



NHS Grampian Grampian Vaccination and Immunisation Programme Annual Report 2023



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Abbreviations

CMO	Chief Medical Officer (for Scotland)
GBMSM	Gay, Bisexual and Men who have sex with Men
GREC	Grampian Regional Equality Council
HSCP	Health and Social Care Partnership
IJB	Integrated Joint Board
JCVI	Joint Committee on Vaccinations and Immunisation
MSM	Men who have Sex with Men
NHSG	NHS Grampian
PAG	Preliminary Assessment Group
PHS	Public Health Scotland
SIMD	Scottish Index of Multiple Deprivation
SIRS	Scottish Immunisation & Recall System
SLWG	Short Life Working Group
VMT	Vaccination Management Tool
VTP	Vaccination Transformation Programme
WHO	World Health Organisation

Vaccine and disease abbreviations

BCG	Bacillus Calmette-Guerin
FVCV	Influenza vaccine (Flu) and covid-19 Vaccine
Hib	Haemophilus influenzae type B
HPV	Human Papilloma Virus
IPD	Invasive pneumococcal disease
MenACWY	Meningococcal groups A,C,W and Y
MenC	Meningitis C
MMR	Measles, Mumps and Rubella
Mpox	Mpox (Previously Monkeypox)
PPV	Pneumococcal Polysaccharide Vaccine
Td	Tetanus and Diphtheria vaccine
IPV	Inactivated Polio Virus

1. EXECUTIVE SUMMARY

- 1.1. This is the first Annual Vaccination and Immunisation Report for NHS Grampian. The purpose of the report is to provide an annual monitoring report of vaccine preventable disease surveillance data, along with uptake data for each vaccine delivered within Grampian.
- 1.2. Immunisation provides protection against a range of infections across the life course, enabling our population to live longer, healthier lives, reducing inequalities, and releasing health service capacity. Vaccination can prevent or reduce the severity of disease, minimise disability and save lives, often in many of the most disadvantaged people in society. It offers excellent value for money by reducing current and future public expenditure on health and social care provision. The European Region of WHO recommend coverage of 95% in a population is required to control or eliminate disease.
- 1.3. The Vaccination Transformation Programme (VTP) was created because of the 2018 Scottish General Medical Services (GMS) Contract (4). Since 2022, NHS Grampian has been responsible for coordination of vaccination programmes with operational delivery being the responsibility of our three Health and Social Care Partnerships (HSCPs) in Aberdeen City, Aberdeenshire, and Moray. The programme delivers the pregnancy, pre-school, school age, adult routine, non-routine, seasonal and travel vaccinations to the population of Grampian.
- 1.4. The report discusses vaccination in the national and local context including; Vaccination Uptake; Equity in Grampian; Quality Improvement in vaccination and horizon scanning.
- 1.5. There have been declines in vaccination uptake across childhood vaccinations in both Grampian and Scotland. Uptake rates at 12 months of age were below the 95% target for rotavirus and meningitis B. Work is ongoing to identify challenges and areas for improvement from a Grampian and HSCP perspective to support increased uptake.
- 1.6. Uptake in teenage (school based) vaccination programme saw disruption during 2020 – 21 due to covid-19 pandemic which resulted in catch up programmes. Our Grampian uptake during 2021-22 is above Scotland average, however, remains below the WHO target of 95%.
- 1.7. The adult routine shingles programme was paused during the pandemic and was subsequently transferred to health board/HSCP delivery as part of the VTP. This resulted in a significant catch-up programme being delivered during 2022-23. The health and social care partnerships have made good progress to ensure all those eligible have been offered. In 2022/23 the coverage in Grampian for the 70 – 79 cohort was 69.5% which is a 15.5% increase from 21/22 position.
- 1.8. Young children, the elderly and people in a clinical risk group are most at risk of severe pneumococcal disease, and so all these groups are currently offered a pneumococcal immunisation. During 2022-23, 14,328 pneumococcal vaccines were administered to citizens turning 65 as well as those under 65 in an at-risk group.
- 1.9. Uptake of seasonal flu and covid-19 vaccinations in Winter 2022/23 was similar in Grampian to elsewhere in Scotland and highest in the oldest age groups. Uptake shows a socioeconomic gradient with highest uptake amongst least deprived.
- 1.10. Non routine vaccinations cover a range of situations where citizens require vaccination out with the usual population vaccination schedules. NHSG has processes by which services may refer a citizen for vaccinations that are required

out with normal vaccination schedules. There remain outstanding operational and clinical questions to be worked through and we are collaborating with specialist services on a local and national level to achieve clarity and strong clinical governance in this most flexible of programmes.

- 1.11. Travel risk assessments, advice, and vaccinations (if required) are provided to reduce the risk of transmission of diseases amongst patients travelling to countries where these diseases are still prevalent. The travel health service in Grampian has been delivered by community pharmacy since October 2021 and is available to all travellers who reside in Grampian and require advice and /or vaccinations for travelling to a destination considered at risk of tropical disease.
- 1.12. We are currently undertaking a Needs Assessment focussing on families with children under 6 years of age to identify concerns and practical barriers to accessing vaccinations for uptake of vaccinations and improve engagement, along with engaging with Grampian Regional Equality Council (GREC).
- 1.13. Priorities for improvement have been identified including Work with PHS and health intelligence to develop quality assured statistical reporting which will provide live data to allow us to better understand variance in programme and monitor these more effectively.
- 1.14. **Conclusion:** We are delivering the vaccination programme and continue to develop ways of working to promote a consistent approach across NHS Grampian in line with national and local policy, guidelines and priorities.

2. INTRODUCTION

- 2.1. This is the first Annual Vaccination and Immunisation Report for NHS Grampian. The purpose of the report is to provide an annual monitoring report of vaccine preventable disease surveillance data, along with uptake data for each vaccine delivered within Grampian.
- 2.2. The most recently published data has been used throughout the report. Variation in data release timings and reporting intervals mean that the period covered in this report varies by programme.
- 2.3. Within Grampian we continue to improve the delivery of all the vaccination programmes. This includes monitoring the proportion of our eligible population who are vaccinated. Within Scotland we have adopted the recommendations made by the World Health Organisation (WHO) that at least 95% of children should be immunised against vaccine preventable diseases on the routine schedule.
- 2.4. The routine childhood and adult schedules in the UK (appendix 1) are based on advice from the independent Joint Committee of Vaccination and Immunisation (JCVI) and provides protection against the following vaccine preventable infections:
 - Covid-19
 - Diphtheria
 - Haemophilus influenza type b (Hib)
 - Hepatitis B
 - Human Papilloma Virus (HPV)
 - Influenza
 - Measles
 - Meningococcal disease
 - Mumps
 - Pertussis (whooping cough)
 - Pneumococcal disease
 - Polio
 - Rotavirus
 - Rubella
 - Shingles
 - Tetanus
 - Tuberculosis
- 2.5. The Director for Public Health has the accountability and governance oversight for vaccination and immunisation at NHS Grampian Board Level and undertakes the role of executive lead.
- 2.6. The operational delivery of vaccination is through the 3 HSCPs with the Chief Officers being accountable to their respective Integrated Joint Boards (IJBs). The Vaccination Transformation Programme Board (VTPB) is chaired by the Director of Public Health with the 3 HSCP Chief Officers, Finance, Primary Care, Nursing, Pharmacy and property and asset colleagues as members. The Programme Board has oversight of the whole vaccination programme, oversees progress, and ensures the national agreed outcomes are delivered within Grampian, taking decisions on a Grampian wide basis on complex issues that are common to Grampian or issues which are escalated.

- 2.7. Reporting into the VTPB, the Grampian Vaccination and Immunisation Clinical and Care Governance Group meets monthly to be assured that all appropriate governance arrangements are in place, to identify actions where required and to provide support and advice and share learning across NHS Grampian. This group reviews quality of service delivery, complaints and feedback, adverse events along with the review of the vaccination programme risk register. This groups provides reports to the Vaccination programme board.

3. WHY VACCINATION IS IMPORTANT AS PART OF POPULATION HEALTH

- 3.1. The World Health Organisation (WHO) describes vaccines as one of the two public health interventions that have the greatest impact on the world's health, the other being clean water. It is also considered as one of the most impactful and cost-effective public health interventions available to communities and populations across the world. Vaccination can prevent or reduce the severity of disease, minimise disability and save lives, often in many of the most disadvantaged people in society. It offers excellent value for money by reducing current and future public expenditure on health and social care provision. The European Region of WHO recommend coverage of 95% in a population is required to control or eliminate disease.
- 3.2. Effective control of vaccine preventable disease requires action across the whole health and care system, and this aligns with the drive to improve outcomes and reduce inequalities. Vaccination has for the first time become included in the annual delivery plan process for health boards.
- 3.3. Surveillance data demonstrate low incidence rates of vaccine preventable disease during 2022 in Grampian. Many of the vaccine preventable diseases are also notifiable diseases because of their potential to cause harm to public health. The information in table 1 was taken from disease notifications to Public Health Protection Team in 2022.

Table 1: Notifiable organism/ disease controllable by vaccination in Grampian 2022

Notifiable Organism/Diseases controllable by vaccination in Grampian (2022)	
Infectious disease	Number reported
Bordetella pertussis (Whooping cough)	0
Mumps	<5
Rubella (German Measles)	0
Measles	0
Meningococcal disease	<5
Hepatitis B	48
Tuberculosis	20
Corynebacterium diphtheria (Diphtheria)	0
Hepatitis A	0

Source: HP Zone

- 3.4. Hepatitis B and Tuberculosis (TB) have numerically the highest number of notified cases. Tuberculosis vaccination is a targeted, risk-based programme, not a population-based vaccination programme. Grampian's rates are low regionally and internationally. Hepatitis B became a population-based programme in October 2017 as part of the childhood programme and we would predict these numbers to fall as the children grow to adulthood. More information on both programmes is given below.

4. National and Local Context - Immunisation Programmes

- 4.1. Immunisation policy in Scotland is set by the Scottish Government Health Directorate who take advice from the UK Joint Committee on Vaccinations and Immunisation (JCVI). JCVI provide advice on immunisations for the prevention of infections and/or disease following consideration of evidence on the burden of disease, vaccine safety and efficacy and on the impact and cost effectiveness of immunisation strategies (1). The UK immunisation schedule is continually reviewed and updated (2). *Immunisation against infectious disease* (commonly known as the *Green Book*) reflects the current policies and procedures as advised by the JCVI and provides essential guidance on vaccines and vaccination procedures for all vaccine preventable diseases that may occur in the UK (3).
- 4.2. The Vaccination Transformation Programme (VTP) was created as a result of the 2018 Scottish General Medical Services (GMS) Contract (4). The Contract aims to improve access for patients in General Practice (GP) with the expansion of multi-disciplinary teams to share the delivery of care and ease workload pressures.
- 4.3. Since 2022, NHS Grampian has been responsible for coordination of vaccination programmes with operational delivery being the responsibility of our three Health and Social Care Partnerships (HSCPs) in Aberdeen City, Aberdeenshire, and Moray. This has meant local changes in how members of the public access services. In Grampian, vaccinations are administered in a range of settings.
- 4.4. General Practice staff retain important roles in continuing to promote and advise on vaccinations; responding to vaccination status enquiries; and signposting and referring to Immunisation Teams in Health Boards for vaccine delivery.

