NHS GREATER GLASGOW AND CLYDE

ANNUAL IMMUNISATION REPORT 2016/17

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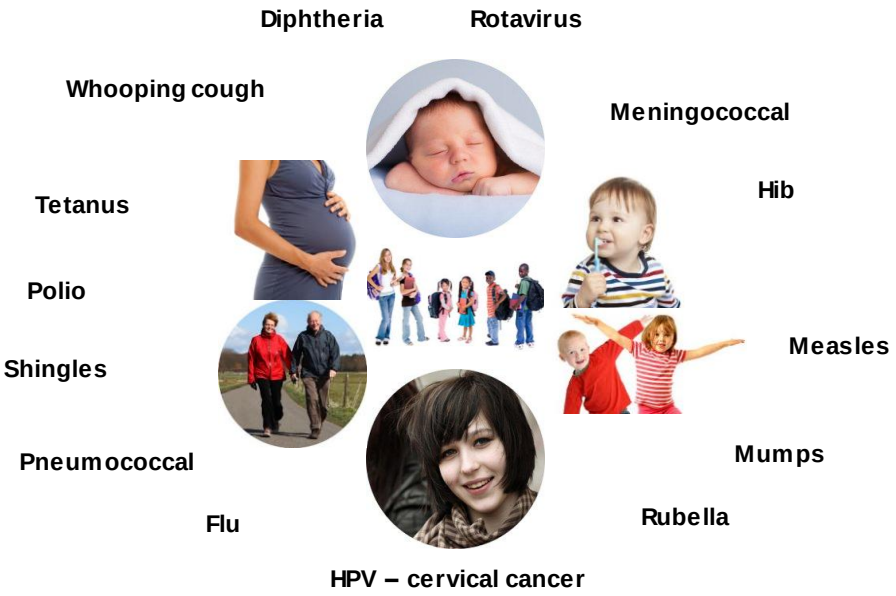
1. INTRODUCTION AND BACKGROUND

1.1 As a public health measure, vaccinations are very effective in reducing the burden of disease. The current UK vaccination schedule offers protection from 14 communicable diseases at different stages of life (see Figure 1 below).

Figure 1: Overview of communicable diseases covered by UK vaccination schedule



1.2 Vaccination policy in Scotland, in terms of recommendations/the introduction of new vaccination programmes and recommendations relating to existing vaccination programmes, is based on advice from the Joint Committee on Vaccination and Immunisation (JCVI), an independent Expert Committee of the UK Department of Health but advising all the UK administrations.

1.3 Vaccination policy has developed over a number of years, in response to recommendations on new vaccination programmes and in response to incidents and outbreaks. A number of key stakeholders (national and local) contribute to and help to facilitate the delivery of vaccination programmes across NHS Greater Glasgow and Clyde (NHSGGC) and Scotland as a whole.

1.4 Priorities and targets are communicated via professional guidance/Chief Medical Officer (CMO) letters to the NHS.

1.5 Approximately 375,000 people receive 625,000 doses of vaccine each year across NHSGGC in a number of settings including GP practices, primary and

secondary schools and clinics held in the community and hospitals. This is the largest co-ordinated public health programme in Scotland and the Health Board.

1.6 NHSGGC and Scotland have one of the highest uptake rates across vaccination programmes in the UK and Europe.

1.7 Information on national immunisation programmes, including the timetable of routine childhood immunisations, can be found on the Immunisation Scotland website.

2. ROUTINE CHILDHOOD IMMUNISATION PROGRAMME

2.1 The European Region of the World Health Organization (WHO) recommends that on a national basis at least 95% of children are immunised against diseases preventable by immunisation and targeted for elimination or control. These include diphtheria, tetanus, pertussis, polio, Haemophilus influenzae type b (Hib), measles, mumps and rubella (MMR).

2.2 In Scotland a target of 95% uptake of one dose of the MMR vaccine by five years of age (with a supplementary measure at 24 months) was introduced in 2006 to focus efforts on reducing the number of susceptible children entering primary school.

2.3 The routine childhood immunisation schedule has become increasingly complex over recent years with the extension of the childhood seasonal flu immunisation programme to include all two to five year olds (not in school), and addition of important vaccines including Rotavirus in 2013 and Meningitis B in 2015.

2.4 Pre-School Immunisations

2.4.1 In NHSGGC, pre-school immunisations (for babies and young children aged 0-5 years) have historically been delivered in GP premises through a mixed model; with variation in a number of elements including staff administering vaccinations, for example GP practice staff, health board employed staff or a combination of the two.

2.4.2 Immunisation uptake rates for pre-school aged children in 2016/17 for NHSGGC are shown in the following Tables 1 to 4.

Table 1

NHS Board of residence[1]	Number in Cohort[2]	% completed primary course by 12 months							
		DTP/Pol/Hib		MenC		PCV		Rotavirus[3]	
		No.	%	No.	%	No.	%	No.	%
NHS Ayrshire and Arran	3,633	3,561	98.0	3,570	98.3	3,560	98.0	3,456	95.1
NHS Borders	1,015	986	97.1	983	96.8	984	96.9	966	95.2
NHS Dumfries & Galloway	1,328	1,294	97.4	1,297	97.7	1,295	97.5	1,265	95.3
NHS Fife	3,798	3,658	96.3	3,675	96.8	3,650	96.1	3,570	94.0
NHS Forth Valley	3,037	2,953	97.2	2,953	97.2	2,949	97.1	2,875	94.7
NHS Grampian	6,379	6,087	95.4	6,032	94.6	6,081	95.3	5,757	90.2
NHS Greater Glasgow & Clyde	12,544	12,151	96.9	12,119	96.6	12,190	97.2	11,592	92.4
NHS Highland	2,943	2,793	94.9	2,804	95.3	2,796	95.0	2,670	90.7
NHS Lanarkshire	6,973	6,851	98.3	6,855	98.3	6,854	98.3	6,634	95.1
NHS Lothian	9,507	9,160	96.4	9,133	96.1	9,172	96.5	8,802	92.6
NHS Orkney[4]	196	181	92.3	180	91.8	182	92.9	169	86.2
NHS Shetland[4]	233	216	92.7	227	97.4	219	94.0	219	94.0
NHS Tayside	3,983	3,878	97.4	3,876	97.3	3,875	97.3	3,739	93.9
NHS Western Isles[4]	231	226	97.8	224	97.0	226	97.8	215	93.1
NHS Board unknown	15	..	..	..	..	..	..	..	..
Scotland	**55,815**	**54,010**	**96.8**	**53,943**	**96.6**	**54,048**	**96.8**	**51,942**	**93.1**

Source: SIRS
Date: 16th May 2017

1. NHS Boards based on the boundaries as at 1 April 2014. NHS Board of residence on the Scottish Immunisation & Recall System (SIRS) is recorded in the pre-April 2006 configuration of NHS Board boundaries. Data have been mapped to reflect the boundaries as at 1 April 2014

using the child's home postcode. There are a small number of records that do not have a postcode recorded and therefore the NHS Board is unknown.

2. Children reaching 12 months of age during the evaluation period 1 April 2016 to 31 March 2017 (i.e. born 1 April 2015 to 31 March 2016).

3. The administration of rotavirus vaccination is bound by strict age limits. Children require two doses of vaccine, given at least four weeks apart. The first dose should be given before 15 weeks of age and the second dose should be given before 24 weeks of age. These age limits mean that if a child is not vaccinated with the first dose early enough, due to missed appointments for example, then it may not be possible for them to complete the full two dose course before 24 weeks. This explains why uptake of the completed course of rotavirus vaccine is slightly lower than completed courses of the other vaccines offered in the first year of life.

4. Uptake rates for NHS Orkney, NHS Shetland and NHS Western Isles are prone to fluctuation due to the small number of children in these cohorts.

.. Not Applicable.

Key:

DTP/Pol/Hib: The 5-in-1 vaccine (3 doses) which protects against diphtheria, tetanus, pertussis, polio and Haemophilus influenza type B (Hib). For children who received primary immunisations outside the UK, where the vaccine may not be given as one injection, only those who received 3 doses of each vaccine (diphtheria, tetanus, pertussis, polio and Hib) are counted as completing the primary course.
MenC: Meningococcal serogroup C conjugate vaccine (1 dose)
PCV: Pneumococcal conjugate vaccine (2 doses)
Rotavirus: Rotavirus vaccine (2 doses under 24 weeks)

Table 2

NHS Board of residence[1]	Number in Cohort[2]	% completed primary and booster course by 24 months							
		DTP/Pol/Hib		MMR1		Hib/MenC		PCVB	
		No.	%	No.	%	No.	%	No.	%
NHS Ayrshire and Arran	3,718	3,677	98.9	3,590	96.6	3,618	97.3	3,610	97.1
NHS Borders	1,011	994	98.3	975	96.4	974	96.3	973	96.2
NHS Dumfries & Galloway	1,319	1,303	98.8	1,275	96.7	1,282	97.2	1,280	97.0
NHS Fife	3,924	3,831	97.6	3,684	93.9	3,689	94.0	3,677	93.7
NHS Forth Valley	3,178	3,089	97.2	3,015	94.9	3,016	94.9	3,018	95.0
NHS Grampian	6,126	5,974	97.5	5,758	94.0	5,747	93.8	5,716	93.3
NHS Greater Glasgow & Clyde	12,590	12,236	97.2	11,945	94.9	11,942	94.9	11,955	95.0
NHS Highland	3,164	3,077	97.3	2,969	93.8	2,979	94.2	2,970	93.9
NHS Lanarkshire	7,351	7,225	98.3	7,060	96.0	7,145	97.2	7,141	97.1
NHS Lothian	9,513	9,313	97.9	8,995	94.6	8,968	94.3	8,942	94.0
NHS Orkney[3]	187	176	94.1	169	90.4	169	90.4	170	90.9
NHS Shetland[3]	253	247	97.6	227	89.7	227	89.7	228	90.1
NHS Tayside	4,220	4,123	97.7	4,009	95.0	3,995	94.7	4,004	94.9
NHS Western Isles[3]	225	213	94.7	207	92.0	203	90.2	206	91.6
NHS Board unknown	17	..	..	..	..	..	..	..	..
Scotland	**56,796**	**55,494**	**97.7**	**53,893**	**94.9**	**53,969**	**95.0**	**53,905**	**94.9**

Source: SIRS
Date: 16th May 2017

1. NHS Boards based on the boundaries as at 1 April 2014. NHS Board of residence on the Scottish Immunisation & Recall System (SIRS) is recorded in the pre-April 2006 configuration of NHS Board boundaries. Data have been mapped to reflect the boundaries as at 1 April 2014

using the child's home postcode. There are a small number of records that do not have a postcode recorded and therefore the NHS Board is unknown.

