given the absence of adequate screening for HPV-related cancers beyond cervical, detecting the early signs of these cancers is crucial. For example, it has been suggested that dentists and dental hygienists may have a potentially important role in the opportunistic detection of oral lesions

Restoring and boosting immunisation uptake, including catch-up programmes

Vaccination remains one of the most effective tools available to us in our journey towards elimination. If we are to achieve an end to all HPV-related cancers, it is crucial that all who are eligible are able to access this protection.

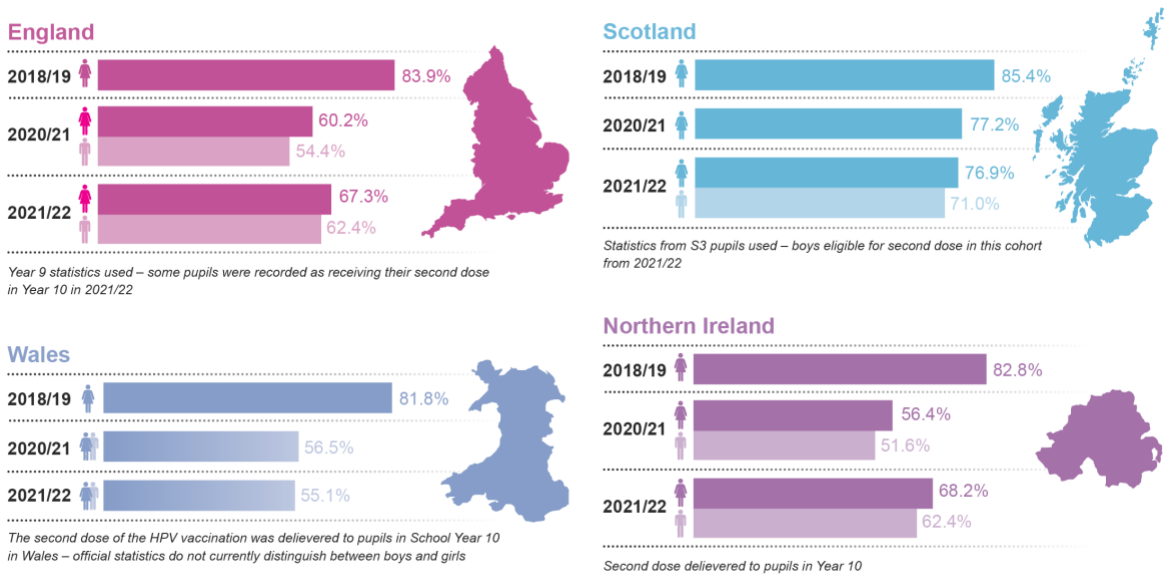
We therefore need to see:

- **By the end of the 2023/24 school year, vaccination levels have recovered to pre-pandemic levels, with parity between genders**
- **By 2030, uptake of the HPV vaccination across both boys and girls is improved to 90%**

Why does it matter?

The UK's gender-neutral approach to vaccination – providing the broadest possible protection to both boys and girls – has placed the UK as a global leader in the provision of HPV prevention. However, current uptake levels of the programme mean that progress towards elimination is at significant risk. Primary barriers towards the UK reaching elimination thresholds include post-pandemic recovery of vaccination uptake, and a number of inequalities inherent in the delivery of the HPV vaccine.

Data for the last undisrupted school year showed that in England 83.9% of girls received their full course of HPV vaccinations – which still represented a decline from high water marks in previous years. Although schools have long returned to the open rates expected prior to lockdowns,[35] HPV vaccine uptake is still declining.



Variation exists across the UK in regard to HPV vaccination coverage; for example, in 2021/2022, the East of England reported the lowest percentage of boys and girls receiving a full course of HPV vaccinations by Year 9, at 54.2% and 60% respectively.[36] Prior to the pandemic, young people were still missing out on vaccinations based on their postcode, gender or ethnicity:

- While 22 English local authorities equalled or bettered the WHO's 90% vaccination uptake target pre-pandemic, many others had further to go, with rates dipping into the 70, 60 and 50 percent ranges across the country[37]
- Uptake amongst boys has lagged behind girls since the introduction of gender-neutral vaccination (GNV) in the 2019/20 academic year: just before the outbreak of COVID-19
- Both NICE and the UK Government have recognised that children and young people from non-English speaking families are at an increased risk of not completing vaccination courses,[38] and research has previously shown that uptake is typically lower amongst girls from ethnic minority backgrounds[39]

Reversing these trends must be a priority, to ensure all eligible individuals are afforded protection against cervical and other HPV-related cancers, and to set the UK back on course to eliminate these diseases. There is no silver bullet to increasing HPV vaccination uptake – a range of interventions need to be considered to improve vaccine delivery across all nations.[40]

What needs to happen?