5. VACCINE PREVENTABLE DISEASES

- 5.1. Data for vaccine preventable diseases are summarised at both a national and Grampian level where data is available.
- 5.2. The following section contains background information about the agents, diseases, and vaccinations for reference.
- 5.3. Graphs showing Scottish data aim to illustrate the effect of vaccination on vaccine preventable diseases

Covid-19

- 5.4. Covid-19 is an acute respiratory viral infection caused by SARS-Cov-2 and spread primarily through respiratory droplets and aerosol. The 2020 Covid-19 pandemic resulted in a significant increase in mortality both worldwide and in the United Kingdom, particularly in people aged over 75, and led to several lockdowns and accelerated vaccine development. Mortality has subsequently fallen, believed to be due to increased natural and vaccine-mediated immunity, but rapid emergence

of new strains has led to concerns regarding immune escape. Evidence shows that protection provided by both vaccination and previous natural infection wane as new strains become prevalent – this has led to several adaptations of vaccines by manufacturers.

- 5.5. Initial national programmes in the UK aimed to offer primary vaccination prioritised by risk category as capacity allowed. The lowest risk group, children aged 5 to 11 years, were offered vaccination by late 2021. Seasonal booster programmes are now only offered to certain populations including those aged over 65; clinically at-risk individuals; close contacts of immunocompromised individuals; residents of care homes, and frontline healthcare staff. There are currently five vaccinations against Covid-19 available in the UK, all of which target the S protein of the original SARS-Cov-2 strain. These vary in their mechanism of action using either mRNA, adenovirus vectors or recombinant S protein to induce immunity.

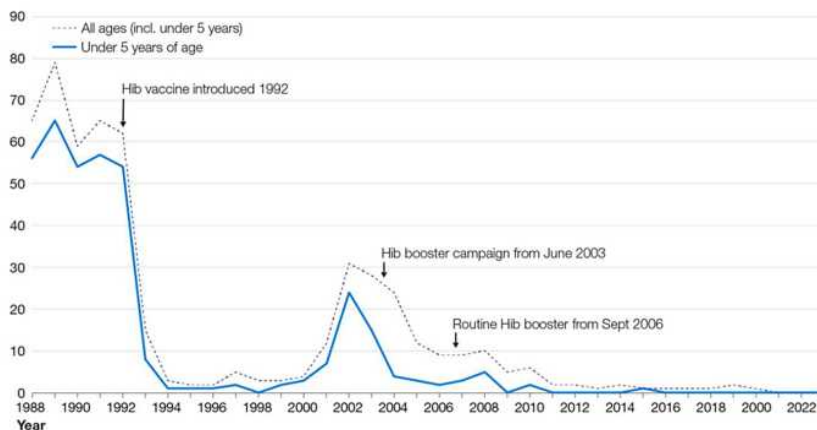
Diphtheria

- 5.6. Diphtheria is caused by *Corynebacterium diphtheriae* and closely related bacteria and classically presents with swollen neck glands and a pseudo membrane in the throat which obstructs the airways or sore throat or pharyngitis in immunised or partially immunised individuals. It is now rare in Scotland following the vaccination programme which began in 1941/2. In 1940 there were nearly 16,000 cases in Scotland with 675 deaths.

Haemophilus influenzae type b (Hib)

- 5.7. *Haemophilus influenzae* can cause serious invasive disease, especially in young children. There are six subtypes but prior to vaccination Type B was the dominant subtype. The usual presentation of invasive disease was meningitis with around 10% of children having long term complications of the disease. Cases from Hib have fallen dramatically since the introduction of vaccination. Protection is achieved from 4 doses given in multivalent preparations as part of the childhood programme.

Figure 1: Laboratory reports of invasive *Haemophilus influenzae* type b disease in Scotland, 1988 to 2023 (week 13) - Source: PHS



Hepatitis A

- 5.8. Hepatitis A is caused by the Hepatitis A virus and spread through the faecal-oral route. Hepatitis A infection tends to be mild and does not result in chronic infection or liver impairment, though can lead to significant morbidity or mortality in older people and those with hepatic co-morbidities. Given its faecal-oral spread, Hepatitis A is comparatively rare in high-income countries with adequate standards of sanitation and vaccination. At-risk categories include individuals travelling to Hepatitis A-endemic areas; patients with chronic liver disease; patients with haemophilia; men who have sex with men (MSM); people who inject drugs, and individuals with occupational exposure. Several Hepatitis A vaccinations are available – both monovalent and combined with Hepatitis B or Typhoid vaccinations – and these are given either IM or subcutaneously (in the case of haemophilic patients) in two or three doses.

Hepatitis B

- 5.9. Hepatitis B is caused by the Hepatitis B virus and spread through exposure to infected blood or bodily fluids. Hepatitis B causes an acute flu-like illness with jaundice and may sometimes lead to complete liver failure. While infection resolves in most patients following the acute illness, chronic infection persists in a proportion of cases. Risk of chronic infection is increased in young people and immunocompromised individuals, and chronic infection can lead to cirrhosis and hepatocellular carcinoma.
- 5.10. Hepatitis B vaccination is included in the routine childhood immunisation programme - 3 doses in 1st year (with extra doses at 4 weeks and 1 year to babies at risk) as well as selective pre- and post-exposure vaccination programmes for at-risk individuals. At risk categories include neonates with maternal Hepatitis B exposure; travellers to endemic countries; people who inject drugs; MSM; sex workers; close family contacts of individuals with chronic Hepatitis B infection; individuals living in custodial institutions or residential accommodation; individuals with certain renal or hepatic comorbidities, and those at risk of occupational exposure.

Table 2: Hepatitis B case in Grampian 2011-2020

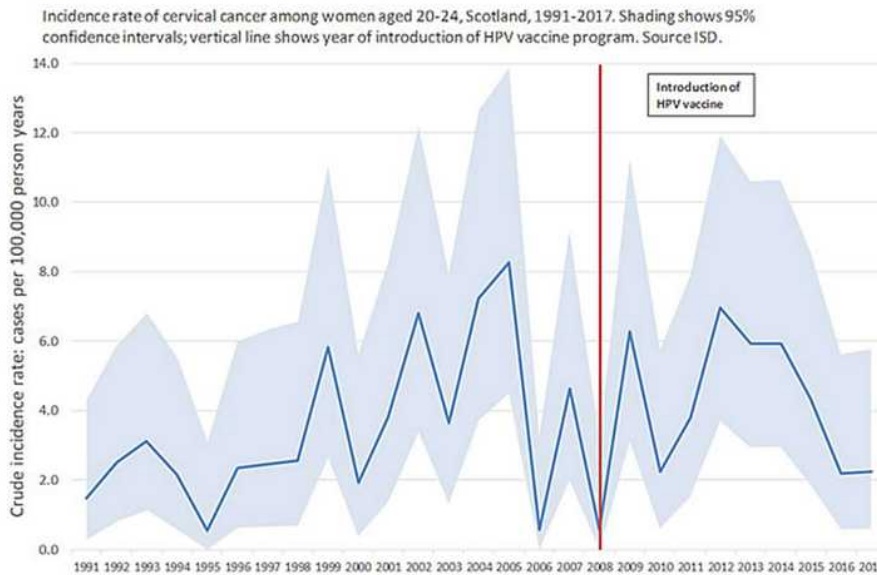
Hepatitis B cases (acute and chronic) in Grampian 2011-2020											
2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
75	49	58	59	50	39	22	39	29	14	23	48

Human Papilloma Virus (HPV)

- 5.11. Vaccination against HPV is part of WHO's global Cervical Cancer Elimination Initiative. There is a causal pathway from infection with particular HPV subtypes and development of squamous cell carcinomas of the cervix, anus, vulva, vagina, penis and head and neck cancers. By vaccinating young people and older people at higher risk, this pathway can be disrupted. From 1 August 2019, the HPV immunisation programme in Scotland became universal when males in first year of secondary school (S1) became eligible alongside females. The routine HPV schedule was a full course of two doses of vaccine given predominantly in schools. The second dose was given no sooner than six months and no later than two years after the first dose.

- 5.12. From 1 January 2023, following a review of evidence by JCVI showing one dose conferred similar levels of immunity to two doses, the HPV vaccine moved to a one-dose schedule for immunocompetent individuals before their 25th birthday. 2 doses are required for citizens aged 25 – 45 years in the MSM programme and 3 doses for immunosuppressed or known to be HIV positive.

Figure 2: Incidence rate amongst women aged 20-24, Scotland 1991 - 2017



Source: ISD Scotland

Influenza

- 5.13. Influenza is an acute viral respiratory infection caused by influenza A, B or C – symptoms include fever, myalgia, malaise, headache and coryzal symptoms. Influenza is normally self-limiting in otherwise healthy patients but can lead to significant morbidity in young children, older people, immunocompromised individuals, those with respiratory or cardiac co-morbidities and pregnant women. Influenza is highly seasonal, and a vaccination programme has been in place in the United Kingdom since the late 1960s. Periodic antigenic drift in the virus means that individuals frequently lose immunity between influenza seasons, necessitating at-risk individuals being re-vaccinated each year against likely dominant strains.