2. Children reaching 24 months of age during the evaluation period 1 April 2016 to 31 March 2017 (i.e. born 1 April 2014 to 31 March 2015).

3. Uptake rates for NHS Orkney, NHS Shetland and NHS Western Isles are prone to fluctuation due to the small number of children in these cohorts.

.. Not Applicable.

Key:

DTP/Pol/Hib: The 5-in-1 vaccine (3 doses) which protects against diphtheria, tetanus, pertussis, polio and Haemophilus influenza type B (Hib). For children who received primary immunisations outside the UK, where the vaccine may not be given as one injection, only those who received 3 doses of each vaccine (diphtheria, tetanus, pertussis, polio and Hib) are counted as completing the primary course.
MMR1: Measles, mumps and rubella vaccine (1 dose over 12 months)
Hib/MenC: Hib/MenC Booster (1 dose over 12 months)
PCVB: Pneumococcal conjugate vaccine booster (1 dose over 12 months)

Table 3

NHS Board of residence[1]	Number in Cohort[2]	% completed primary and booster course by 5 years									
		DTP/Pol/Hib		MMR1		Hib/MenC		DTP/Pol		MMR2	
		No.	%	No.	%	No.	%	No.	%	No.	%
NHS Ayrshire and Arran	3,971	3,913	98.5	3,883	97.8	3,882	97.8	3,717	93.6	3,706	93.3
NHS Borders	1,167	1,143	97.9	1,137	97.4	1,137	97.4	1,104	94.6	1,104	94.6
NHS Dumfries & Galloway	1,490	1,473	98.9	1,456	97.7	1,456	97.7	1,447	97.1	1,439	96.6
NHS Fife	4,251	4,172	98.1	4,119	96.9	4,101	96.5	3,907	91.9	3,879	91.2
NHS Forth Valley	3,453	3,397	98.4	3,353	97.1	3,348	97.0	3,255	94.3	3,239	93.8
NHS Grampian	6,485	6,336	97.7	6,247	96.3	6,007	92.6	6,076	93.7	6,038	93.1
NHS Greater Glasgow & Clyde	13,050	12,695	97.3	12,582	96.4	12,438	95.3	12,119	92.9	12,062	92.4
NHS Highland	3,312	3,243	97.9	3,195	96.5	3,176	95.9	3,073	92.8	3,051	92.1
NHS Lanarkshire	7,726	7,613	98.5	7,546	97.7	7,536	97.5	7,410	95.9	7,345	95.1
NHS Lothian	9,738	9,537	97.9	9,436	96.9	9,384	96.4	8,934	91.7	8,887	91.3
NHS Orkney[3]	226	218	96.5	205	90.7	204	90.3	201	88.9	194	85.8
NHS Shetland[3]	259	253	97.7	250	96.5	248	95.8	226	87.3	223	86.1
NHS Tayside	4,513	4,441	98.4	4,369	96.8	4,363	96.7	4,257	94.3	4,229	93.7
NHS Western Isles[3]	258	256	99.2	250	96.9	249	96.5	239	92.6	237	91.9
NHS Board unknown	23	..	..	..	..	..	..	..	..	..	..
Scotland	**59,922**	**58,712**	**98.0**	**58,050**	**96.9**	**57,551**	**96.0**	**55,987**	**93.4**	**55,655**	**92.9**

Source: SIRS
Date: 16th May 2017

1. NHS Boards based on the boundaries as at 1 April 2014. NHS Board of residence on the Scottish Immunisation & Recall System (SIRS) is recorded in the pre-April 2006 configuration of NHS Board boundaries. Data have been mapped to reflect the boundaries as at 1 April 2014 using the child's home postcode. There are a small number of records that do not have a postcode recorded and therefore the NHS Board is unknown.

[2.] Children reaching 5 years of age during the evaluation period 1 April 2016 to 31 March 2017 (i.e. born 1 April 2011 to 31 March 2012).

[3.] Uptake rates for NHS Orkney, NHS Shetland and NHS Western Isles are prone to fluctuation due to the small number of children in these cohorts.

.. Not Applicable.

Key

DTP/Pol/Hib: The 5-in-1 vaccine (3 doses) which protects against diphtheria, tetanus, pertussis, polio and Haemophilus influenza type B (Hib). For children who received primary immunisations outside the UK, where the vaccine may not be given as one injection, only those who received 3 doses of each vaccine (diphtheria, tetanus, pertussis, polio and Hib) are counted as completing the primary course.

MMR1: Measles, mumps and rubella vaccine (1 dose over 12 months)

Hib/MenC: Hib/MenC Booster (1 dose over 12 months)

DTP/Pol: Diphtheria, tetanus, pertussis and polio containing vaccine (4^{th} dose). In the UK this is given as a single injection (the 4-in-1 vaccine)

MMR2: Measles, mumps and rubella vaccine (2^{nd} dose)

Table 4

NHS Board of residence[1]	Number in Cohort[2]	% completed primary and booster course by 6 years					
		MMR1		DTP/Pol		MMR2	
		No.	%	No.	%	No.	%
NHS Ayrshire and Arran	4,107	4,009	97.6	3,939	95.9	3,923	95.5
NHS Borders	1,188	1,155	97.2	1,149	96.7	1,143	96.2
NHS Dumfries & Galloway	1,523	1,476	96.9	1,488	97.7	1,479	97.1
NHS Fife	4,330	4,194	96.9	4,048	93.5	4,028	93.0
NHS Forth Valley	3,397	3,319	97.7	3,268	96.2	3,250	95.7
NHS Grampian	6,428	6,164	95.9	6,089	94.7	6,053	94.2
NHS Greater Glasgow & Clyde	13,070	12,485	95.5	12,282	94.0	12,209	93.4
NHS Highland	3,344	3,201	95.7	3,154	94.3	3,113	93.1
NHS Lanarkshire	7,615	7,361	96.7	7,316	96.1	7,234	95.0
NHS Lothian	9,645	9,309	96.5	9,106	94.4	9,052	93.9
NHS Orkney[3]	222	209	94.1	199	89.6	198	89.2
NHS Shetland[3]	265	252	95.1	227	85.7	228	86.0
NHS Tayside	4,340	4,231	97.5	4,169	96.1	4,135	95.3
NHS Western Isles[3]	267	252	94.4	250	93.6	248	92.9
NHS Board unknown	34	..	..	..	..	..	..
Scotland	**59,775**	**57,647**	**96.4**	**56,713**	**94.9**	**56,321**	**94.2**

Source: SIRS
Date: 16th May 2017

1. NHS Boards based on the boundaries as at 1 April 2014. NHS Board of residence on the Scottish Immunisation & Recall System (SIRS) is recorded in the pre-April 2006 configuration of NHS Board boundaries. Data have been mapped to reflect the boundaries as at 1 April 2014 using the child's home postcode. There are a small number of records that do not have a postcode recorded and therefore the NHS Board is unknown.

[2.] Children reaching 6 years of age during the evaluation period 1st April 2016 to 31st March 2017 (i.e. born 1 April 2010 to 31 March 2011).

[3.] Uptake rates for NHS Orkney, NHS Shetland and NHS Western Isles are prone to fluctuation due to the small number of children in these cohorts.

.. Not Applicable.

Key

MMR1: Measles, mumps and rubella vaccine (1 dose over 12 months)
DTP/Pol: Diphtheria, tetanus, pertussis and polio containing vaccine (4th dose). In the UK this is given as a single injection (the 4-in-1 vaccine)
MMR2: Measles, mumps and rubella vaccine (2nd dose)