- **Pandemic recovery:** With the utmost urgency, stakeholders across the system must come together to address low levels of vaccination across all genders which have yet to recover from the pandemic, and in some cases are still falling. Missing out on vaccinations during adolescence could put children at increased risk for the rest of their lives: system partners must develop holistic plans to improve local immunisation uptake rates

- **Real time monitoring:** As it stands, vaccination data is not captured in a way which allows for immunisation teams to monitor uptake effectively. Joining up data sets – across primary care, School-Aged Immunisation Teams, immunisation information systems and screening programmes – and making them accessible across the system will allow real time monitoring to take place, meaning areas of low coverage can be targeted both in school settings and elsewhere in the system. In addition, utilising digital tools that help to secure parental consent and send immunisation day reminders can increase both parent awareness and vaccination attendance rates

- **Catch-up programmes:** It is vital that students who missed vaccinations during the pandemic are given ample opportunity to complete their course before the end of their eligibility. While it is helpful to see awareness activities being undertaken in further education settings,[41] specific provision should be put in place to ensure students who have left secondary education for university or who have entered the world of work are able to easily access opportunities for vaccination. Additionally, following the JCVI's decision to move from a two-dose to a one-dose HPV schedule starting in the 2022/23 academic year,[42] opportunities to redirect resource towards further catch-up programmes should be considered – Australia[43] and Austria[44] have expanded eligibility for the vaccine following a similar change. For example, this could include a review into extending the age limit for the male catch-up programme to align with that for females (only boys born after 1 September 2006 are currently eligible for a free catch-up vaccine until their 25th birthday, in contrast to 1 September 1991 for girls)

Enhancing data, digital and workforce infrastructure

Communication between health services and programme providers is key to ensuring a consolidated approach to elimination that minimises regional inequalities.

By 2030, clinical expertise and the opportunities of digital and data must be fully leveraged to drive the elimination ambition.

Why does it matter?

To reach the goal of elimination, the architecture of the surrounding health systems must be optimised to allow healthcare professionals from different care settings to effectively communicate, share data and learn from examples of best practice. Throughout the COVID-19 pandemic, the value of digitisation and online communication was realised as the NHS battled to reduce the spread of the infection across the UK. In response, the pandemic drove innovation in the use of digital technologies, like the NHS App, to disseminate and collect information that allowed the Government and NHS to more easily identify regions with higher rates of infection and therefore target resources towards them.[45,46]

Facilitating effective communication between HPV prevention services – including school-aged immunisation services, GP surgeries and screening services – is a key step to ensuring no one falls through the cracks. By improving data sharing between these services, areas of low uptake can be identified allowing regional and national teams to maximise the use of resources to improve uptake. This will also enable the facilitation of investigations into the impact of HPV vaccination on cervical screening uptake and the potential effectiveness of screening programmes for all HPV-related cancers beyond cervical, particularly in areas of high deprivation and with greater risk of contracting HPV.

In addition, a more holistic approach to encouraging uptake of the HPV vaccination and screening is required in order to engage with hesitant communities. A 'make every contact count'[47] approach utilising healthcare professionals in a wide range of primary care settings – including GPs, pharmacists, health visitors and trained volunteers – was a key pillar in the UK's fight against COVID-19, providing a critical case study for future cross-community prevention efforts.

What needs to happen?

- **Workforce:** Local and regional health systems must work to implement multi-disciplinary team working, utilising the wider primary care and public health workforce spectrum – including pharmacists and trained volunteers – to support catch-up programmes through a 'make every contact count' approach

- **Communication**: In England, the NHS must capitalise on opportunities created by integration to ensure a joined-up approach, between immunisation, screening, and other providers, ensuring that no one falls through the net across both vaccination and screening

- **Data and digitalisation:** Opportunities to improve the use of data and digital tools must be identified to support risk stratification and to link up vaccination and screening data where this is not already the case. Ongoing work to improve the functionality of the NHS should be utilised[48] to digitise and bring together vaccination records and screening appointment booking, building on learnings from the COVID-19 pandemic and, in England, commitments of the NHS Data Strategy[49]

Embracing future innovations

In the longer term, it is crucial that the UK's healthcare system, infrastructure, and mindset is open and primed to embrace future innovations in HPV-related cancer prevention and care.