Measles

- 5.14. Measles is one of the most transmissible infectious diseases. It can lead to serious and potentially life-threatening complications even years after the original infection. Catching measles when pregnant can result in complications for baby. However, the MMR vaccine, which also provides protection against mumps and rubella, is highly effective - after two doses around 99% of people will be protected against measles. The number of notifiable cases within Grampian over the past ten years is detailed below:

Table 3: Measles cases in Grampian 2011 – 2020

Measles cases in Grampian 2011-2020

2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
<5	<5	<5	<5	0	0	0	<5	0	0	0	0

Figure 3: Number of laboratory-confirmed cases of measles in Scotland by year, 1988 to end of March 2023 – Source: PHS

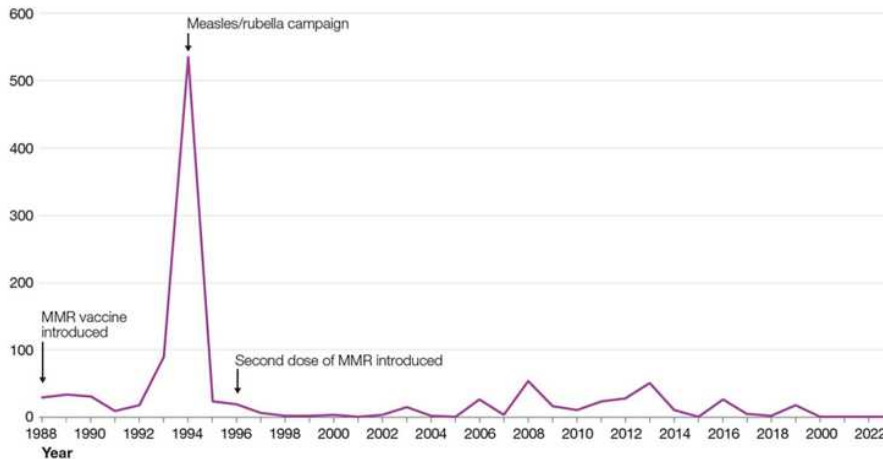
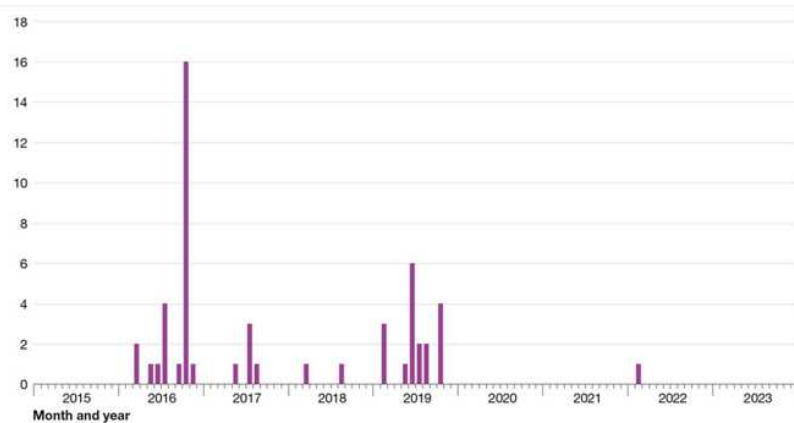


Figure 4: Number of laboratory-confirmed cases of measles in Scotland by month and year, 2015 to March 2023 – Source: PHS



Meningococcal disease (Men B)

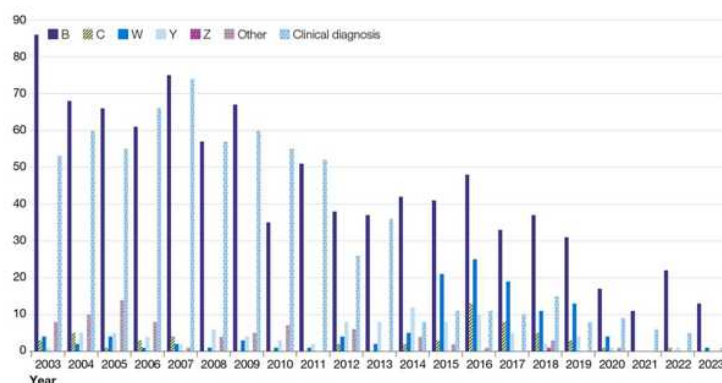
- 5.15. Men B vaccination is given as 3 doses in the first year of life with Men C also currently given at 1 year as part of the childhood programme. The Meningococcal groups A,C,W and Y (Men ACWY) vaccine protects against meningococcal disease caused by four groups of meningococcal bacteria A, C,W and Y. The Men ACWY vaccine is offered to all young people in S3 at school. Young people in S4 to S6 who missed the opportunity to be immunised the previous year are offered vaccination at subsequent visits.
- 5.16. Due to the success of the adolescent MenACWY vaccination programme in controlling meningococcal disease across the population, from 2025 a dose of meningococcal C containing vaccine will no longer be recommended at 12 months. (This would have been delivered via the Hib/MenC vaccination at this time.)

- 5.17. The number of notifiable cases of meningococcal disease in Grampian over the past ten years is detailed below:

Table 4: Meningococcal cases in Grampian 2011 – 2022

Meningococcal cases in Grampian 2011-2022											
2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
8	5	7	6	11	11	7	8	5	<5	0	<5

Figure 5: Meningococcal disease cases reported to MIDAS by serogroup, 2003 to 2022 (week 13) - Source: PHS



Mpox

- 5.18. Mpox (previously known as Monkeypox) is a rare viral infection usually associated with travel to West Africa and has only, until recently, rarely been reported out with this region. Mpox can be transmitted through close physical contact with a person who already has the infection or contact with their bedding, towels, etc. It does not spread easily in the general population. Mpox is usually a self-limiting illness, with most people making a complete recovery within a few weeks. The Mpox virus is similar to the smallpox virus and the smallpox vaccine gives effective protection against Mpox. The vaccine is given in two doses a minimum of 28 days apart.
- 5.19. The 2022–2023 Mpox outbreak represents the first incidence of widespread community transmission outside of Africa. This was initially identified in the United Kingdom in May 2022, with subsequent cases confirmed in 111 countries as of May 2023. During the recent outbreak, all those in NHS Grampian (NHSG) who were considered at high risk of Mpox were offered vaccination in line with national guidance via sexual health clinics.
- 5.20. There remains a level of clinical discretion when deciding to offer vaccination to those who are attending sexual health services for other sexual health care or treatments. Opportunistic Mpox vaccination are included as part of a holistic approach to care for those attending sexual health services. This may include those who are attending for other vaccinations given at sexual health services, such as the adult HPV vaccine. Efforts have been made to offer vaccination to those who are newly eligible through sexual health services. Eligible healthcare workers have been vaccinated through occupational health services.

Mumps

5.21. Mumps, caused by paramyxovirus, is spread by airborne or droplet transmission and classically causes bilateral parotid swelling, fever, and myalgia. In addition, mumps can cause a variety of significant complications such as meningitis, encephalitis, orchiditis, oophoritis and pancreatitis. These complications, if developed, may be associated with sensorineural hearing loss and subfertility. Vaccination against mumps in the United Kingdom commenced with the introduction of the MMR vaccine in 1988, leading to a significant decrease in the prevalence of mumps in the years following due to high levels of uptake. Subsequent decreases in uptake, as well as supply issues with the MMR in certain years, have led to increasing cases since the late 1990s.

Figure 6: Number of laboratory-confirmed cases of mumps in Scotland by year, 2000 to March 2023 – Source: PHS

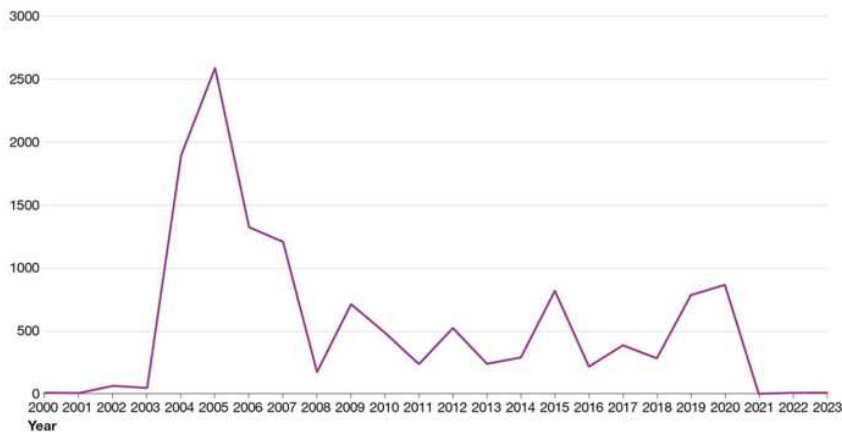
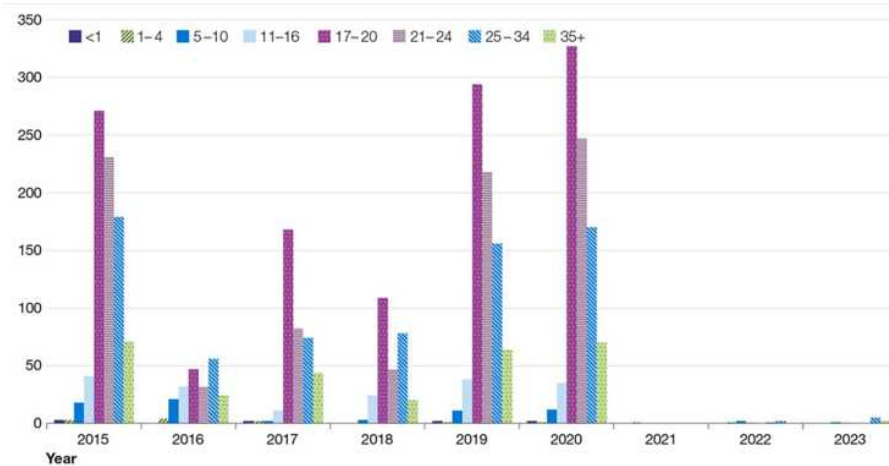


Figure 7: Number of laboratory-confirmed cases of mumps in Scotland by age group and year, 2015 to March 2023 – Source: PHS



Pertussis (Whooping cough)

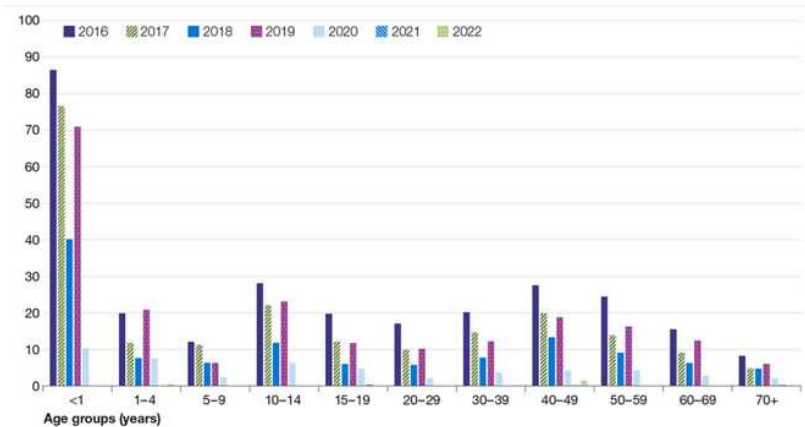
5.22. Pertussis, or whooping cough, is a highly infectious bacterial disease affecting the respiratory system. Infants and young children are particularly at risk of severe disease and/or death. The number of notifiable cases in Grampian over the past 10 years is detailed below:

Table 5: Pertussis cases in Grampian 2011- 22

Pertussis cases in Grampian 2011-2022											
2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
6	219	193	47	146	143	80	98	143	11	0	0

5.23. Protection against disease is conferred via vaccination, From October 2012 pregnant women in Scotland are offered a pertussis vaccine typically between 16- and 32-weeks' gestation. This is to protect infants in the first eight weeks of life who are too young to receive their routine immunisations.

Figure 8: Incidence of Bordetella pertussis per 100,000 population in Scotland by age group, 2016 to 2022 – Source: PHS



Pneumococcal disease

5.24. Pneumococcal disease can present as non-invasive or invasive infections caused by the bacterium *Streptococcus pneumoniae* (also called pneumococcus). Non-invasive disease includes middle ear infections (otitis media), sinusitis and bronchitis, whilst invasive pneumococcal disease (IPD) includes septicaemia, pneumonia, and meningitis.

5.25. Young children, the elderly and people in a clinical risk group are most at risk of severe pneumococcal disease, and so all these groups are currently offered a pneumococcal immunisation.