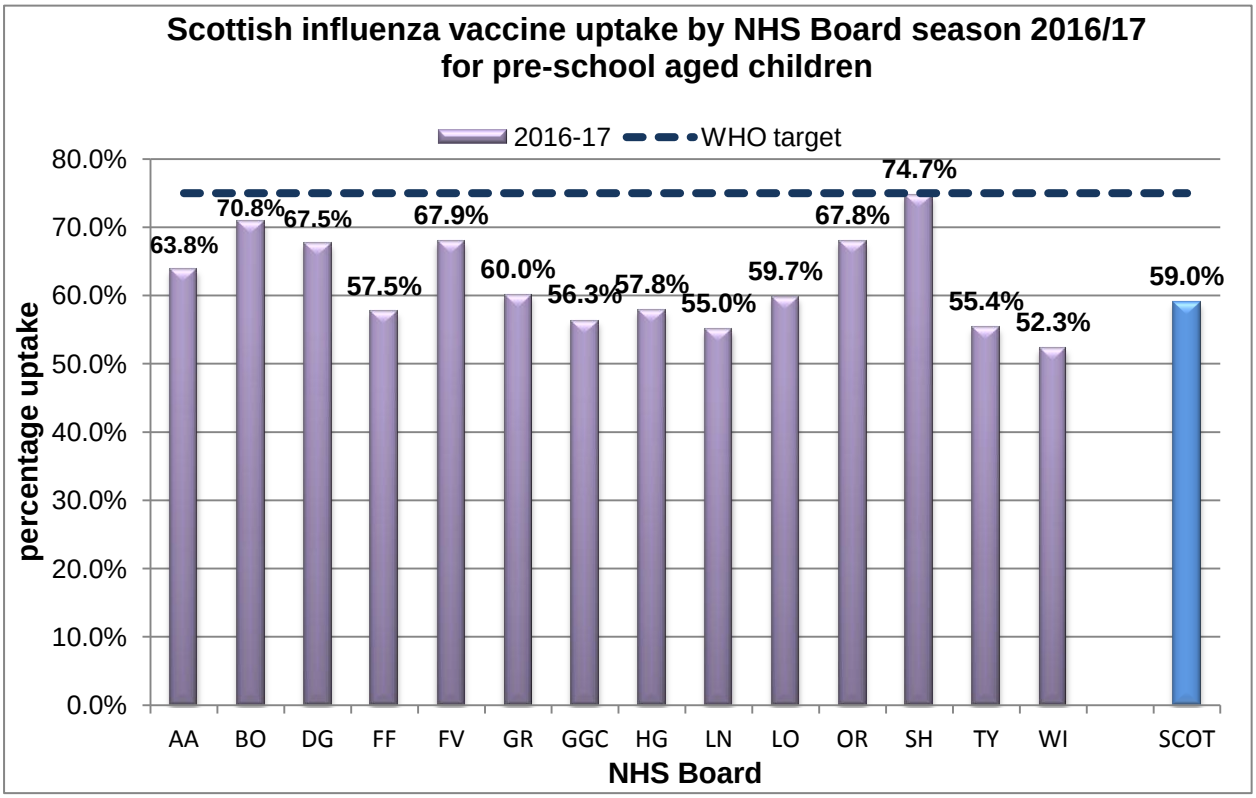
2.5 Extension of childhood seasonal flu immunisation programme

2.5.1 In 2013/14 a phased extension of the childhood seasonal flu immunisation programme was announced and implemented. Initially this was to all 2-3 year olds in 2013 and then extended to all 2-5 year olds (not yet in school) in 2014.

2.5.2 The programme is delivered by GP practices. A letter is sent to all parents/carers nationally of eligible children (as at 1st September) asking them to contact their GP practices to arrange an appointment for their child.

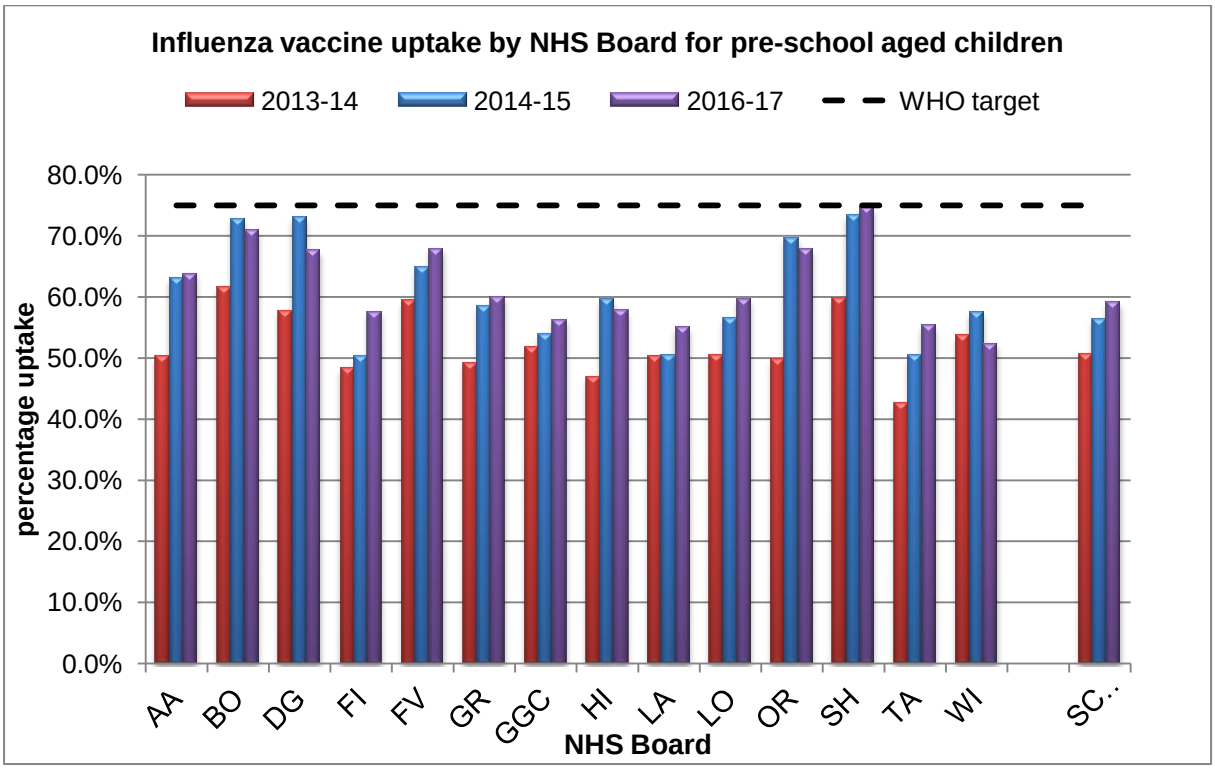
2.5.3 In NHSGGC in 2016/2017, uptake was 56.3%, which is below the Scottish average of 59.0%. Figure 2 refers.

Figure 2: Seasonal flu vaccination for pre-school children by NHS Board 2016/17
Source: Health Protection Scotland



2.5.4 Figure 3 shows that since its introduction in 2013/14, flu vaccination uptake amongst pre-school children has on the whole slowly continued to increase.

Figure 3: Trend comparison of seasonal flu vaccination uptake for pre-school children in 2016/17 with two previous seasons by NHS Board Source: Health Protection Scotland



2.6 School Aged Children

2.6.1 A number of national developments led to a review of the service delivery model of school immunisation across NHSGGC. These national developments included: CEL 13 (2013)[1] which set out the requirement for NHS Boards to refocus existing Health Visiting and School Nursing roles, services and interventions by April 2014; major changes to the Scottish Immunisation Programme in 2013-14; and a locally depleting school nursing workforce.

2.6.2 Following the exploration of a variety of alternative delivery models, including self-administration, healthcare support workers immunising, and piloting a school immunisation team across East Renfrewshire HSCP and Glasgow City HSCP (South Locality), Heads of Children's Services agreed to implement dedicated school immunisation teams across NHSGGC to deliver all school immunisation programmes.

[1] http://www.sehd.scot.nhs.uk/mels/CEL2013_13.pdf

2.6.3 Four dedicated school immunisation teams were set up in 2016/17, with the agreement for staff to work cross boarder (across local HSCP areas) as required, were structured to cover the following HSCP areas:

- East Dunbartonshire and Glasgow City (North-east Locality)
- East Renfrewshire and Glasgow City (South Locality)
- Inverclyde and Renfrewshire
- Glasgow City (North-west Locality) and West Dunbartonshire

2.6.4 The implementation of the teams, with the continued support of staff from Child Health, Pharmacy, Public Health and the Nurse Bank has:

- Realised capacity of existing school nursing workforce to focus on school nursing role
- Developed and increased immunisation expertise within the group of staff
- Significantly reduced the reliance on bank staff to deliver school immunisation programmes
- Reduced the incidence of immunisation errors

2.6.5 The impact of this new service delivery model on vaccination uptake to each school immunisation programme will continue to be monitored. This is to ensure that uptake levels are maintained and/or improved and that patient experience is not negatively affected.

2.6.6 The implementation of a hosted service that operates across all HSCPs has generated useful learning to date, including:

- A consistent approach to managing staff and the importance of peer support; crucial to ensuring the equitable application of organisational policies
- The need for standard operating procedures to ensure equitable and consistent service delivery, reviewed regularly as part of an iterative process
- Time and concentrated planning is required regarding cross cover arrangements, on a board wide basis across HSCPs, to reduce the reliance on bank staff and ensure the correct skill mix at school immunisation sessions
- The need for a co-ordinated approach to dealing with complaints.

2.6.7 School immunisation programmes are delivered annually over a concentrated six month period as shown in Table 5.

Table 5: NHSGGC service delivery schedule of school immunisation programmes

Time Period	Cohort(s)	Diseases protected against	Number of doses	Eligible cohort in NHSGGC
Oct – Dec	P1 – 7	Seasonal flu	1 dose	89,000
Jan – Feb	S1 and S2 (catch up S3-S6)	Cervical cancer caused by human papillomavirus (HPV) types 16 and 18 (and genital warts caused by types 6 and 11)	2 doses	14,000
	S1	MMR (catch-up)	Dependent on immunisation history	Approx. 1,000
Feb - March	S3 (catch up S4-S6)	Diphtheria, tetanus and polio (DTP)	1 dose	14,000
	S3 (catch up S4-S6)	Meningitis A, C, W and Y	1 dose	14,000

2.7 Primary school flu immunisation programme

2.7.1 Approximately 89,000 primary school-aged children across NHSGGC are eligible for the seasonal flu vaccine on an annual basis. This programme is delivered in all 340 primary schools across NHSGGC, with school immunisation teams and specialist school nurses visiting schools once. For any child who missed the immunisation session held at school (for whatever reason), there is an opportunity for them to attend their GP to be immunised through a national 'mop up' agreement.