As part of the UK's commitment to elimination, specific attention should be given to enabling the swift availability and uptake of innovations in the diagnosis, prevention, and treatment of HPV-related cancers.

Why does it matter?

In order for the UK to reduce HPV-related cancers as effectively as possible, there must be an openness and willingness to embrace future innovations. The healthcare system must be primed to deliver and incorporate these innovations, whether that be new preventative interventions, medicines, or service delivery mechanisms.

Too often, the NHS remains resistant to new innovation. In Northern Ireland, for example, the cervical screening programme still uses cytology – looking under a microscope for cell changes – as the first test on cervical screening samples, rather than the more accurate HPV primary screening.[50] While Northern Ireland has committed to move to this type of testing, implementation has been slow, falling behind the rest of the UK which introduced primary screening between 2018 and 2020.[51]

Nonetheless, there are countries that have advanced even further than the UK, and offer HPV self-sampling, such as Sweden and the Netherlands.[52,53] This method offers individuals the option to perform the test themselves at home, or in a healthcare setting.[54] Having such an alternative to the traditional healthcare provider-administered method may be more convenient for some people, with over one in four women, out of the 5 million invited for cervical screening every year in the UK, failing to attend their appointment.[55]

Case study: How the COVID-19 pandemic led to innovation in HPV self-sampling in Sweden

The COVID-19 pandemic, and the social distancing regulations and reduced screening appointments that followed, encouraged Sweden to rethink its approach to cervical screening; subsequently all eligible women in the country were sent HPV self-sampling kits. As a result, 333,000 kits were sent out in the Stockholm region, leading to a 10% increase from 75% to 85% in population test coverage in just one year. In July 2022, new Government regulation came into effect in Sweden allowing women to have a choice between self-sampling or sampling by a clinician.[56,57]

The UK's ability to embrace innovations such as vaginal HPV self-sampling, which has been shown to improve participation among women who seldom or never attend screening, will have a significant impact on success of prevention efforts – particularly for underserved groups – while reducing pressures on primary care.[58] Early research has also shown that urine based HPV self-sampling may have similar benefits.[59] It should of course be noted that increasing uptake will have an impact on laboratories, which will require capacity to process new tests. Implementation of digital & artificial intelligence technologies could assist in managing this impact, and there is a desire for such innovations within the system.

Healthcare system readiness also applies to the adoption of new scientific innovations in all areas of the diagnostic pathway. Examples include the utilisation of biomarker-based technologies for more accurate triaging of HPV-positive cases in cervical cancer screening and the development of technologies to aid in the diagnosis of other HPV-related cancers, such as head and neck.

What needs to be done?

- **Large-scale pilots for health system readiness:** To ensure assessment and integration of new innovations, such as HPV self-sampling, the UK must conduct and fund large-scale pilots to build evidence in the patient population and assess how the interventions will integrate into the HPV patient pathway and community-based delivery pathways. They must also ensure these pilots count towards national coverage statistics to fully assess the impact. These large-scale pilots – which could be developed out of local trials such as the recent self-sampling study run across London[60] – will subsequently help to efficiently and effectively roll out innovations, if and when they come to market

- **Research in HPV-related care**: Further research must be conducted into HPV-related care, to ensure continuous innovation within the field, including: HPV self-sampling, biomarker-based triage options, diagnosis of other HPV-related cancers and innovations that will address screening inequalities