Polio

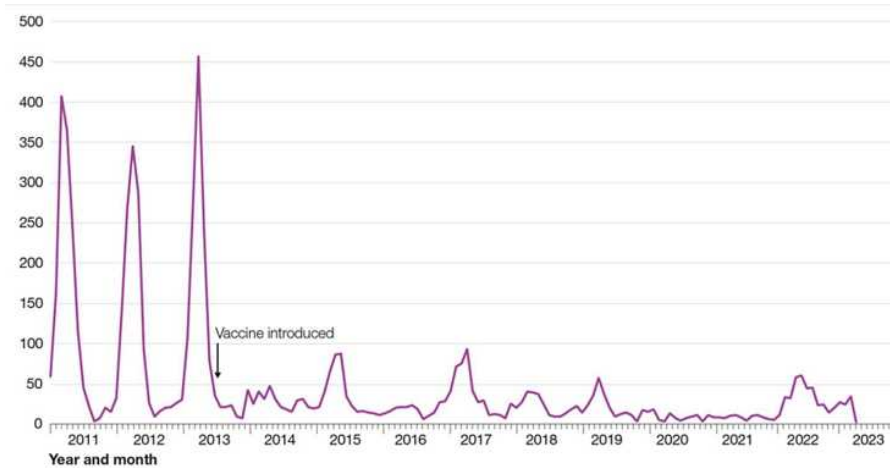
5.26. Poliomyelitis is now rare in the UK following national vaccination programmes. It is an acute illness caused by the poliovirus entering the body through the gut and giving rise to a range of symptoms from gastrointestinal disturbance, fever and paralysis. During UK epidemics in the 1950s up to 8000 notifications of paralytic polio were received in a year. 4 doses via the 6 in 1 vaccine are offered during the childhood programme, with a booster dose delivered at age 14 (S3).

Rotavirus

5.27. Rotavirus is an extremely infectious cause of gastroenteritis through both the faecal-oral and occasionally respiratory route and can require hospitalisation in severe cases due to dehydration. Incidence follows a seasonal pattern, with the majority of cases in winter and early spring, and most symptomatic cases are in

young children. A national infant rotavirus vaccination programme was commenced in Scotland in 2013, leading to a significant reduction in both overall cases and peak incidence in winter. Rotarix, the licensed vaccine for rotavirus, is given orally in two doses at 8 and 12 weeks.

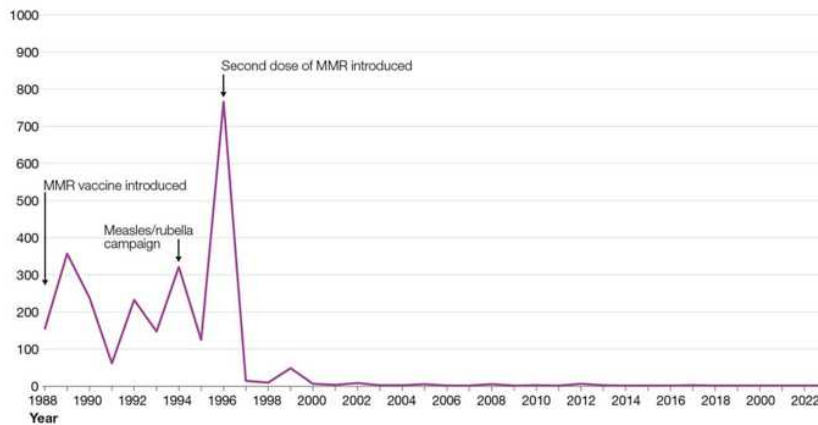
Figure 9: Laboratory reports of rotavirus in Scotland from 2011 to end of March 2023 – Source: PHS



Rubella

- 5.28. Rubella is a viral illness caused by togavirus and spread by droplet transmission. The symptoms of acute rubella infection tend to be mild and include fever, coryzal symptoms, malaise and rash – though it may be associated with more serious complications such as post-infectious encephalitis and thrombocytopenia. The primary concern regarding rubella is the potential for foetal loss and birth defects in cases of maternal infection in pregnancy. Up to 90% of infants exposed to rubella at 8 to 10 weeks' gestation will develop congenital rubella syndrome (CRS). As such, the primary aim of vaccination programmes is to reduce exposure of pregnant women to rubella. Targeted vaccination began in the UK in 1970, and universal vaccination began in 1988 with the introduction of MMR leading to significant decreases in rates of rubella. This is delivered during the childhood programme via the MMR vaccine.

Figure 10: Number of laboratory-confirmed cases of rubella in Scotland by year, 1988 to end of March 2023 – Source: PHS



Shingles

- 5.29. Shingles (Herpes zoster) is caused by the reactivation of a latent varicella zoster virus (VZV) infection, sometimes decades after initial infection. Shingles can occur at any age, with the highest incidence seen in older people. The severity of shingles generally increases with age and can lead to Post Herpetic Neuralgia (PHN) that may require hospitalisation.
- 5.30. The shingles vaccine programme for older adults was introduced in Scotland in September 2013 following recommendation by JCVI in 2009 and a Scottish policy. The JCVI recently recommended changes to the shingles programme and these will be implemented from 1st September 2023. The vaccine offered will switch from Zostavax to the non-live vaccine Shingrix requiring a 2-dose schedule. There will also be a change to eligibility so that individuals are protected from a younger age.
- 5.31. The eligible age for immunocompetent individuals will change from 70 to 60 years of age for the routine cohort in a phased implementation over a 10-year period. In addition, from 1st September 2023, eligibility will expand to all those who are severely immunosuppressed aged 50 years and over, with no upper age limit.

Tetanus

- 5.32. Tetanus is caused by the release of tetanus toxin during infection with the bacterium *Clostridium tetani*. It causes symptoms such as fever, muscle spasms, lockjaw, difficulty breathing and swallowing problems. Tetanus can never be eradicated as its bacterial spores are commonly present in the environment, including soil. This vaccine is given at 8, 12 and 16 weeks via the 6-1 vaccine and at 3 years 4 months via the 4-1 vaccine.

Tuberculosis

- 5.33. The BCG immunisation programme was introduced into the UK in 1953 to protect against Tuberculosis (TB), a serious bacterial disease which affects the lungs and other parts of the body including brain, bones, kidneys, and joints. The programme has undergone several changes in response to changing trends in TB epidemiology. Following a continued decline in TB incidence in the UK-born population, the universal school-based programme for adolescents was stopped in 2005. The BCG immunisation programme is now risk-based; the key part being a neonatal programme targeted at those children most at risk of exposure to TB, aiming to protect them from the more serious childhood forms of the disease.

Babies are offered the vaccine if they or their parents or others close to the baby have lived in an area with high levels of tuberculosis.

Figure 11: Number of tuberculosis cases and incidence per 100,000 population in Scotland, 2000–2021 – Source: PHS

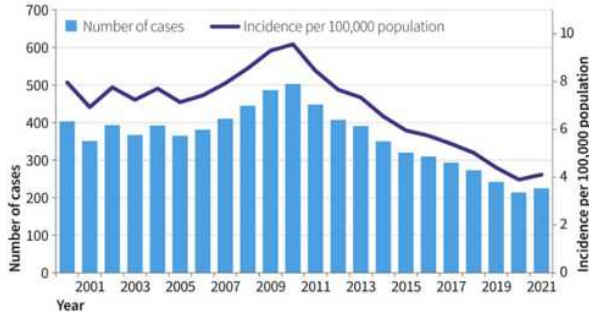
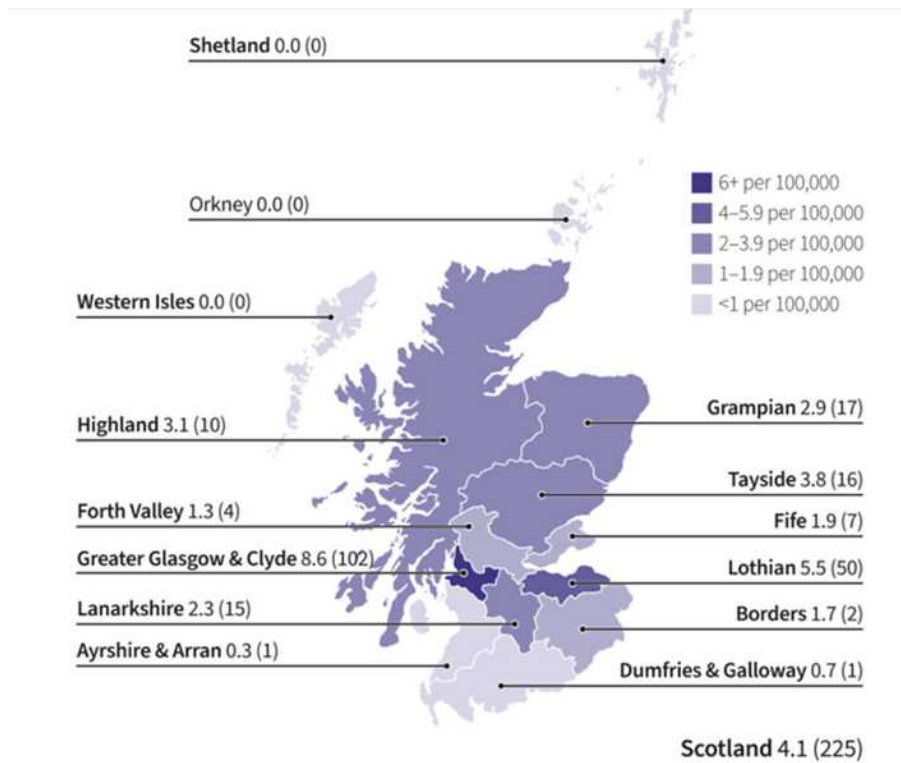


Figure 12: Tuberculosis incidence per 100,000 population and case numbers by NHS board, 2021 – Source: PHS



Typhoid

- 5.34. Typhoid fever is caused by *Salmonella enterica typhi* and is spread through the faecal-oral route. Typhoid fever varies significantly in severity from isolated gastrointestinal symptoms and fever to multi-organ failure and has a mortality rate of up to 20% if untreated. Given its faecal-oral spread, typhoid fever is comparatively rare in high-income countries with adequate standards of sanitation - the United Kingdom averaged 393 cases of typhoid fever a year between 2008 and 2017 and 93% of cases were determined to have been contracted abroad. As such, vaccination against typhoid fever is typically only carried out on individuals