2.7.2 NHSGGC's primary school flu immunisation programme is delivered over an eight week period (beginning of October until the beginning of December), with staff visiting approximately 9 primary schools per day.

2.7.3 In 2016/17, school flu immunisation uptake in NHSGGC was 74.2% compared to 73.0% in Scotland (shown in Figure 4). This local uptake compared favourably to previous years as shown in Figure 5 and efforts will continue in the coming years to increase uptake to meet/exceed the WHO target of 75%.

Figure 4: Primary school seasonal flu vaccination uptake by NHS Board 2016/17
Source: Health Protection Scotland

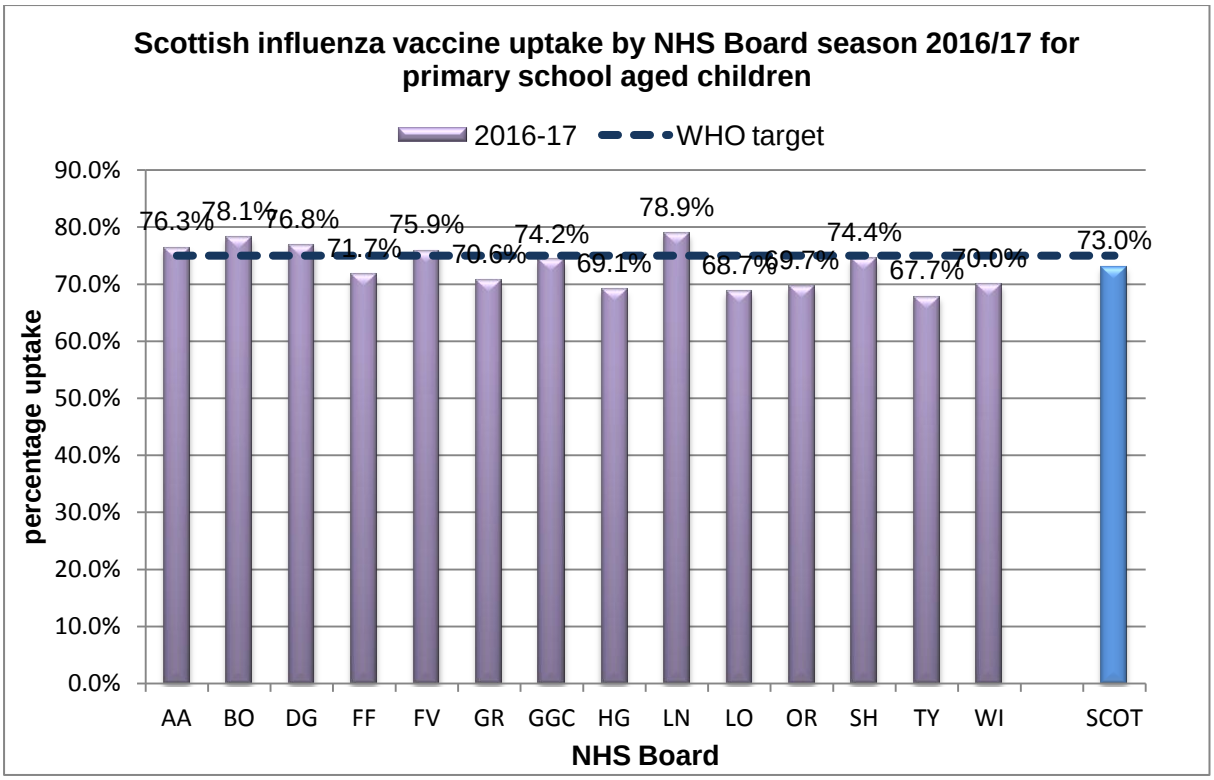
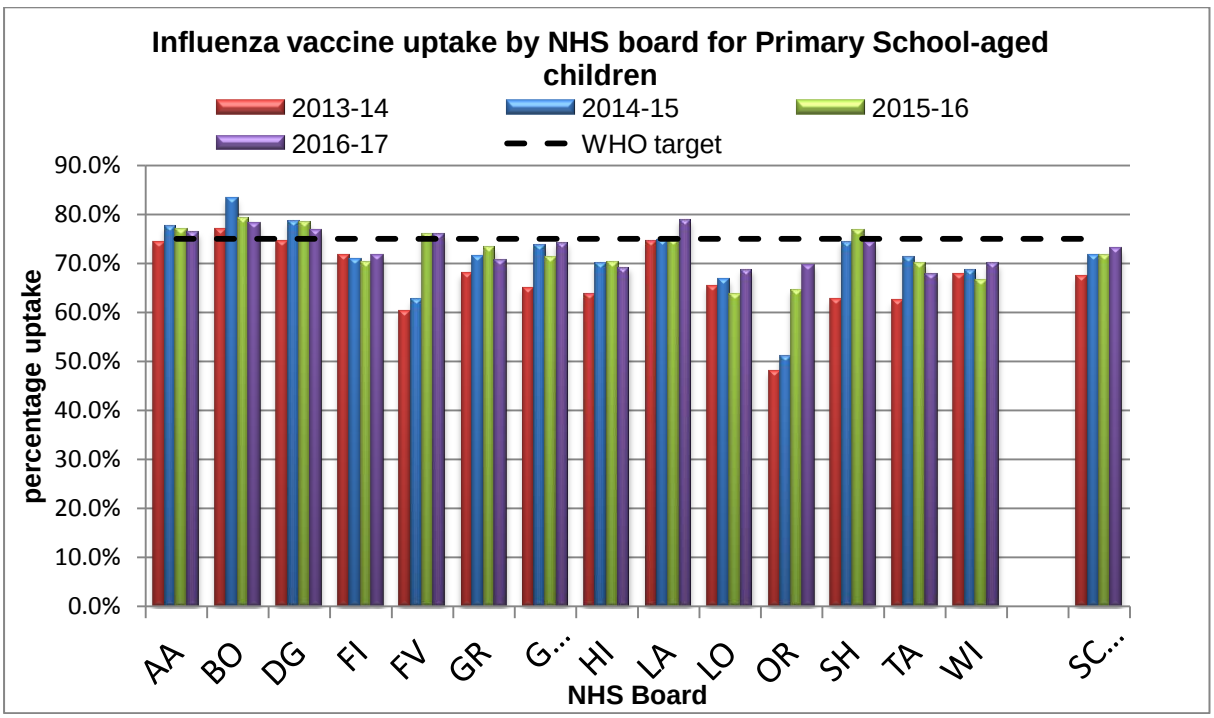


Figure 5: Trend comparison of primary school seasonal flu vaccination uptake for 2016/17 with previous three seasons by NHS Board
Source: Health Protection Scotland



2.8 Secondary school immunisation programmes

2.8.1 The purpose of the HPV immunisation programme is to protect girls from the two types of HPV that cause around 75% of cases of cervical cancer. The HPV vaccine does not protect against all cervical cancers, so regular cervical screening is still important.

2.8.2 In 2016/17, vaccination uptake amongst S1 girls in NHSGGC was 91.7% (1st dose) and 93.7% in S2 girls (1st dose). The uptake for girls having completed their HPV vaccination in S3 was 92.5%, as shown in Table 6.

2.8.3 In an effort to maximise vaccine uptake, any girl who misses her HPV vaccination, for whatever reason, is offered subsequent opportunities throughout her remaining time at school.

Table 6: HPV immunisation uptake rates by the end of the school year 2016/17 by NHS Board of school; Girls in S3
Source: CHSP School/SIRS

NHS Board of school	Number eligible	Dose 1		Dose 2	
		Number immunised	% Uptake	Number immunised	% Uptake
Ayrshire & Arran	1,802	1,658	92.0	1,594	88.5
Borders	538	512	95.2	490	91.1
Dumfries & Galloway	698	659	94.4	646	92.6
Fife	1,729	1,560	90.2	1,435	83.0
Forth Valley	1,475	1,418	96.1	1,297	87.9
Grampian	2,736	2,550	93.2	2,446	89.4
Greater Glasgow & Clyde	5,542	5,300	95.6	5,124	92.5
Highland	1,539	1,372	89.1	1,298	84.3
Lanarkshire	3,515	3,329	94.7	3,151	89.6
Lothian	3,969	3,671	92.5	3,475	87.6
Orkney	108	87	80.6	84	77.8
Shetland	114	105	92.1	105	92.1
Tayside	2,015	1,869	92.8	1,764	87.5
Western Isles	152	138	90.8	131	86.2
Scotland	25,932	24,228	93.4	23,040	88.8

2.8.4 As with all vaccination programmes, the impact of this programme is continually monitored. HPV vaccination has been offered in secondary schools in Scotland since 2008. Uptake has always been high, with on average 9 out of 10 girls choosing to get the vaccine. Evidence shows the high uptake of the HPV vaccine has helped to reduce the levels of cancer-causing HPV in young women in Scotland by 90%. The vaccine also helps protect against two other types of HPV that cause about 90% of the cases of genital warts.

2.9 Teenage Boosters

2.9.1 There are two teenage booster immunisations. The Td/IPV booster immunisation completes the course of childhood vaccines and provides protection against tetanus, diphtheria and polio. The second is the MenACWY immunisation which protects against meningitis and septicaemia (blood poisoning), caused by four strains of meningococcal bacteria, meningococcal group A, C, W and Y.

2.9.2 Both immunisations are routinely offered to all S3 boys and girls, with further opportunities for vaccination available for pupils in subsequent academic years (S4-S6) whilst they remain at school. This approach helps to maximise uptake. Uptake by NHS Board in 2016/17 at S4 is shown below in table 7.

