

IMMUNISATION IN CHILDHOOD Fact Sheet

Background

After clean water, vaccination is the most effective public health intervention for saving lives and promoting good health. The more infectious the disease, the greater the proportion of the population needed to be vaccinated to keep it under control. For example, measles is highly infectious and if vaccination rates go down, it will quickly spread again. At least 95% of children have to be immune in order to stop the spread. Rubella causes severe abnormalities in the unborn child and at least 87% of the population need to be immune to stop transmission.^{1,2}

The government schedule for routine childhood immunisation as at Summer 2016 is shown below. Please refer to the following Public Health England link for more detail, and further selective immunisation programmes, additional vaccines for those with underlying medical conditions, older age groups, and to check for the most up-to-date schedule.

Public Health England. The complete routine immunisation schedule.

<https://www.gov.uk/government/publications/the-complete-routine-immunisation-schedule>

| The routine immunisation schedule from Summer 2016 (updated 28 th June, 2016) | | |
|--|--|---|
| Age due | Diseases protected against | Vaccine given |
| Eight weeks old | <ul style="list-style-type: none"> Diphtheria, tetanus, pertussis (whooping cough), polio and Haemophilus influenzae type b (Hib) Pneumococcal (13 serotypes) Meningococcal group B (MenB) Rotavirus gastroenteritis | <ul style="list-style-type: none"> DTaP/IPV/Hib Pneumococcal conjugate vaccine (PCV) MenB Rotavirus |
| Twelve weeks | <ul style="list-style-type: none"> Diphtheria, tetanus, pertussis, polio and Hib Rotavirus | <ul style="list-style-type: none"> DTaP/IPV/Hib Rotavirus |
| Sixteen weeks old | <ul style="list-style-type: none"> Diphtheria, tetanus, pertussis, polio and Hib MenB Pneumococcal (13 serotypes) | <ul style="list-style-type: none"> DTaP/IPV/Hib MenB PCV |
| One year old | <ul style="list-style-type: none"> Hib and MenC Pneumococcal (13 serotypes) Measles, mumps and rubella (German measles) MenB | <ul style="list-style-type: none"> Hib/MenC booster PCV booster MMR MenB booster2 |
| Two to eight years old | <ul style="list-style-type: none"> Influenza (each year from September) | <ul style="list-style-type: none"> Live attenuated influenza vaccine LAIV |
| Three years four months old | <ul style="list-style-type: none"> Diphtheria, tetanus, pertussis and polio Measles, mumps and rubella | <ul style="list-style-type: none"> DTaP/IPV MMR (check first dose given) |
| Girls aged 12 to 13 years | <ul style="list-style-type: none"> Cervical cancer caused by human papillomavirus (HPV) types 16 and 18 (and genital warts caused by types 6 and 11) | <ul style="list-style-type: none"> HPV (two doses 6-24 months apart) |
| Fourteen years old | <ul style="list-style-type: none"> Tetanus, diphtheria and polio Meningococcal groups A, C, W and Y disease | <ul style="list-style-type: none"> Td/IPV (check MMR status) MenACWY |

¹ Public Health England. Vaccination Immunisation.

<http://www.hpa.org.uk/Topics/InfectiousDiseases/InfectionsAZ/VaccinationImmunisation/>

² NHS Choices. How vaccines work. <http://www.nhs.uk/Conditions/vaccinations/>

The Local Picture

Vaccines given in the first year of life cover some of the most important diseases and many of the vaccines have been available in changing forms for 50 years.

Diphtheria (D), tetanus (T), pertussis (aP) and polio (IPV) have been used for decades in various forms. More recently Haemophilus Influenzae B (Hib), Pneumococcal (PCV) and Meningococcal C (Men C) have been added. Hib and PCV infections can be very severe causing meningitis, infections of the blood stream and serious chest infections. Men C can cause also cause fatal blood stream infections and meningitis.

Uptake of vaccination in the first year of life are measures of the level of organisation of the health service and general compliance of parents as none of the vaccinations are perceived as controversial.

DTaP/IPV/Hib

Figs 1 and 2 show how coverage rates of DTaP/IPV/Hib for Sutton at one and two years remain lower than the national average. At one year, Sutton's rate is currently 93.3% for DTaP/IPV/Hib, compared to London (90.6%) and England (94.2%). For these same vaccines, at two years, Sutton's rate is 90.3% compared to London (92.5%) and England (95.7%). Sutton ranks 7th highest at age one year but 5th from bottom at age two years compared to other London authorities in 2014/15.