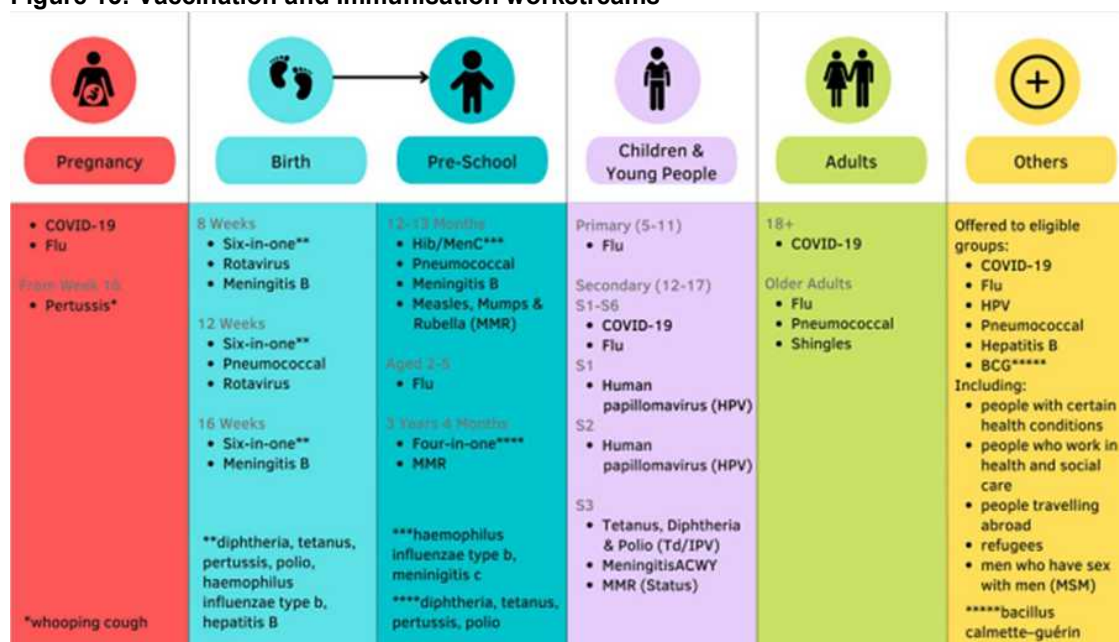
travelling to endemic areas. Increasing antibiotic resistance noted in typhoid-endemic countries increases the importance of vaccination of at-risk travellers. There are currently two typhoid vaccines licensed in the United Kingdom - a polysaccharide vaccine given in one oral dose, and a live attenuated vaccine given in three oral doses.

6. VACCINE UPTAKE

6.1. The Grampian Vaccination and Immunisation Programme is organised into the following work streams, largely mirroring the structure in figure 13 below. Uptake data within this annual report will be reported according to this structure.

- Pregnancy
- Pre-school children
- School age children
- Adults
- Non routine vaccinations

Figure 13: Vaccination and Immunisation workstreams



6.2. The summary of the reporting period covered in this report is as follows:

Cohort	Reporting Period
Pregnancy Routine	April 2022 – March 2023
Childhood Routine	April 2022 – March 2023
Teenage Routine	School year 2021 – 22 *22-23 will be published at end November 2023
Adult Routine	April 2022 – March 2023 September 2022 – August 2022
Flu and Covid-19	September 2022 – March 2023
Travel health	September 2022 – August 2023

Pregnancy

Pertussis

- 6.3. Prenatal pertussis vaccination uptake surveillance started in Scotland in 2014, however, a decision was taken to stop publishing this data in 2021 as data held nationally (taken from General Practice IT systems) was underestimating local figures.
- 6.4. Across Grampian the pertussis vaccine in pregnancy programme is delivered by the midwifery teams from 16 weeks' gestation. Midwives have an important role in promoting the vaccine, ensuring pregnant women are informed and administering the vaccine.
- 6.5. In 2022 – 23, coverage in Grampian from locally held data was 81.7%. The data is reported according to NHS Board of delivery and therefore excludes those who choose to receive their maternity care in other Board areas.

Flu and Covid-19 Programme

- 6.6. Pregnant women are eligible for both Flu and Covid-19 vaccinations however uptake is low. 802 (14.8%) covid-19 vaccinations were given in the year 22-23 and 986 (18.2%) Flu vaccinations.
- 6.7. During the summer of 2023, a study was undertaken in Grampian to help to understand vaccine hesitancy in pregnant women. This included a literature review and engagement with key stakeholders, comprising a survey to all health boards in Scotland and midwifery teams in NHS Grampian. Overall, this review highlighted the need for targeted engagement, tailored interventions, and clear communication to address barriers to vaccine acceptance among pregnant individuals. This ran concurrently with a short life working group (SLWG) to identify solutions to increase engagement and vaccine uptake with pregnant women in Grampian. A number of recommendations were identified, some of which have been implemented for the start of the winter vaccination programme, with the aim of increased vaccine uptake. This will be reviewed and appraised at the end of the programme to identify impact.

Childhood routine immunisations

- 6.8. Over the past 10 years, there has been a gradual decline in the uptake of childhood immunisations across the UK and globally. While Scotland's uptake has continued to perform well by comparison with the other UK nations, this trend is observed here too.
- 6.9. The reporting ages for childhood vaccine completion rates in the UK are 12 months, 24 months, and five years of age. The data presented is based on the published data from PHS and relates to year end to March 2023.
- 6.10. There are time lags between when a vaccination is first offered within the routine childhood schedule and when uptake is evaluated, for example MMR2 appointments are scheduled from 3 years 4 months but uptake is evaluated based on the cohort of children who reach 5 years. Therefore, uptake data in a particular reporting year reflect delivery practices over a longer period.

Vaccinations up to 12 months of age

- 6.11. The 95% target is met on a Grampian basis for all vaccinations up to 12 months of age except Rotavirus and Men B. The Rotavirus course requires two vaccinations

in a narrow time window (8 and 12 weeks) and must be completed before 24 weeks. The consequence of this schedule is if the first dose is missed or delayed for some reason it may not be possible to have the second dose within this time window.

- 6.12. Aberdeen City coverage is under the 95% threshold for all vaccinations. Investigation has shown that there has been an influx of new to area children with incomplete vaccination history, greater than in other parts of Grampian and Scotland as a whole.

Table 6: Completed primary immunisations by 12 months of age, 2022 – 23, Local Authority, NHS Grampian and Scotland. April '22 - March '23

	Number in	% completed primary course by 12 months								
		Cohort	6-in-1		PCV		Rotavirus ³		MenB	
			No.	%	No.	%	No.	%	No.	%
Aberdeen City	2,316	2,173	93.8	2,159	93.2	2,041	88.1	2,055	88.7	
Aberdeenshire	2,195	2,141	97.5	2,139	97.4	2,087	95.1	2,129	97.0	
Moray	872	842	96.6	840	96.3	823	94.4	839	96.2	
Grampian	5,494	5,257	95.7	5,240	95.4	5,050	91.9	5,124	93.3	
Scotland	49,583	47,376	95.5	47,328	95.5	45,919	92.6	46,716	94.2	

Source: SIRS 15th May 2023

Immunisations up to 24 months of age

- 6.13. The second year of life introduces the vaccines for Men C, Hib, Men B booster and MMR. In common with Scotland as a whole NHS Grampian achieves the 95% mark for 6 in 1 only.

Table 7. Completed primary immunisations by 24 months of age, 2022-23, Local Authority, NHS Grampian and Scotland April '22 - March '23

	Number in	% completed primary and booster course by 24 months										
		Cohort	6-in-1		MMR1		Hib/MenC		PCVB		MenB (Booster)	
			No.	%	No.	%	No.	%	No.	%	No.	%
Aberdeen City	2,209	2,112	95.6	1,982	89.7	1,953	88.4	1,895	85.8	1,922	87.0	
Aberdeenshire	2,137	2,100	98.3	2,068	96.8	2,061	96.4	2,050	95.9	2,053	96.1	
Moray	820	803	97.9	784	95.6	785	95.7	785	95.7	785	95.7	
Grampian	5,269	5,115	97.1	4,932	93.6	4,898	93.0	4,829	91.6	4,858	92.2	
Scotland	48,462	46,747	96.5	45,268	93.4	45,165	93.2	45,056	93.0	44,885	92.6	

Source: SIRS 15th May 2023

Immunisations up to five years of age

- 6.14. Grampian's uptake of vaccinations up to five years of age are all below 95% except for the 6 in 1 and are all below those seen for the Scotland average. There is

variation in uptake across the HSCPs which lead to quality improvement work discussed in later sections.

Table 8. Completed primary immunisations and boosters by 5 years of age, 2022-23, Local Authority, NHS Grampian and Scotland. April '22 - March '23

	Number in Cohort	% completed primary and booster course by 5 years									
		6-in-1*		MMR1		Hib/MenC		4-in-1		MMR2	
		No.	%	No.	%	No.	%	No.	%	No.	%
Aberdeen City	2,488	2,339	94.0	2,256	90.7	2,180	87.6	2,043	82.1	2,018	81.1
Aberdeenshire	2,711	2,655	97.9	2,624	96.8	2,615	96.5	2,553	94.2	2,531	93.4
Moray	886	855	96.5	843	95.1	842	95.0	810	91.4	798	90.1
Grampian	6,223	5,974	96.0	5,848	94.0	5,762	92.6	5,528	88.8	5,469	87.9
Scotland	55,071	53,156	96.5	52,455	95.2	52,130	94.7	50,029	90.8	49,701	90.2

Source: SIRS 15th May 2023

Immunisations up to six years of age

- 6.15. By the age of 6, first MMR, MMR2 and 4 in 1 remain lower than the Scottish average and below the 95% coverage mark and uptake is decreasing over time. This is of concern as MMR requires two doses for protection and 95% coverage for population protection. Measles is a particular concern because it is highly infectious, and the disease can have significant short- and long-term health complications.
- 6.16. At the time of writing in August 2023, the Chief Medical Officer has written to Health Boards to highlight the risks from Measles and NHS Grampian has responded with an updated action plan.

Table 9. 4 in 1, MMR and MMR2 vaccination uptake rates at 6 years of age, April 2022 – March 2023, NHS Grampian and Scotland. April '22 - March '23

	Number in Cohort	% completed primary and booster course by 6 years					
		MMR1		4-in-1		MMR2	
		No.	%	No.	%	No.	%
Aberdeen City	2,664	2,390	89.7	2,280	85.6	2,232	83.8
Aberdeenshire	2,680	2,558	95.4	2,511	93.7	2,500	93.3
Moray	991	952	96.1	929	93.7	924	93.2
Grampian	6,472	6,018	93.0	5,837	90.2	5,773	89.2
Scotland	56,759	53,799	94.8	52,476	92.5	52,118	91.8

Source: SIRS 15th May 2023

Uptake and Coverage of School-based Immunisation Programmes

Human Papilloma Virus (HPV)

- 6.17. Coverage is higher in girls than boys. This may be a legacy of the programme starting as a female only programme. Further work is needed to see how uptake in boys can be improved.
- 6.18. Coverage consistently improves with each school year showing the importance of offering vaccination at each opportunity.

- 6.19. A process has been developed to ensure any child who has left school without the opportunity to receive routine vaccinations is contacted with the offer of vaccination.