Table 7: Td/IPV and MenACWY immunisation uptake rates by the end of the school year 2016/17 by NHS Board of school; Pupils in S4
Source: CHSP School/SIRS

NHS Board of school	Number of pupils in S4	Teenage Td/IPV booster		Teenage MenACWY	
		Number immunised	Uptake rate (%)	Number immunised	Uptake rate (%)
Ayrshire & Arran	3,692	3,240	87.8	3,262	88.4
Borders	1,181	1,071	90.7	1,075	91.0
Dumfries & Galloway	1,393	1,205	86.5	1,208	86.7
Fife	3,713	3,074	82.8	3,098	83.4
Forth Valley	3,145	2,923	92.9	2,949	93.8
Grampian	5,367	4,800	89.4	4,767	88.8
Greater Glasgow & Clyde	11,331	10,393	91.7	10,376	91.6
Highland	3,261	2,672	81.9	2,710	83.1
Lanarkshire[1]	6,838	5,253	76.8	5,273	77.1
Lothian	8,368	6,851	81.9	6,886	82.3
Orkney	219	161	73.5	160	73.1
Shetland[2]	*	*	*	*	*
Tayside	4,309	3695	85.8	3845	89.2
Western Isles[2]	*	*	*	*	*
Scotland[1, 2]	52,817	45,338	85.8	45,609	86.4

1. NHS Lanarkshire identified data quality issues in 2015/16 which may be affecting their teenage booster immunisation uptake rates for the S4 cohort in 2016/17
2. In NHS Shetland and NHS Western Isles teenage booster immunisations are given in general practice and therefore data on immunisations given are not routinely recorded on CHSP School/SIRS

* Not available.

2.10 Measles, Mumps and Rubella (MMR)

2.10.1 Following an outbreak of mumps in NHSGGC in early 2016, predominantly amongst school-aged children, a MMR vaccination catch-up for all S1-S6 pupils was planned and subsequently delivered between January and March 2017 by NHSGGC's School Immunisation Teams when they were visiting secondary schools to deliver HPV vaccination and teenage boosters.

2.10.2 Through this catch-up 652 pupils received two doses and 1195 received one dose. Of those pupils who received one dose, for 763 this was a second dose. Therefore, the catch-up resulted in 1415 pupils completing their MMR vaccinations.

2.10.3 Following this catch-up, MMR vaccination will now be routinely offered to S1 boys and girls who have yet to complete their course of MMR vaccinations. A further opportunity will be given to S2 pupils who consented for vaccination in S1 but for whatever reason were not vaccinated.

3.0 ADULT VACCINATION PROGRAMMES

3.1 Call up arrangements for adult vaccinations programmes are carried out by GP practices; the current exception to this is the annual seasonal flu vaccination. A letter is sent out annually to everyone aged 65 years and over, advising them to contact their GP practice to arrange for their annual seasonal flu vaccination.

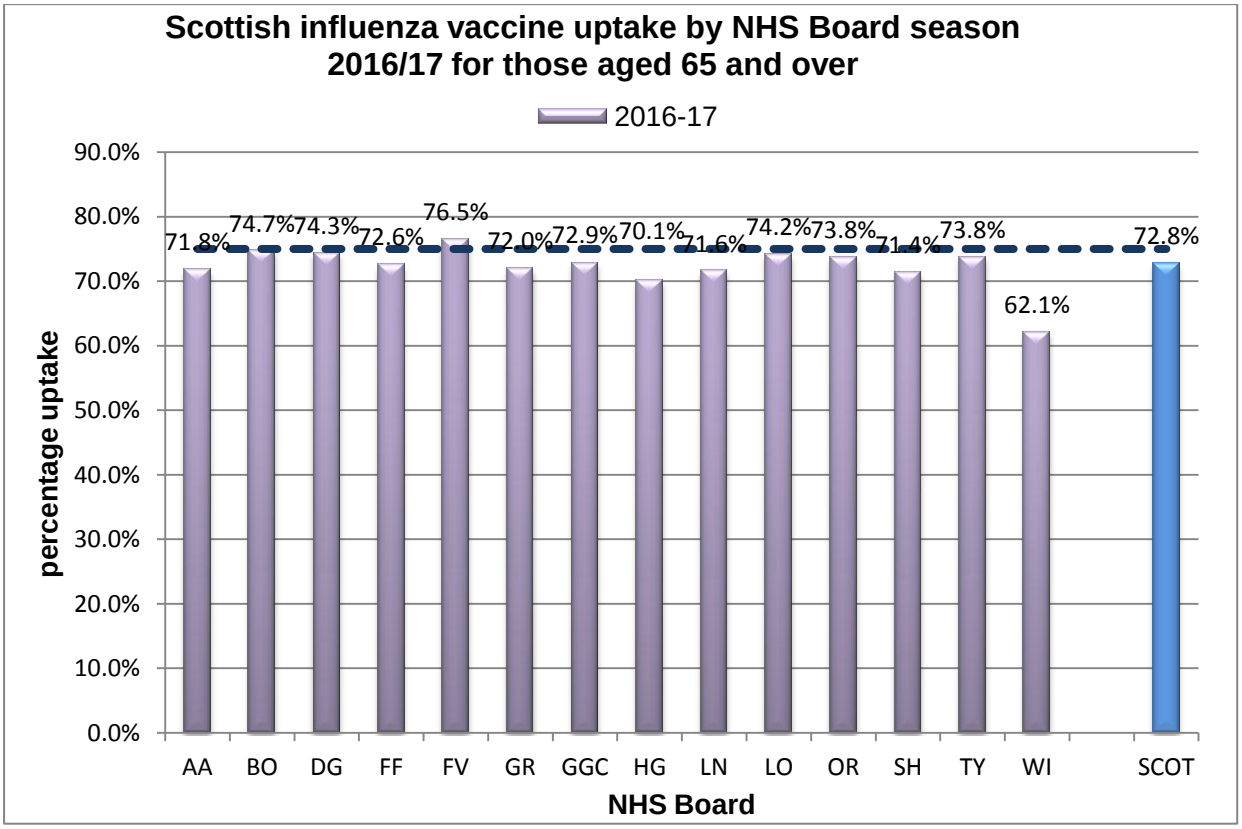
3.2 Seasonal Flu and Pneumoccocal

3.2.1 The annual seasonal flu vaccination programme is the largest adult vaccination programme, with the following patient groups eligible for annual seasonal flu vaccination: all adults aged 65 and over, those between the ages of 6 months and under 65 years with a chronic medical condition, pregnant women and unpaid carers.

3.2.2. The programme is delivered annually from October until March by GP Practices and the WHO target for all eligible patient groups is a 75% uptake.

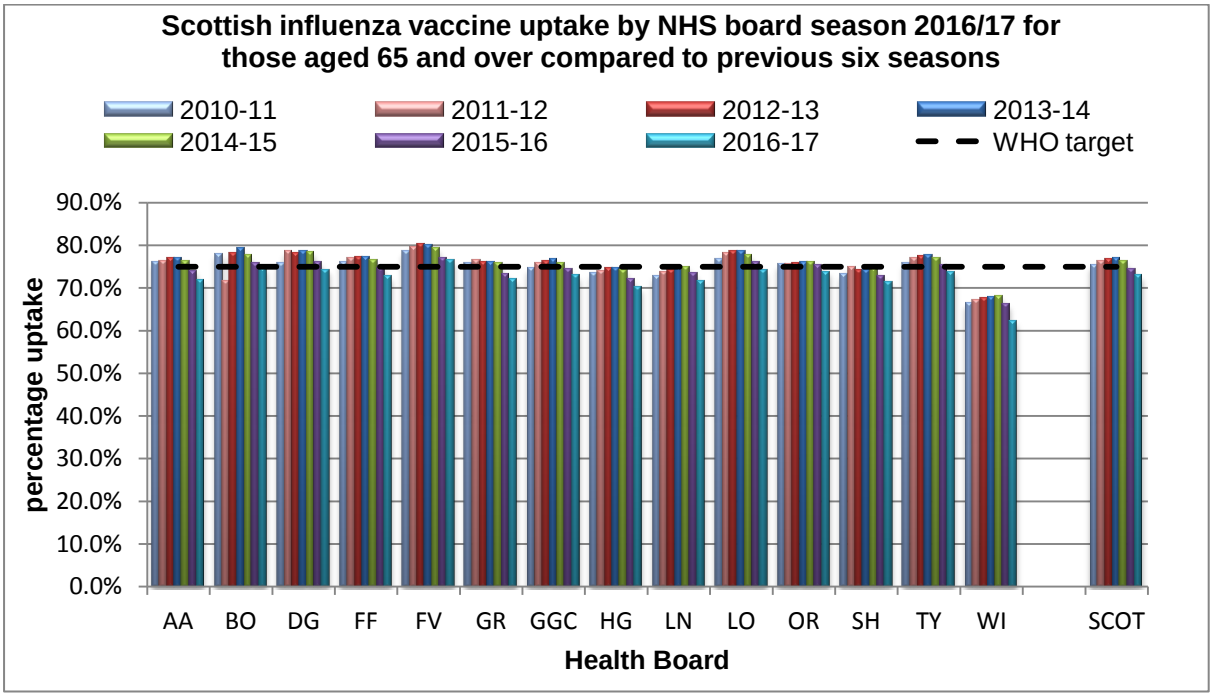
3.2.3 Uptake amongst those aged 65 and over in NHSGGC in 2016/17 was 72.9%. This is in line with the Scottish average but below the WHO target.

Figure 6: Seasonal flu vaccination uptake for those aged 65 years and over by NHS Board 2016/17
Source: Health Protection Scotland



3.2.4 Uptake across Scotland is monitored and scrutiny is likely to increase following a slow decline over the last couple of seasons as shown in Figure 7 below.