Fig. 1: Trend in Vaccination Coverage of DtaP/IPV/Hib in Sutton at one and two years

Fig. 2: Vaccination Coverage of DtaP/IPV/Hib in Sutton at one and two years, 2014/15, Sutton compared to London authorities

Measles, Mumps and Rubella vaccination

Measles and mumps can be very serious infections and, in a small proportion of people, can be fatal. In most children and adults rubella (German Measles) is a relatively mild infection but, if contracted in pregnancy, can cause severe fetal disability including deafness, heart deformities, blindness and learning problems which persist throughout life. Vaccination is highly effective and requires two doses. The first MMR vaccine is given to children as part of the routine vaccination schedule, usually within a month of their first birthday. They will then have a booster before starting school, which is usually between three and five years of age.

Currently in Sutton, 88.8% of children have received MMR by their second birthday, compared to London and England (92.3%). This is similar to the previous year.

The graphs show that if a child does not have the first vaccine by two years old, very few subsequently have this at a later age. This would be a beneficial area of focus.

80.4% of Sutton children have received two doses of MMR by their fifth birthday compared to the London and England rate of 88.6%. There has been an improvement in the rate since 2012/13 when Sutton ranked bottom in the whole country. **Figs 3 and 4** indicate this improvement. At five years, Sutton remains below target and is statistically worse than England although similar to London.

Fig. 3: Trend in Vaccination Coverage of MMR in Sutton at two and five years

Fig. 4: Vaccination Coverage of MMR in Sutton at two and five years, 2014/15, Sutton compared to London authorities

Hib/Men C

The Hib / Men C booster increases the protection a child gets from the first course of Hib vaccine when they are 8, 12 and 16 weeks old, and the Men C vaccine when they are 12 and 16 weeks. This boosted immunity lasts into adulthood.

Fig. 5 show trends in vaccination coverage for children who have received a booster by two years and five years respectively. At two years Sutton's coverage is 87.9%, compared to London and England, both 92.1%. At five years Sutton's coverage is 81.8%, compared to London and England 92.4%.

At both ages, the rate for Sutton is below target and rates are statistically lower than for London and England overall. The rate of improvement levelled out in the most recent year.

Fig. 5: Trend in Vaccination Coverage of Hib/Men C in Sutton at two and five years

PCV

The PCV vaccine protects against pneumococcal infections that can cause pneumonia, septicaemia or meningitis. **Fig 6** shows the trend in the percentage of eligible children who have received the complete course of PCV vaccine by their 1st birthday and the booster by their 2nd birthday. For the complete course by the 1st birthday, the rate for Sutton is 94.2%, similar compared to 93.9% for both London and England. However, for the booster dose of PCV vaccine by the 2nd birthday, the rate for Sutton is lower at 87.7% compared to 92.2% for both London and England.

There has been an improvement for the PCV vaccine completed by the first birthday and rates are now in line with London and England, though for the booster dose by the second birthday, rates are still below target and statistically lower than London and England overall.

Fig. 6: Trend in Vaccination Coverage of PCV by first year and booster by second year

Vaccine Preventable Cancer

Two vaccines are designed to prevent 'infectious cancer' and prevent the other physical complications of these viruses. These are Hepatitis B and Human Papilloma Virus (HPV) vaccines.

Hepatitis B Virus – HBV

Hepatitis B virus can be spread via blood and other routes but can be prevented from spreading from mother to child during pregnancy and early years via vaccination. Babies born to infected mothers are given a dose of the hepatitis B vaccine after they are born. This is followed by a further two doses (with a month between each), and a booster dose 24 months later. Around 20% of people with chronic hepatitis B will go on to develop scarring of the liver (cirrhosis), which can take 20 years to develop, and around 1 in 10 people with cirrhosis will develop liver cancer.

Since April 2000 it has been recommended that all pregnant women in England and Wales should be offered testing for hepatitis B through screening, and that all babies of carrier women should be immunised.³ **Figs 7 and 8** show how vaccination coverage of Hepatitis B in Sutton has improved greatly for children aged one year, up from 66.7% coverage in

³ Public Health England. Public Health Outcomes Framework. <http://www.phoutcomes.info/>

2012/13 to 100% in 2014/15. There has also been an improvement for vaccination coverage for hepatitis B at two years and Sutton's coverage is 100%.

It is very encouraging that Sutton has achieved complete vaccination coverage of Hepatitis B at aged one and two years, and the borough is one of only seven reporting London authorities to reach this status.