Table 10: HPV immunisation coverage rates of dose 1 by the end of the school year 2021/22 at S1 and S2 by local authority area, NHS Grampian and Scotland

	S1 Coverage Rate (%) Dose 1		S2 Coverage Rate (%) Dose 1	
	Female	Male	Female	Male
Aberdeen City	79	68	84.3	78
Aberdeenshire	85.6	78.6	91.6	89.4
Moray	87.1	72.4	87.4	86.8
Grampian	83.7	74	88.4	85.3
Scotland	77.5	69.6	86.4	80.9

Source: CHSP School/SIRS

Vaccination with Td, IPV and Men ACWY

- 6.20. Coverage shows that Grampian as a whole and HSCPs individually exceed the Scottish average for diphtheria, polio, and the ACWY meningococcal subtypes. Rates continue to improve in S4.
- 6.21. However, when coverage is analysed by Scottish Index of Multiple Deprivation (SIMD) there is a marked disparity between those in the most deprived and least deprived. Coverage among the least deprived is as much as 30% higher.
- 6.22. Updated figures for pupils will be published for school year 2022/23 in November 2023

Table 11: Td/IPV and MenACWY uptake rates by end of S3 and end of S4, Local Authority Area, NHS Grampian and Scotland. School year 2021 – 22.

	S3 Coverage Rate (%)		S4 Coverage Rate (%)	
	Td/IPV	MenACWY	Td/IPV	MenACWY
Aberdeen City	72.2	72.5	84.1	83.9
Aberdeenshire	79.9	79.9	89.8	89.3
Moray	77.6	77.8	82.0	82.2
Grampian	77	77.2	86.7	86.4
Scotland	71.6	71.7	74.9	73.8

Source: CHSP School/SIRS

Table 12: Td/IPV and MenACWY by NHS board of school and Scottish Index of Multiple Deprivation Quintile

Scottish Index of Multiple Deprivation quintile	S3 Coverage Rate (%)		S4 Coverage Rate (%)	
	Td/IPV	MenACWY	Td/IPV	MenACWY
1= Most deprived	55.6	55.3	67.7	67.7
2	65.3	65.5	77.1	76.5

3	74.3	74.6	86.5	85.8
4	80.6	80.6	88.6	88.6
5	85.0	85.2	93.2	92.9

Source: CHSP School/SIRS

Uptake and Coverage in Adult Immunisation Programmes Shingles

- 6.23. This programme was paused during the pandemic and was subsequently transferred to health board/HSCP delivery as part of the VTP. This resulted in a significant catch-up programme being delivered during 2022-23. The health and social care partnerships have made good progress to ensure all those eligible have been offered and this is evident in the progress in table 13.
- 6.24. In 2022/23, 13,600 shingles vaccines were administered covering routine (age 70 years) and catch-up (age 71 – 79 years) cohorts.
- 6.25. Uptake of adult vaccination programmes experience seasonal fluctuations as a result of the alignment in delivery models.
- 6.26. Planning has been ongoing, and we will move to the 2-dose shingles schedule offer to the eligible groups from start of 2024.

Table 13: Shingles Zostavax vaccination coverage amongst eligible routine and catch-up cohorts (70 – 79 years). Local Authority area and NHS Grampian. 1 September to 31 August

	70 – 79 years % coverage	
	2021 - 22	2022-23
Aberdeen City	52.3	68.4
Aberdeenshire	49.7	68.2
Moray	69.8	75.0
Grampian	53.9	69.5

Source: National Clinical Data Store/SEER

Pneumococcal

- 6.27. Young children, the elderly and people in a clinical risk group are most at risk of severe pneumococcal disease, and so all these groups are currently offered a pneumococcal immunisation.
- 6.28. During 2022-23, 14,328 pneumococcal vaccines were administered to citizens turning 65 as well as those in the 2 – 64 at risk cohort and good progress has been made to offer the vaccine to eligible groups.

Table 14: Pneumococcal vaccination coverage amongst aged 65+ and 2-64 at Risk cohorts 1 April 2022 – 31st March 2023

	% coverage	
	Aged 65+	2 – 64 at risk
Aberdeen City	56.6	22.3
Aberdeenshire	57.8	51.2
Moray	47.3	33.1
Grampian	55.5	36.9

Source: National Clinical Data Store/SEER

Uptake and Coverage in Seasonal Immunisation Programmes

Influenza

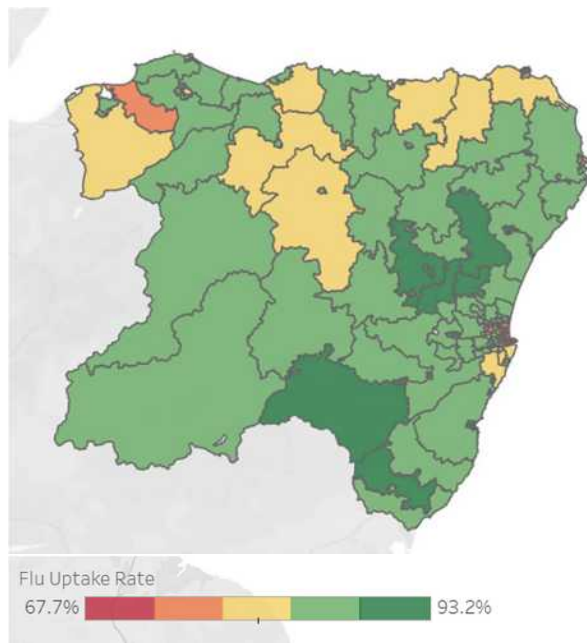
- 6.29. For the 2022/23 flu season adults aged 50 and over, health and social care workers and individuals at risk aged 18 years or over were eligible to receive the flu vaccine. The programme ran from the 5th of September 2022 until the 31st of March 2023. Citizens were invited to attend clinics with most vaccines being co-administered with the COVID-19 winter booster vaccine (89.9%).
- 6.30. Grampian outperforms the Scottish average for both flu and Covid-19 vaccinations.

Table 15: % Uptake Seasonal Flu Vaccine adults 2022/23

	18 – 64 at risk	50 - 64	65+
Grampian	57.7	57.2	85.8
Scotland	56.9	55.5	85.5

(Source: PHS FVCV Delivery and planning flash report)

Map 1: Cold spot map of influenza autumn winter '22 vaccination uptake for citizens aged 65 years and over



Covid-19

- 6.31. As with the seasonal flu vaccine the COVID-19 winter booster programme ran from the 5th of September 2022 to the 31st of March 2023. Eligible groups for the 2022/23 COVID-19 winter booster programme included adults aged 50 years or over, frontline health and social care workers, and at-risk individuals aged 5 years and over.
- 6.32. A total of 197,720 vaccines were administered during the programme, 73.7% uptake among the total eligible cohort, which is around 1% higher than the uptake reported for the rest of Scotland.

- 6.33. During the 2022/23 season overall the uptake rates in Grampian were higher than for the rest of Scotland for individuals aged 5 – 64 at risk, 50-64 years and those aged 65 and over.
- 6.34. Uptake is lower in areas which are most deprived. Uptake is also lower in some ethnic minority groups, specifically the Polish and African communities.

Table 16: % Uptake COVID-19 Booster Vaccine 2022-23

	5 – 64 at risk	50 - 64	65+
Grampian	64.2	67.8	91.2
Scotland	63.8	66.0	90.6

(Source: PHS FVCV Delivery and planning flash report)

Map 2: Cold spot map of covid-19 autumn winter '22 vaccination uptake for citizens aged 65 years and over

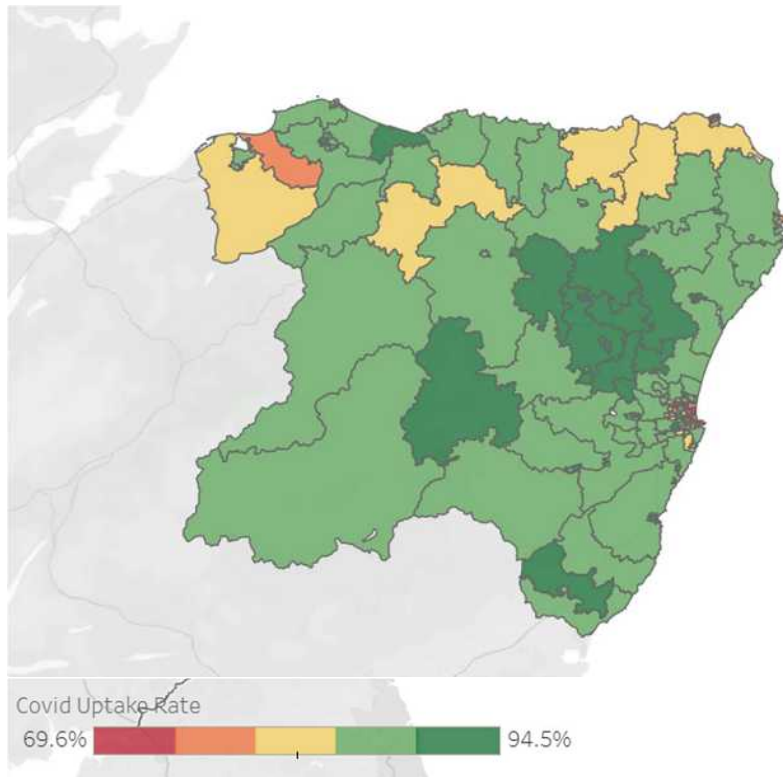


Table 17: Uptake of COVID-19 winter booster vaccine by SIMD decile for eligible groups 2022/23 programme

SIMD Decile (1 = Most Deprived - 10 = Least Deprived)	NHS Grampian
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	Number Uptake	Population	Percentage Uptake
1	1,465	2,718	53.9
2	6,088	10,121	60.2
3	10,195	15,628	65.2
4	15,214	22,292	68.2
5	17,129	24,249	70.6
6	23,974	32,848	73
7	29,054	38,402	75.7
8	33,678	44,547	75.6
9	29,476	38,457	76.6
10	31,296	38,962	80.3

Uptake and delivery of other selective and non- routine vaccines

- 6.35. Non routine vaccinations cover a range of situations where citizens require vaccination out with the usual population vaccination schedules. These include individuals recently treated for cancer or who have had a stem cell transplant and require their full course of vaccinations again; bat handlers or travellers who have been scratched or bitten by rabid animals; certain travel vaccinations etc.
- 6.36. With no national scheduling, call or recall system for non-routine vaccinations, Boards have been working to put in place processes which support the delivery of these vaccines. NHSG has processes by which services may refer a citizen for vaccinations that are required out with normal vaccination schedules. There remain outstanding operational and clinical questions to be worked through and we are collaborating with specialist services on a local and national level to achieve clarity and strong clinical governance in this most flexible of programmes. A local working group has been established to improve and further develop a system- wide approach to non-routine vaccinations in NHSG with the aim to protect the health of the local population and reduce inequalities.

Post Exposure treatment of infectious disease

- 6.37. Health protection investigations regularly identify persons who have been exposed to infectious disease. Post-exposure treatment with vaccines is recommended in some cases including Diphtheria, Hepatitis A and B, Measles, Meningococcus and Pertussis. Immunoglobulin may also be indicated for some infections. Health and Social Care Partnerships (HSCP) now arrange and administer vaccinations, with referrals made in line with the non-routine vaccine pathway. An updated national Post Exposure protocol is under development.