Figure 7: Trend comparison of seasonal flu vaccination for those aged 65 years and over for 2016/17 with previous six seasons
Source: Health Protection Scotland

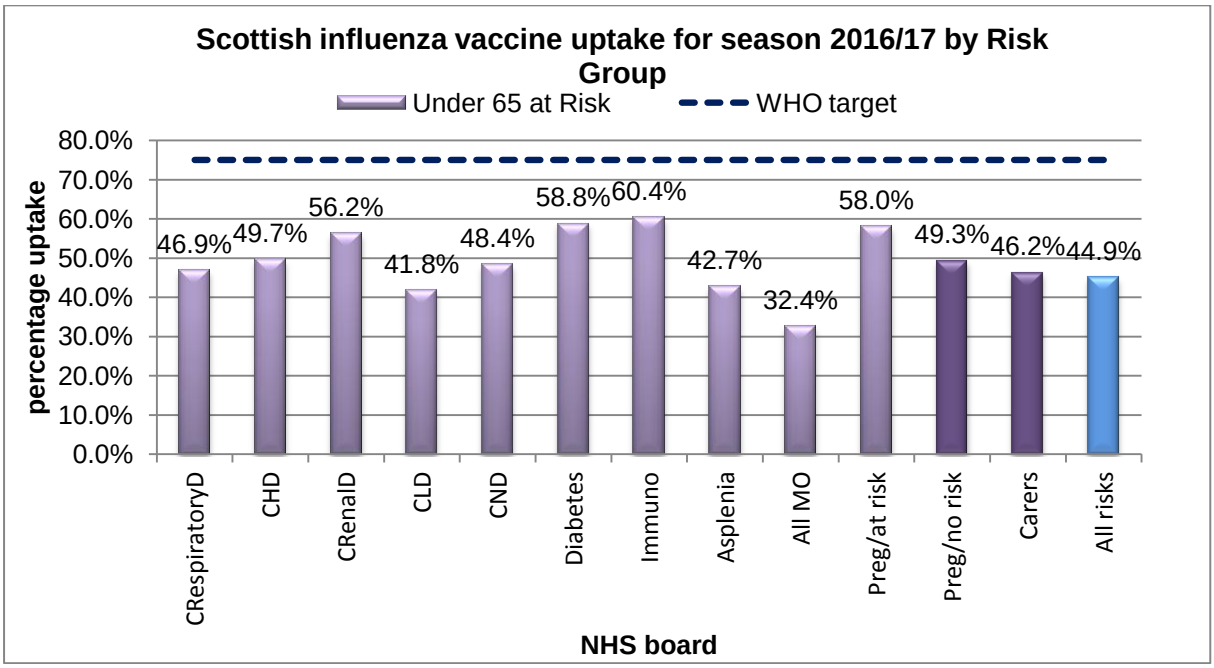


3.2.5 People with certain chronic health conditions, referred to hereon as 'risk groups', are eligible for annual seasonal flu vaccination as they are more vulnerable to the effects of flu. Included are the following patient groups:

- chronic respiratory disease
- chronic heart disease
- chronic kidney disease
- chronic neurological disease
- diabetes
- immunosuppression
- asplenia or dysfunction of the spleen
- pregnant women
- morbid obesity

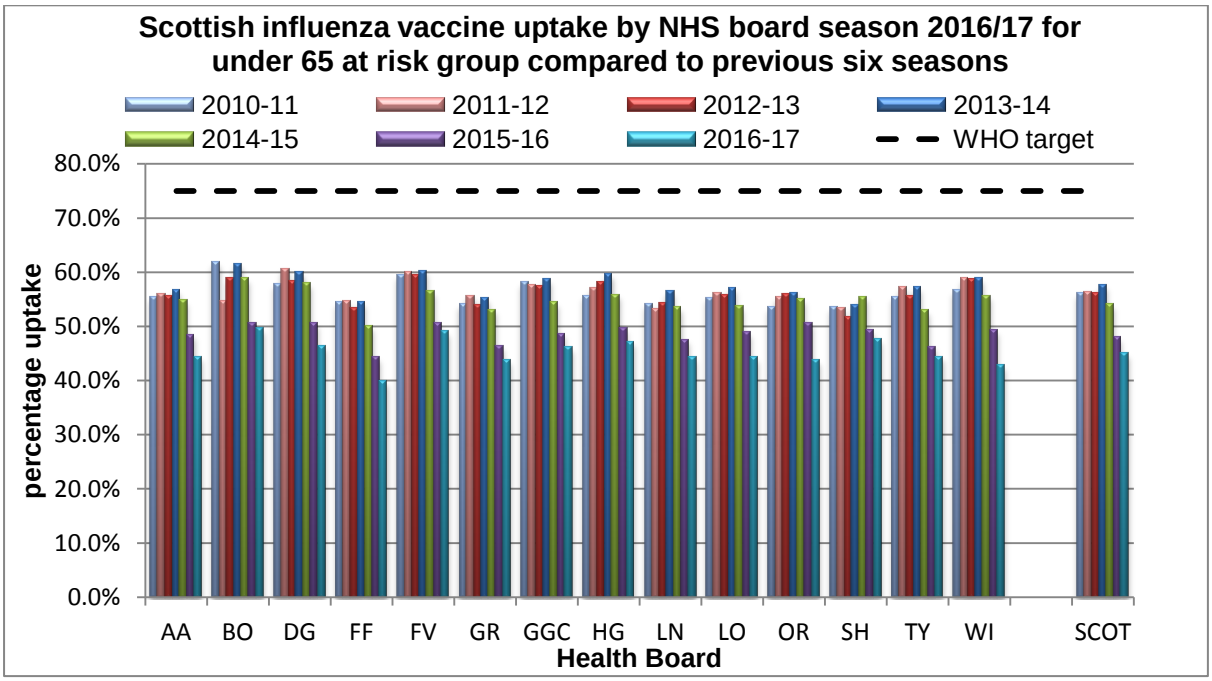
3.2.6 Figure 8 shows the average uptake for <65 at risk groups in Scotland in 2016/17, with significant variation and all below the WHO target of 75%.

Figure 8: Seasonal flu vaccination uptake by Risk Group in Scotland 2016/17
Source: Health Protection Scotland



3.2.7 Figure 9 below shows a trend comparison of seasonal flu vaccination for under 65s at-risk over the last 7 flu seasons, showing a continuing steady decline across all Health Boards and Scotland.

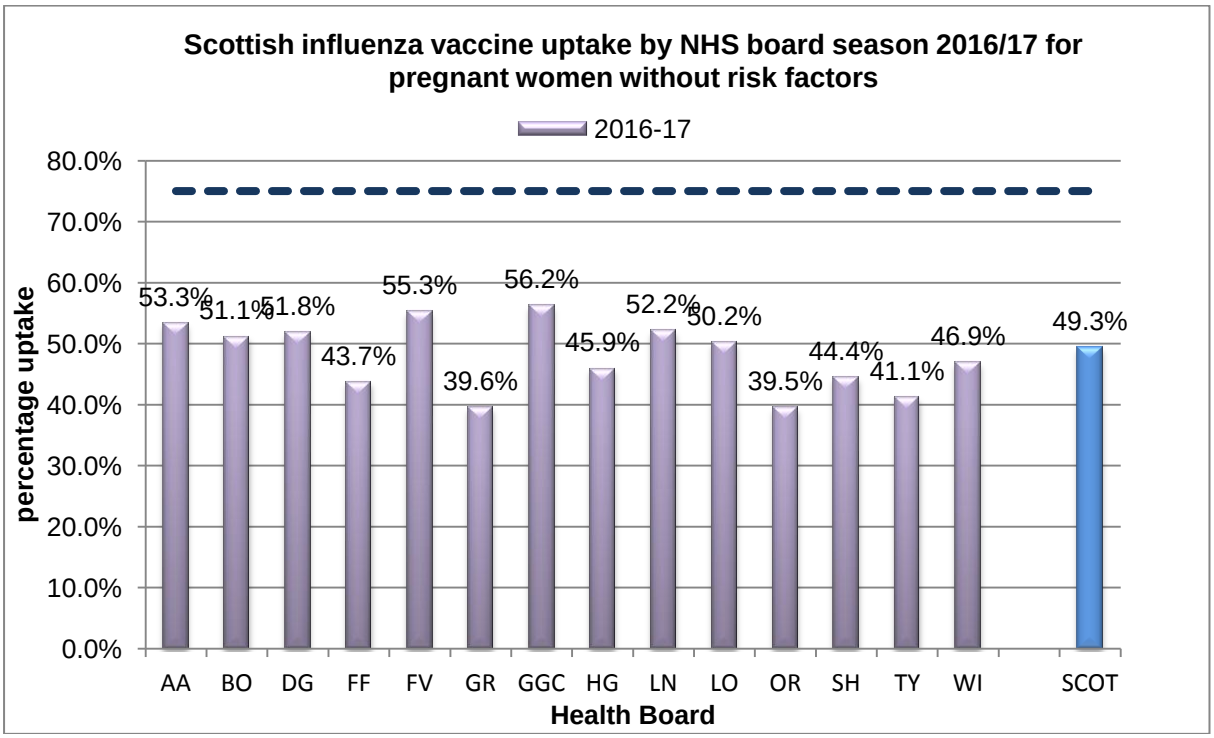
Figure 9: Trend comparison of seasonal flu vaccination for under 65 at risk groups
Source: Health Protection Scotland



3.2.8 As shown in Figures 8 and 9, uptake of the seasonal flu vaccine in 65 years of age and over and <65 years at risk in NHSGGC has steadily declined over the last three seasons (2014/15 – 2016/17), more so in the latter season. This is a picture that is mirrored across Scotland. This continuing decline has prompted discussion both locally and nationally to potential reasons why and what could be done differently to try and reverse the trend.