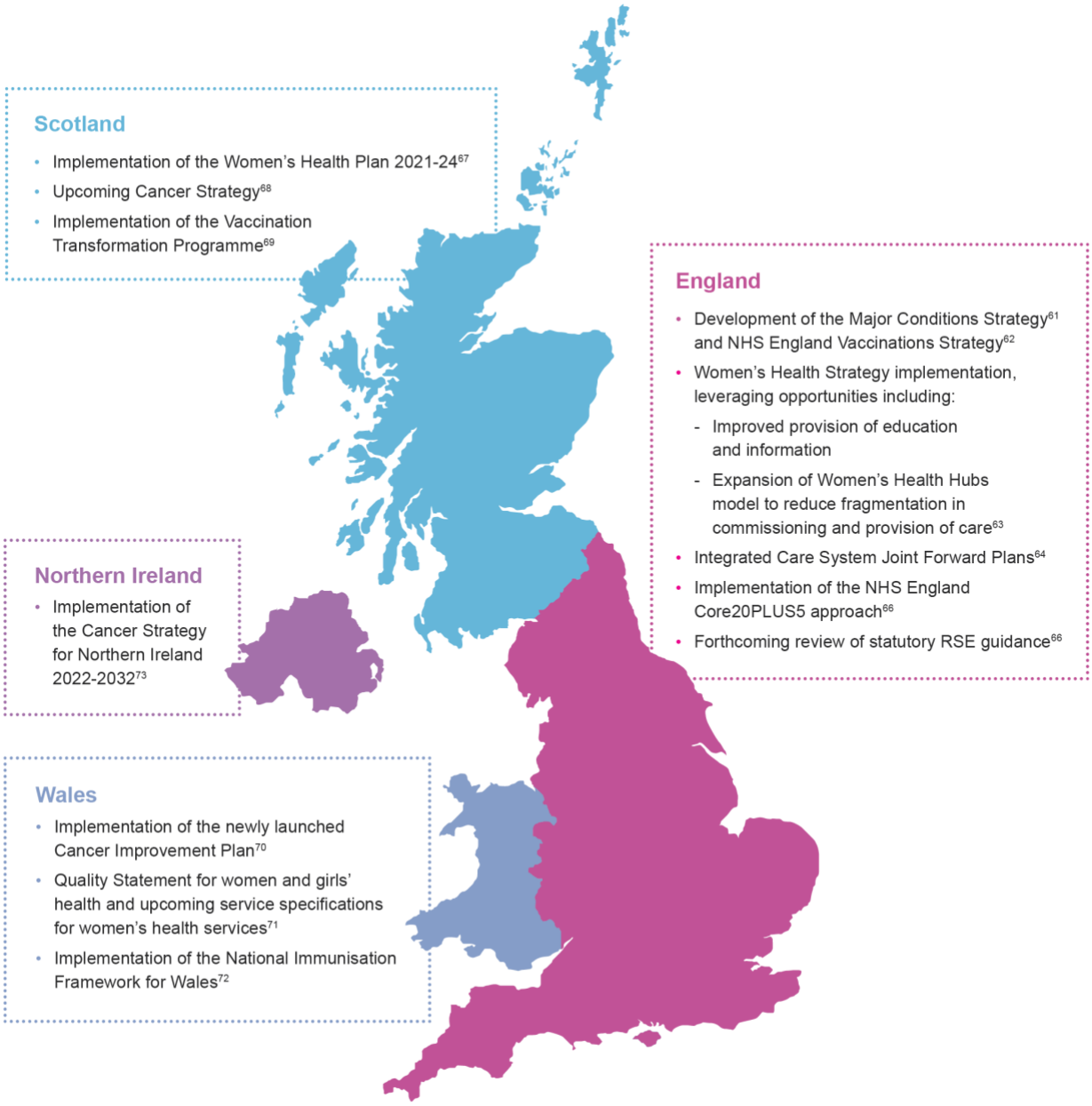
Enabling success: how can we translate this vision into reality?

The opportunity to make the elimination of all HPV-related cancers a reality is ours for the taking – something that policymakers have begun to recognise, but not yet leverage. It is critical that UK governments now take the next step on the journey towards HPV-related cancer elimination by setting out a concrete strategy for elimination of all-HPV related cancers, widening the scope of our ambition beyond cervical cancer elimination.

This strategy can draw on, and harness, a range of ongoing policy developments and levers: we don't need to start from scratch. What we do need is one cohesive plan that coalesces these currently disparate agendas around the shared goal of HPV-related cancer elimination, bringing together the many different parts of the system with a role to play. Without this, we risk leaving this unprecedented opportunity – the opportunity to help future generations avoid developing HPV-related cancer – tragically untapped.

> "The NHS vaccination programme will help to accelerate the control of cervical cancer in women and ***offers the potential for the elimination of HPV-caused cancers in the UK."***
>
> Women's Health Strategy for England

Across the nations, we have identified a range of policy enablers that can be harnessed to capture and progress the elimination ambition, now and in the future:



This must be underpinned by cross-UK collaboration and partnership to ensure a consistent approach, and that no nation is left behind.

We would encourage the four UK nations to convene a steering group to compare and share learnings on the journey to elimination, making recommendations so that communities across the UK have equitable access to preventative interventions, and that the workforce, digital, and data infrastructure is in place to drive, monitor, and report on progress.

Next steps

We cannot allow the opportunity of elimination to pass us by, and we have the tools available to us now to make significant progress towards making it a reality. This roadmap sets out the blueprint for now and in the future, and the HPV Coalition stands ready to support its implementation.

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