Babies born to mothers with Hepatitis B

- 6.38. Mothers are offered screening for Hepatitis B in pregnancy and their babies can be offered their first vaccination within 24 hours of birth.

- 6.39. During 2022 - 23, a total of 11 babies were born to mothers' resident in Grampian infected with Hepatitis B. Because of the small numbers involved the breakdown of this data is not given. However, babies were not receiving all their doses in a timely way.
- 6.40. To support improvement work in Grampian we reviewed processes implemented to improve offer and uptake. A Catch-up programme was undertaken and to date all those who have consented to vaccination have received the required doses. Ongoing audit and analysis of vaccinations is discussed at the Grampian Vaccination Programme Board.

Table 18. Hepatitis B screening status of all mothers delivering in Grampian during the period April 2022 – March 2023.

	Screening result: negative	Screening result: positive	No screening results	Total
Grampian	4,649	9	78	4,736

Total registerable births in NHS Grampian during this timeframe was 4,958

BCG for newborns at risk

- 6.41. In 2021, 643 babies in Grampian were identified as meeting the national selective criteria for requiring BCG vaccination. Of these 599 (93%) received the vaccine within the first 12 months of life.
- 6.42. The BCG uptake levels in at risk infants in Grampian exceeds the 2018 Scottish TB Framework Key Performance Indicator level (set at 85% uptake level) [3]

Table 19: Uptake levels of BCG for eligible infants. August '21 – September '22

Care Location of Birth	Total Babies (Live Births)	Parent or Grandparent Born in high prevalence area	At Risk Babies Offered BCG	At Risk Babies Given BCG	Total BCG Given
NHS Grampian 2021	5313	668 (12%)	550 (82%)	554 (100%)	554 (100%)
NHS Grampian Up to 30/09/2022)	3826	547 (14%)	476 (87%)	468 (85%)	468 (85%)
Total	9139	1215	1026	1022	1022

Source: Badgernet

Vaccinations delivered in Sexual Health Clinics

- 6.43. A small number of vaccinations are carried out in sexual health clinics as part of their specialist assessment and treatment.
- 6.44. Since the Mpox outbreak in 2022/23 NHS Grampian sexual health clinics vaccinated 487 individuals, with all those eligible having been offered an appointment to attend for 1st and 2nd doses. Opportunistic vaccination continues.
- 6.45. A further breakdown is detailed below in Table 20.

Table 20: Vaccinations delivered to GBMSM, Source: NaSH

Vaccine	Year	Number of patients
HPV	April 21-March 22	74
	April 22- March 23	46
Hep A	April 21-March 22	74
	April 22- March 23	46
Hep B	April 21-March 22	28
	April 22- March 23	28
Hep A&B	April 21-March 22	279
	April 22- March 23	239

Travel health

- 6.46. Travel risk assessments, advice, and vaccinations (if required) are provided to reduce the risk of transmission of diseases amongst patients travelling to countries where these diseases are still prevalent.
- 6.47. The travel health service in Grampian has been delivered by community pharmacy since October 2021 and is available to all travellers who reside in Grampian and require advice and /or vaccinations for travelling to a destination considered at risk of tropical disease.
- 6.48. The following travel vaccines are offered free as part of the NHS service: Hepatitis A, Typhoid, Cholera, and polio / diphtheria / tetanus.
- 6.49. In person travel health advice is supported by a digital offer. The Fit for Travel website is available to citizens and the Travax specialist website is available to health professionals.
- 6.50. Since July 2023, Travel risk assessments and vaccines are only offered to citizens residing in the Grampian health board area.

Table 21: Number of NHS travel vaccines administered by Local authority and Health board. September '22 - August '23

	Hepatitis A	Chlora	Typhoid	Polio, diphtheria/ Tetanus
Aberdeen City	867	21	867	774
Aberdeenshire	1018	102	1131	973
Moray	180	34	211	153
Grampian	2,065	157	2,209	1,900

Source: Seer vaccination dashboard

7. Equity in Grampian

- 7.1. “Health inequalities are the unjust and avoidable differences in people’s health across the population and between specific population groups. Health inequalities go against the principles of social justice because they are avoidable. They do not occur randomly or by chance. They are socially determined by circumstances largely beyond an individual’s control. These circumstances disadvantage people and limit their chance to live longer, healthier and fulfilled lives. The existence of health inequalities in Scotland means that the right of everyone to the highest attainable standard of physical and mental health is not being enjoyed equally across the population.”
- 7.2. The above statement is taken from the NHS Grampian Health Inequalities Action Plan. We know from the limited information we have that those suffering

socioeconomic deprivation and some ethnic groups are less likely to come forward for preventative healthcare. NHS Grampian Vaccination Programme is taking action to investigate and reduce health inequalities in vaccination for the Grampian population. As part of the overarching plan, we are working with colleagues in screening, academia, and community representatives to improve engagement and ultimately to increase uptake of preventative medicine offers within our underserved populations.

- 7.3. We are currently undertaking a Needs Assessment focussing on families with children under six years of age. Amongst other work to collate what engagement activities are ongoing, we are asking about families' concerns and beliefs about vaccination and the practical barriers to accessing vaccination. As part of this work, we are trying to reach ethnic communities through the support of HSCP and GREC (Grampian Regional Equality Council) to have their voices heard. This report will be completed for January 2024 and its insights will be used to improve services.
- 7.4. We are working with the University of Aberdeen on evidence collation and messaging around screening in the Polish community and this will give us insights that we can generalise to the vaccination programme. To support the delivery of programme we are also developing a vaccine inclusivity plan that will complement the screening inequality plan. This will provide a joined-up approach towards addressing inequalities in Grampian.

8. Quality improvement in Vaccination

- 8.1. Aberdeen City have an Improvement Action Plan. Progress against this plan was reported to their HSCP's IJB Clinical Care Governance Committee in their August update paper.
- 8.2. An updated Measles Elimination Plan for Grampian has been written in response to the CMO's letter.
- 8.3. We continue to work with boards across Scotland and national colleagues on non-routine vaccination and post exposure treatment pathways.
- 8.4. Issues are identified and discussed at the Vaccination and Immunisation Clinical and Care Governance Group. Staff participate in shared learning events across the programme at least 2 times per year, along with relevant short life working groups convened to develop improved processes.
- 8.5. Two PAGs (Preliminary Assessment Group) and a short life working group have been instigated in the 2022-23 timeframe to look at vaccination of newborns born to mothers with Hepatitis B, the decline of childhood vaccination uptake in Aberdeen City and vaccine uptake in pregnancy. A summary of the work undertaken by these groups is as follows:

8.4.1 Vaccination of newborns born to mothers with Hep B

Audit showed that babies were not completing their full course of vaccinations. The first vaccination is offered within 24 hours of birth and is usually given in hospital, whereas subsequent vaccinations require referral to the vaccination services. Training has been given to staff and processes improved to ensure this first vaccination takes place and onward referral happens. A catch-up plan was implemented for those babies who have missed their full course. Audits are ongoing to ensure processes are robust and remain under regular review.

8.4.2 Aberdeen City – Vaccination and Child Health Review

Annual and quarterly pre-school child vaccination uptake rates for Aberdeen City and NHS Grampian highlight that uptake remains below the 95% necessary to preserve

herd immunity. There is an ongoing downward trend in vaccine uptake over recent years. A need to ensure accurate, consistent reporting of pre-school vaccine uptake has also been recognised.

Our assessment group established that the decline in vaccination uptake identified for Grampian is clear, reflecting the wider decline in pre-school vaccination uptake across NHS Boards in Scotland. However, there are areas where the local vaccination process could be improved, and an action plan has been developed to address these. These include scheduling systems, reporting systems and completeness of data. Further information is available in appendix 2. Progress against these actions will be reported to the Programme Board and will be included in the Annual Report for 2024.

8.4.3 Short Life Working Group - Vaccine hesitancy in pregnant women

This work identified the need for targeted engagement, tailored interventions, and clear communication to address barriers to vaccine acceptance among pregnant individuals. Solutions to increase engagement and vaccine uptake with pregnant women in Grampian were identified and recommendations made. Some of which have been implemented for the start of the winter vaccination programme, with the aim of increasing vaccine uptake. This includes making it easier for pregnant women to access an appointment and sharing information with midwifery colleagues to ensure positive information sharing.

Priorities for improvement

- Work with PHS and health intelligence to develop quality assured statistical reporting which will provide live data to allow us to better understand variance in programme and monitor these more effectively.
- Ensure that we maintain and improve vaccination rates. We will do this by better understanding variance of programmes as well as attitudes and barriers to vaccination.
- Improve the availability and accessibility of up-to-date resources for all health professionals. This will include development of bespoke training resources for harder to reach groups to highlight the importance of vaccines.
- Contribute to the digital discovery work being led by NHS National Services Scotland to ensure that we have digital systems to support the delivery of all vaccination programmes.
- Work with a range of organisations to improve accessibility of vaccination programmes to those that need through targeted interventions.
- We will develop a Vaccination and Immunisation strategic framework for Grampian to provide governance and assurance around uptake rates and improvement required.

9. Planned changes and Horizon Scanning for Programme

9.1. The below table provide a summary of forthcoming planned and proposed schedule changes which will require teams to adapt delivery models.

Programme	Changes (proposed/approved)
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Childhood	<ul style="list-style-type: none"> • The JCVI advised that the following changes should come into effect nationally once the current supply of the Hib/MenC vaccine has been used: <ul style="list-style-type: none"> a. an additional dose of Hib-containing multivalent vaccine such as the 6in1 should be given at 18 months (to replace the Hib dose at 12-13 months). b. From 2025, JCVI are recommending the second dose of MMR vaccine be brought forward from 3 years 4 months to 18 months of age. The rationale for delivering the vaccine earlier is to complete the course at an earlier age and therefore further reduce the likelihood of measles outbreaks. c. Due to the success of the adolescent MenACWY programme in controlling meningococcal C disease across the population a dose of meningococcal C containing vaccine is no longer recommended at 12 months.
	<ul style="list-style-type: none"> • JCVI advises that a Respiratory Syncytial Virus (RSV) immunisation programme, that is cost effective, should be developed for both infants and older adults.
	<ul style="list-style-type: none"> • JCVI varicella subcommittee continue to assess chickenpox as a target for vaccination.
	<ul style="list-style-type: none"> • New child health system to replace Scottish Immunisation Recall systems has been brought forward to winter 2024.
School	<ul style="list-style-type: none"> • MMR review and catch up to take place from S1 rather than S3.
Adult	<ul style="list-style-type: none"> • 1 September 2023 change of vaccine in Shingles programme to Shingrix, and extended eligibility. If uptake remains the same or improves this will require at least a doubling of capacity within the same financial resources for an extended period of time.
Seasonal	<ul style="list-style-type: none"> • Poultry workers to be eligible for influenza vaccination in the Autumn winter programme for 2023/24 as a response to Avian Influenza.