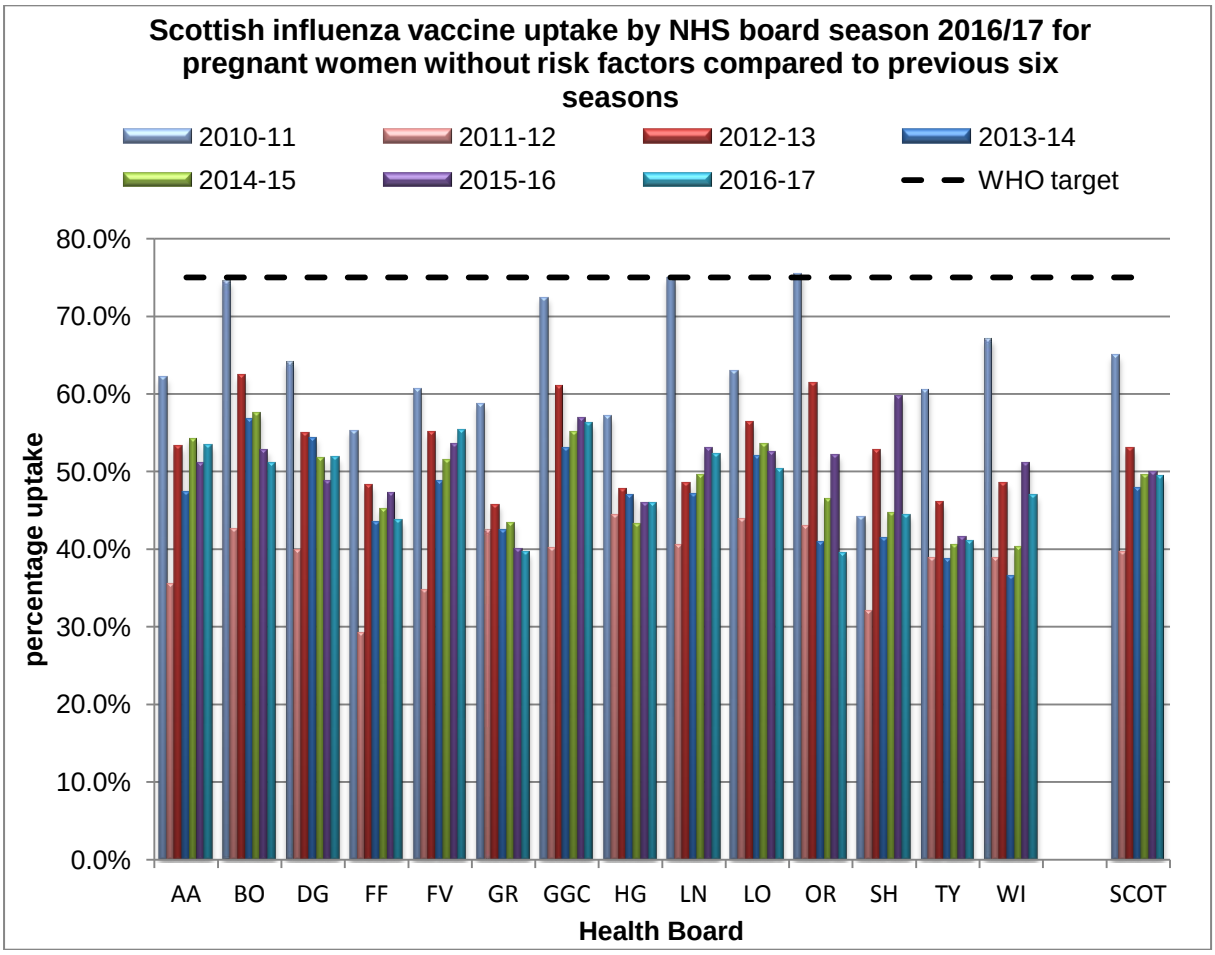
3.2.9 In NHSGGC, pregnant women are signpost to their GP practice by maternity services for flu vaccination. In 2016/17 uptake amongst pregnant women (without clinical risk factors) was 56.2%.

Figure 10: Seasonal flu vaccination uptake in pregnant women by NHS Board 2016/17
Source: Health Protection Scotland



3.2.10 Uptake over the last seven seasons is shown in Figure 11 below.

Figure 11: Trend comparison of seasonal flu vaccination uptake in pregnant women by NHS Board 2016/17
Source: Health Protection Scotland



3.2.11 An overview of seasonal flu vaccination uptake across all eligible adult groups in NHSGGC in 2016/17, as well as by HSCP and Scotland, is shown below in Table 9.

Table 9: Seasonal Flu Vaccination Uptake Averages 2016/17 by HSCP, NHSGGC and Scotland
Source: Health Protection Scotland

HSCP	Over 65s	Under 65s in at risk groups	Pregnant (not in clinical risk group)	Pregnant (in clinical at risk group)
East Dunbartonshire	75.6%	47.3%	64.3%	71.8%
East Renfrewshire	74.0%	43.7%	58.8%	64.7%
Glasgow City - North East Sector	71.0%	46.0%	51.5%	57.6%
Glasgow City - North West Sector	71.2%	44.9%	56.7%	64.8%
Glasgow City - South Sector	72.9%	46.7%	56.1%	65.1%
Inverclyde	71.2%	45.9%	52.1%	69.0%
Renfrewshire	73.0%	45.6%	57.7%	57.6%
West Dunbartonshire	75.8%	49.3%	54.6%	65.9%
NHS GREATER GLASGOW AND CLYDE	72.9%	46.1%	56.2%	63.5%
SCOTLAND	72.8%	44.9%	49.3%	58.0%

3.2.12 Table 9 highlights the variation in vaccination uptake amongst HSCPs, for example as much as 14.2% in pregnant women (in a clinical risk group). Such variation is further demonstrated when uptake is analysed by individual GP practice with uptake ranging from 0 – 100%.

3.2.13 Seasonal flu vaccination uptake, by individual GP practice and HSCP, is routinely shared at regular intervals during flu seasons, with all GP practices and HSCP Clinical Directors. This is in an effort to encourage GP practices to continue their efforts to maximise uptake and reduce variation.

3.2.14 Pneumococcal vaccine (a single dose) is currently offered to all those aged 65 years and over and some under 65s in the at risk medical conditions. This is to protect patients against pneumococcal infection. Currently there are no data collected nationally to monitor the uptake of this vaccine, and the future of this programme is being reviewed by the JCVI.

3.2 Shingles

3.2.1 Shingles (herpes zoster) is a painful vesicular skin rash which is caused by reactivation of varicella zoster virus, usually decades after the primary infection in childhood. Shingles usually lasts from between two to four weeks, however some people go on to develop post-herpetic neuralgia (PHN), a long-lasting neuropathic pain after the rash has resolved. PHN can persist for months or years and is often very debilitating. Treatment tends to focus on pain management and effective treatment with tolerable side effects is a major clinical challenge.

3.2.2 In 2013 a routine shingles vaccination (single dose) for people aged 70 years old was implemented to provide protection against shingles. At the same time a time-limited phased catch-up[2] was introduced for people aged 71-79 years. The efficacy of the vaccine declines with age therefore it is not recommended for people aged 80 years or older.

3.2.3 The programme is delivered on an annual basis from the 1st September until the 31st August, with eligibility determined by age as at 1st September. In 2016/17, the programme was principally aimed at all 70 year olds (routine) and 76 year olds (catch-up), with a continuing catch-up running from February 2016 for people aged 77 and 78.

3.2.4 Shingles vaccination uptake amongst eligible cohorts in 2016/17 by NHS Health Board is shown below in Table 10.

Table 10: Shingles vaccination uptake by NHS Health Board and Scotland 2016/17
Source: Health Protection Scotland

NHS HEALTH BOARD	Age this season (years)			
	70	76	77	78
	Uptake (%)	Uptake (%)	Uptake (%)	Uptake (%)
Ayrshire & Arran	42.4%	35.2%	34.9%	35.7%
Borders	39.2%	31.1%	36.7%	39.1%
Dumfries & Galloway	48.9%	40.9%	49.1%	48.5%
Fife	51.8%	45.8%	45.4%	43.7%
Forth Valley	55.5%	48.9%	45.8%	46.1%
Grampian	48.4%	43.1%	46.3%	48.5%
Greater Glasgow & Clyde	45.0%	37.5%	35.3%	36.3%
Highland	46.8%	37.7%	43.3%	45.3%
Lanarkshire	43.2%	36.8%	39.8%	40.1%
Lothian	45.1%	38.1%	44.2%	43.5%
Orkney	59.5%	63.1%	64.6%	63.4%
Shetland	55.8%	40.4%	56.2%	51.3%
Tayside	48.1%	43.6%	48.9%	48.6%
Western Isles	41.9%	38.5%	52.0%	55.4%
Scotland	46.5%	39.8%	42.1%	42.6%

3.2.5 There are a number of possible reasons for the continued decline in the uptake of the shingles vaccination. A decision was made in Scotland to add a further two catch-up cohorts, those aged 76 and 77 years in February 2016, to the 2015/16 programme. This would ensure efficient use of vaccine stock within its shelf life. These two cohorts subsequently remained eligible as

[2] http://www.sehd.scot.nhs.uk/cmo/CMO(2013)15.pdf

targeted catch-up cohorts during the 2016/17 programme (then aged 77 and 78 years), with a new catch-up cohort added on the 1 September 2017 of those aged 76 years. Feedback from GP practices and other NHS Boards indicated that this may have caused some confusion over eligibility and therefore potentially contributed to the reduction in vaccine uptake. It is anticipated that by the 2018/19 season, there will no requirement for any further catch-up cohorts and the programme will be aimed at those aged 70 years, which should result in less confusion over eligibility.