Fig. 7: Trend in Vaccination Coverage of Hepatitis B in Sutton at one and two years

Fig. 8: Vaccination Coverage of Hepatitis B in Sutton at one and two years, 2014/15, Sutton compared to London authorities

Human Papilloma Virus – HPV

The HPV vaccine protects against the two high-risk HPV types - 16 and 18, that cause more than 70% of cervical cancers. In the UK, all 12-13 year old girls (school year 8) are offered vaccination through the national HPV immunisation programme.⁵

Figs 9 and 10 show that Sutton's vaccination coverage of HPV has improved and is now higher than the national average. Sutton's HPV vaccination rate in 2013/14 was 90.4%, higher than London (80%) and England (86.7%). All secondary schools in this borough, barring one, encourage HPV immunisation and assist in arranging sessions.

Fig. 9: Trend in Vaccination Coverage of HPV in Sutton

Fig. 10 shows that *Sutton ranks second out of London authorities for HPV vaccination coverage.*

Fig. 10: Vaccination Coverage of HPV, 2013/14, Sutton compared with London authorities

In summary, there have been encouraging improvements in coverage of Sutton's childhood vaccinations. However, for some key childhood immunisations, rates are still below target.

Sutton progress

There have been improvements in the most recent year, but Sutton's coverage remains lower than would be expected for childhood immunisations. The lead responsible agency is now NHS England (NHSE) but it is generally accepted that more local initiatives are needed. It is known that there is under recording of immunisation in Sutton due to historically poor information systems. This data accuracy needs to be addressed at the same time as trying to improve coverage on the ground via collaborative work with front line staff.

What works

Vaccination coverage is closely correlated with levels of disease. Monitoring coverage identifies possible drops in immunity before levels of disease rise (NICE).⁴

Key indicators and targets

Relevant indicators from the Public Health Outcomes Framework

<http://www.phoutcomes.info/>

Health Protection Domain

⁴ NICE Guidance. Public Health Outcomes Indicator. 3.3 Population vaccination coverage. <http://publications.nice.org.uk/nice-guidance-and-public-health-outcomes-lgb5/rationale-for-the-indicators>

- 3.03i - Population vaccination coverage - Hepatitis B (1 year old)
- 3.03i - Population vaccination coverage - Hepatitis B (2 years old)
- 3.03iii - Population vaccination coverage - DTaP / IPV / Hib (1 year old)
- 3.03iii - Population vaccination coverage - DTaP / IPV / Hib (2 years old)
- 3.03iv - Population vaccination coverage – Men C
- 3.03v - Population vaccination coverage - PCV
- 3.03vi - Population vaccination coverage - Hib / Men C booster (2 years old)
- 3.03vi - Population vaccination coverage - Hib / Men C booster (5 years)
- 3.03vii - Population vaccination coverage - PCV booster
- 3.03viii - Population vaccination coverage - MMR for one dose (2 years old)
- 3.03ix - Population vaccination coverage - MMR for one dose (5 years old)
- 3.03x - Population vaccination coverage - MMR for two doses (5 years old)
- 3.03xii - Population vaccination coverage - HPV

All are reported on and described in the previous section 'The Local Picture'.

Links to further information

See also the Factsheet on **HEALTH PROTECTION** – Infectious Disease.

- Public Health England. The complete routine immunisation schedule.
- <https://www.gov.uk/government/publications/the-complete-routine-immunisation-schedule>
- Public Health England. Vaccine uptake guidance and the latest coverage data. <https://www.gov.uk/government/collections/vaccine-uptake>
- NHS Choices. The NHS vaccination schedule. <http://www.nhs.uk/Conditions/vaccinations/Pages/vaccination-schedule-age-checklist.aspx>
- The Children and Young People's Health Benchmarking Tool. <http://fingertips.phe.org.uk/profile/cyphof>

Priorities for Sutton

There have been encouraging improvements in rates of childhood immunisations.

However, rates for many immunisations in the latest reported financial year for 2014/15 are still below target and lower than expected given Sutton's demographic profile compared to other areas and relative deprivation ranking.

As per the Health and Wellbeing Strategy, the priority is to increase the proportion of the population protected by vaccination. This is a lead role for Public Health England and NHS England but the London Borough of Sutton and Sutton CCG are re-examining what is required locally. Specific actions are to continue to:

- Work with General Practice to ensure that practices have a robust system in place for managing the Routine Childhood Immunisation Programme. Also, to work with lower performing practices to raise to at least the average
- Improve access to immunisations by targeting vulnerable groups, especially highly mobile populations, and working with Children's Services
- Active data capture to improve quality and improve processes to ensure the system picks up on all immunisations administered
- Improve public awareness and attitudes to immunisations, currently the responsibility of NHS England