10. Conclusions

- 10.1. This report has highlighted the findings from the surveillance data on vaccine preventable disease in Grampian, as well as vaccine uptakes across childhood, school age and adult programmes in Grampian. The data within the report demonstrates low incidence rates of most vaccine preventable diseases in Scotland and Grampian.
- 10.2. We continue to achieve good coverage in our vaccination programmes, however there is a growing concern in relation to a decline in childhood uptake trends.
- 10.3. We have an ambitious plan of quality improvement with a number of priorities being highlighted in section 8. We will conclude and evaluate work around inequalities and improving uptake and we will commence to develop a vaccination and immunisation strategic framework during 2024. This will provide a framework to ensure the monitoring of uptakes across all programmes and ensure that delivery models are accessible and can adapt to the needs of our populations within Grampian.

11. Acknowledgements

The NHS Grampian public health directorate would like to thank everyone who works so hard across the Grampian system to ensure that the population is protected against vaccine preventable diseases by working to ensure that we maintain a high vaccine coverage.

Feedback

As this is our first annual report, we would welcome feedback on the content of this report so that we can make improvements for future reporting. Please contact us directly with any feedback at: gram.vaccineenquiries@nhs.scot

12. References

1. Joint Committee on Vaccination and Immunisation Code of Practice, June 2013
2. Complete schedule (children & adults) available here:
<https://www.gov.uk/government/publications/the-complete-routine-immunisation-schedule>
3. Immunisation Against Infectious Disease, [Immunisation against infectious disease - GOV.UK \(www.gov.uk\)](https://www.gov.uk/government/publications/immunisation-against-infectious-disease)
4. [GMS contract: 2018 - gov.scot \(www.gov.scot\)](https://www.gov.scot/publications/gms-contract-2018-2020/pages/1-10-immunisation-schedule.aspx)

13. Appendix

- 13.1. Appendix 1: Routine childhood and adult immunisation schedule

The complete routine immunisation schedule

From September 2023

Age due	Diseases protected against	Vaccine given and trade name		Usual site ¹
Eight weeks old	Diphtheria, tetanus, pertussis (whooping cough), polio, <i>Haemophilus influenzae</i> type b (Hib) and hepatitis B	DTaP/IPV/Hib/HepB	Infanrix hexa or Vaxelis	Thigh
	Meningococcal group B (MenB)	MenB	Bexsero	Left thigh
	Rotavirus gastroenteritis	Rotavirus ²	Rotarix ²	By mouth
Twelve weeks old	Diphtheria, tetanus, pertussis, polio, Hib and hepatitis B	DTaP/IPV/Hib/HepB	Infanrix hexa or Vaxelis	Thigh
	Pneumococcal (13 serotypes)	Pneumococcal conjugate vaccine (PCV)	Prevenar 13	Thigh
	Rotavirus	Rotavirus ²	Rotarix ²	By mouth
Sixteen weeks old	Diphtheria, tetanus, pertussis, polio, Hib and hepatitis B	DTaP/IPV/Hib/HepB	Infanrix hexa or Vaxelis	Thigh
	MenB	MenB	Bexsero	Left thigh
One year old (on or after the child's first birthday)	Hib and MenC	Hib/MenC	Menitorix	Upper arm/thigh
	Pneumococcal	PCV booster	Prevenar 13	Upper arm/thigh
	Measles, mumps and rubella (German measles)	MMR	MMRvaxPro ³ or Priorix	Upper arm/thigh
	MenB	MenB booster	Bexsero	Left thigh
Eligible paediatric age groups ⁴	Influenza (each year from September)	Live attenuated influenza vaccine LAIV ^{1,6}	Fluenz Tetra ^{1,6}	Both nostrils
Three years four months old or soon after	Diphtheria, tetanus, pertussis and polio	dTaP/IPV	Boostrix-IPV	Upper arm
	Measles, mumps and rubella	MMR (check first dose given)	MMRvaxPro ³ or Priorix	Upper arm
Boys and girls aged twelve to thirteen years	Cancers and genital warts caused by specific human papillomavirus (HPV) types	HPV ⁵	Gardasil 9	Upper arm
Fourteen years old (school Year 9)	Tetanus, diphtheria and polio	Td/IPV (check MMR status)	Revaxis	Upper arm
	Meningococcal groups A, C, W and Y	MenACWY	Nimenrix	Upper arm
65 years old	Pneumococcal (23 serotypes)	Pneumococcal Polysaccharide Vaccine (PPV23)	Pneumovax 23	Upper arm
65 years of age and older	Influenza (each year from September)	Inactivated influenza vaccine	Multiple	Upper arm
65 from September 2023 ⁷	Shingles	Shingles vaccine	Shingrix	Upper arm
70 to 79 years of age (plus eligible age groups and severely immunosuppressed) ⁷	Shingles	Shingles vaccine	Zostavax ^{3,7} (or Shingrix if Zostavax contraindicated)	Upper arm

Source: [The complete routine immunisation schedule from September 2023 \(publishing.service.gov.uk\)](https://www.publishing.service.gov.uk)

Selective immunisation programmes			
Target group	Age and schedule	Disease	Vaccines required
Babies born to hepatitis B infected mothers	At birth, four weeks and 12 months old ^{1,2}	Hepatitis B	Hepatitis B (Engerix B/HBvaxPRO)
Infants in areas of the country with TB incidence $\geq 40/100,000$	Around 28 days old ⁴	Tuberculosis	BCG
Infants with a parent or grandparent born in a high incidence country ³	Around 28 days old ⁴	Tuberculosis	BCG
Children in a clinical risk group	From 6 months to 17 years of age	Influenza	LAIV or inactivated flu vaccine if contraindicated to LAIV or under 2 years of age
Pregnant women	At any stage of pregnancy during flu season	Influenza	Inactivated flu vaccine
	From 16 weeks gestation ⁵	Pertussis	dTaP/IPV (Boostrix-IPV)

Additional vaccines for individuals with underlying medical conditions		
Medical condition	Diseases protected against	Vaccines required ¹
Asplenia or splenic dysfunction (including due to sickle cell and coeliac disease)	Meningococcal groups A, B, C, W and Y Pneumococcal Influenza	MenACWY MenB PCV13 (up to 10 years of age) ² PPV23 (from 2 years of age) Annual flu vaccine
Cochlear implants	Pneumococcal	PCV13 (up to 10 years of age) ² PPV23 (from 2 years of age)
Chronic respiratory and heart conditions (such as severe asthma, chronic pulmonary disease, and heart failure)	Pneumococcal Influenza	PCV13 (up to 10 years of age) ² PPV23 (from 2 years of age) Annual flu vaccine
Chronic neurological conditions (such as Parkinson's or motor neurone disease, or learning disability)	Pneumococcal Influenza	PCV13 (up to 10 years of age) ² PPV23 (from 2 years of age) Annual flu vaccine
Diabetes	Pneumococcal Influenza	PCV13 (up to 10 years of age) ² PPV23 (from 2 years of age) Annual flu vaccine
Chronic kidney disease (CKD) (including haemodialysis)	Pneumococcal (stage 4 and 5 CKD) Influenza (stage 3, 4 and 5 CKD) Hepatitis B (stage 4 and 5 CKD)	PCV13 (up to 10 years of age) ² PPV23 (from 2 years of age) Annual flu vaccine Hepatitis B
Chronic liver conditions	Pneumococcal Influenza Hepatitis A Hepatitis B	PCV13 (up to 10 years of age) ² PPV23 (from 2 years of age) Annual flu vaccine Hepatitis A Hepatitis B
Haemophilia	Hepatitis A Hepatitis B	Hepatitis A Hepatitis B
Immunosuppression due to disease or treatment ⁴	Pneumococcal Shingles vaccine Influenza	PCV13 (up to 10 years of age) ^{2,3} PPV23 (from 2 years of age) Shingrix – over 50 years of age ⁵ Annual flu vaccine
Complement disorders (including those receiving complement inhibitor therapy)	Meningococcal groups A, B, C, W and Y Pneumococcal Influenza	MenACWY MenB PCV13 (up to 10 years of age) ² PPV23 (from 2 years of age) Annual flu vaccine

Appendix 2 – Outcome of Aberdeen City PAG

The SIRS Appointment System: The system is outdated and is inflexible in its approach to appointment calls and recalls. Appointments are allocated to one specific clinic location according to registered GP. Transfer to a more convenient location is not supported by the system. This creates capacity issues with some locations over capacity and others under used. The management of children not brought for vaccination is equally inflexible.

Consequently, local vaccination waiting lists are formed and the local child health team and health and social care partnerships continue to contact families/carers on the waiting list to locally manage reappointments to ensure vaccination. This is problematic when local child health teams need to function across HSCP boundaries where children are registered with GP practices out with the HSCP of residence. As a replacement system for SIRS is not expected to be operational before 2025, these issues will remain for the foreseeable future.

The SIRS Reporting System: Information cannot be extracted by postcode area which does not allow easy identification of low uptake areas by GP Practice / Postcode. Again, the Grampian vaccination team manually collate data by postcode area to understand any local variation to mitigate this issue through, for example, organising additional clinics.

Completeness of data: Data from PHS for the year ending 14th February 2023 was extracted from SIRS and has been analysed locally. As table below shows, during 2022 a total of 1,271 children aged 0-16 were recorded as “new to area” within Grampian and for whom there are no recorded vaccinations. The data do not tell us *when* the children newly arrived in Grampian, only that a child was coded as new to area at some point.

PHS report that this number of new to area children is an outlier compared with other NHS Boards. A child new to area but previously registered within SIRS will have its vaccination history recorded. Children from elsewhere in the UK or from outside the UK will not get an automatic transfer of vaccination history. Once registered with a GP, a child will be entered within the child health system (and therefore SIRS), but it is not automatic that vaccination history is captured. Once captured, it must be manually updated.

Within Aberdeen City, the local perception is that children new to area are a mix of those linked to international students attending Higher Education institutes, those arriving as part of asylum and resettlement arrangements, as well as families relocating to Grampian for work.

SIRS Data for Children New to Grampian with No Recorded Vaccinations for the year ending 14th February 2023

Age Group	Locality			
	Aberdeen City	Aberdeenshire	Moray	Grampian
Pre-school (0-4y)	177 (72%)	50 (20%)	20 (9%)	247
School (5-16y)	699 (68%)	239 (23%)	86 (8%)	1024
All ages (0-16y)	876 (69%)	289 (23%)	106 (8%)	1271

Completeness of data: The denominator figures used within SIRS to identify uptake rates does not exclude those children whose families that have notified the service they do not wish to take up the offer of vaccine. This is also a consideration in relation to the data for new to area children, as this may also contain children for whom there is no record of vaccination due to the child having been withdrawn from the vaccination programme by parents/guardians.

Quality assuring statistical reporting: Ensuring that there is consistency of reporting data relating to vaccination uptake is desirable, as a number of organisations across Grampian use pre-school vaccination uptake rates as part of their organisational reporting. This has led to circumstances where there are discrepancies in the uptake data reported. This can occur because of more recently reported data having become available or when data from national sources has been locally analysed.