3.2.6 NHS Boards have also cited concerns around shingles being a live vaccine and contraindications for vaccination. In order to support healthcare practitioners to assess patients' eligibility for this vaccine, a national screening tool was developed in 2015 and is reviewed on a regular basis. However, safety concerns have remained, with some GP practices separating the administration of shingles vaccine from the seasonal flu clinics for reasons of safety. This too may impact on uptake as patients would have to be recalled for shingles vaccination at another time.

3.2.7 Since the start of the programme in 2013, there has been a wide variation in vaccine coverage between individual GP practices, which ranges from 0% to 100%. Whilst reasons for this remain unclear, it does highlight potential inequalities in access to the vaccine, particularly when the success of the programme depends on the individual GP practice recall system.

3.3 Pertussis

3.3.1 Pertussis, known as whooping cough, is an acute bacterial disease of the respiratory tract which can affect people of all ages. While adolescents and adults tend to present with a prolonged cough, unimmunised infants are at risk of severe complications and death.

3.3.2 It is a highly contagious infection, with transmission resulting from close contact. It commonly lasts for two to three months and is easily spread by breathing in tiny droplets that are released into the air by other people's coughs and sneezes. Infants under one year of age are most at risk from whooping cough. For these infants, the disease is very serious and can lead to pneumonia and permanent brain damage.

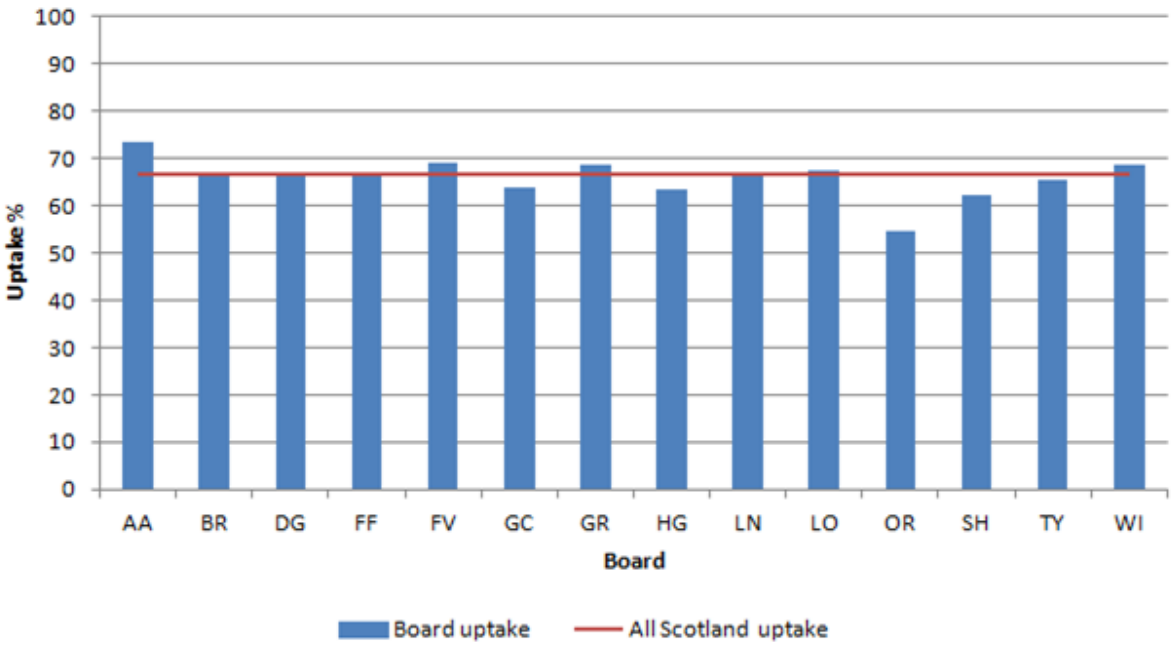
3.3.3 The incidence of pertussis increased dramatically in 2012 and has remained well above historical levels since then. At that time the overall incidence of whooping cough was 36.9 per 100,000 popoulation (1,926 cases), however the rate in infants under one year old was 235.7 per 100,000 population (140 cases). In response to the increase in pertussis and in order to protect young infants in the first few weeks of life before they are old enough to be vaccinated through the routine childhood immunisation programme at eight weeks, a vaccination programme for pregnant women was introduced in October 2012.

3.3.4 Vaccination is recommended between weeks 16 and 32 gestation, with vaccination encouraged as early as possible to allow sufficient time for antibodies to be passed to unborn baby. Pregnant women may still have the vaccine after 32 weeks gestation, however this does not offer babies the same level of protection.

3.3.4 Vaccination provides the most effective strategy for preventing pertussis transmission in the population, although protection afforded by vaccination or from past infection is not lifelong, hence the reason for vaccination in each pregnancy.

3.3.5 In NHSGGC, pregnant women are signposted to their GP practice by maternity services to arrange an appointment for their pertussis vaccination and flu vaccination between October-March. Vaccination uptake is reported quarterly on a 'rolling' basis. Uptake in NHSGGC in 2016/17 was 64%. The Scottish figure was 67% and the range across the country was from 55% to 74%.

Figure 12: Pertussis vaccine uptake in pregnant women by NHS Board 2016/17
Source: Health Protection Scotland



3.3.6 Although laboratory reports of pertussis are lower than levels observed in 2012 and 2013, they are higher than the historical trends in 2010 and 2011, demonstrating that pertussis is continuing to circulate in the community. As pertussis continues to circulate in Scotland well above historical levels, vaccination of pregnant women continues to be important.

4.0 FUTURE DELIVERY OF VACCINATION PROGRAMMES IN SCOTLAND

4.1 Vaccination Transformation Programme

4.1.1 Scottish Government announced a three year (2017-2020) Vaccination Transformation Programme (VTP) in early 2017 as part of the Primary Care Transformation Programme, with the aim of ensuring the health of the Scottish public through the modernisation of the delivery of vaccinations, empowering local decision making and supporting the transformation of the role of the General Practitioner.

4.1.2 A meeting was held in October 2017 with representatives from Scottish Government, the Scottish GP Committee (SGPC) and NHS Board Immunisation Coordinators and Business Change Managers, to discuss various elements of the programme. It was confirmed at this time that the phased implementation of the programme would be extended by a year until 2020/2021, to be fully implemented by April 2021. The phased programme would start in 2018/19, allowing further time for initial planning in 2017/18, with GPs retaining responsibility for the delivery of vaccinations until the programme has been fully transferred. This timing aligns with changes to the GP contract.

4.1.3 The VTP has been established nationally to review and transform vaccine delivery in Scotland in the context of:

- An increasingly complex vaccination schedule, with major changes made to the Scottish Immunisation Programme in 2013-14 and subsequent amendments, without a review of delivery
- The changing role of those, principally GPs, historically tasked with delivery vaccinations
- A need to modernise and empower Health Boards to deliver in a way that addresses inequalities in uptake whilst suiting local needs
- A request from the SGPC to the Scottish Government in the context of agreeing the new GP contract that wherever possible some of the service delivery in practices should be delivered elsewhere in the NHS to relieve pressure on GP practices
- The SGPC and the Scottish Government jointly agreed that alternative modes of delivery of immunisation and screening services should be further explored with some continuing clinical input from GP practices as appropriate
- Recent experience of challenges in securing GP support for new programmes due to capacity issues.

4.1.4 The VTP is taking place in a complex policy landscape, including the wider Primary Care Transformation Programme, as well as the CHI & Child Health Transformation Programme. Scottish Government are mindful of this and the associated impacts and connections, which will continue to be explored through the Programme.

4.1.5 The scope of the VTP includes all NHS vaccination programmes:

- Routine childhood immunisation programme[3] delivered locally by GP practices both with and without support from NHSGGC employed staff
- School immunisation programmes, both in primary and secondary schools delivered by NHSGGC staff
- Adult immunisation programmes, primarily delivered by practices without NHS Board support
- Travel immunisation and advice, primarily delivered by GP practices

4.1.6 It is expected that delivery will be transferred completely to NHS Boards by April 2021. The Scottish Government accepts that the programme is very complex and that not all elements may be completed by 2021; however the vast majority should be.

4.1.7 Additional funding will be made available by Scottish Government to assist NHS Boards to establish and implement the new delivery model, supplementing existing resources currently delivering the service. Furthermore, Scottish Government has confirmed that there will be recurring funding (subject to the normal Parliamentary approval process) to deliver national vaccination programmes after the Programme closes.

4.1.8 In November 2017 a briefing paper on the VTP was presented to NHSGGC Directors and Chief Officers. Agreement was given to establish a NHSGGC VTP Programme Board to coordinate, direct and oversee the implementation of a set of related projects and activities in order for NHSGGC to deliver on the outcomes and benefits related to the objectives of the VTP.

[3] Routine Childhood Immunisation Programme

5. CONCLUSION

5.1 Vaccination is one of the most effective public health interventions and overall uptake of vaccination programmes coordinated by the Board is good. Uptake of pre-school immunisations remains high, and uptake in primary and pre-school aged children for the flu vaccine is increasing.

5.2 However there are declining uptakes in vaccines solely coordinated by GP practices and huge variations in uptake between practices.

5.3 The reasons for declining uptakes across adult vaccinations programmes are currently being investigated both locally and nationally. With regards to flu vaccination, decrease in uptake is consistent with significant differences in uptake rates between seasons, deprivation quintiles and urban/rural areas. In relation to the shingles vaccine, there are a number of possible reasons for the continued decline in uptake, including confusion over eligibility and concerns around contraindications for the vaccine.

5.4 The Vaccination Transformation Programme presents a real opportunity to transform the delivery of vaccinations across NHSGGC and Scotland as a whole; with the underlying principles of at least maintaining, if not increasing uptake, whilst ensuring the patient experience is not negatively impacted.