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Childhood Immunisation Programme

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Inside:

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Background

Vaccines provide an effective way to protect infants, children and the wider population from infectious diseases that would otherwise be common in childhood. Vaccines used in the UK childhood immunisation programme have a very good safety record. The Joint Committee on Vaccination and Immunisation (JCVI) is an independent scientific body that advises UK health departments on national programmes. The Department of Health regularly amends the routine immunisation schedule (see Table 2) in response to changing patterns of disease and the development of new vaccines. This brief discusses vaccines currently offered, changes to the schedule and a recent recommendation by the JCVI to introduce a new meningococcal B vaccine.

Childhood and Adolescent Vaccines

Pre-natal Vaccines

A programme introduced in October 2012 offers pertussis (whooping cough) vaccination to pregnant women (between 28 and 38 weeks of pregnancy). This was in response to a national outbreak of pertussis (see Figure 1) to which infants have negligible immunity. Most pertussis cases in infants occur before six weeks of age and can cause serious complications and death. Maternal antibodies cross the placenta giving newborns some immunity until they receive their first pertussis vaccine at two months old. Take up by pregnant women has been in the range 55-60%.[1]

Babies born to women vaccinated at least a week before birth had a 91% reduced risk of becoming ill with whooping cough in the early weeks of their life compared with babies whose mothers had not been vaccinated.[2] In England, there were 9,367 whooping cough cases in 2012, which halved to 4,623 in 2013. For infants less than three months old, the decrease was greater, with 79% fewer cases in 2013 (85) than in 2012 (407).

Table 2 gives data on pertussis mortality in infants in England. Fourteen infants under the age of three months died from pertussis in 2012. Since the pertussis vaccination programme was introduced in October 2012, 11 infants (less than three months old) have died from pertussis; ten of whom were born to mothers who had not been vaccinated. All these infants were too young to be fully protected by vaccination themselves and none had received their first dose.

In 2014, the JCVI advised that the pre-natal pertussis programme should

1 Health Protection Report, Infection Report, Volume 9 Number 7, Pertussis Vaccination Programme for Pregnant Women: Vaccine Coverage Estimates in England (September - December 2014), 27 February 2015, Public Health England

2 Effectiveness of Maternal Pertussis Vaccination in England: an Observational Study The Lancet Volume 384, No. 9953, p1521–1528, 25 October 2014

continue for a further five years.

Age	2012	2013	2014	2015*
< 3 months	14	0	0	0
< 3 months, mother vaccinated	0	0	1	0
< 3 months, mother not vaccinated	0	3	6	1
3-5 months	0	0	0	0
6-11 months	0	0	0	0

Table 1. Infant deaths from pertussis in England. * reported by 30 April 2015.

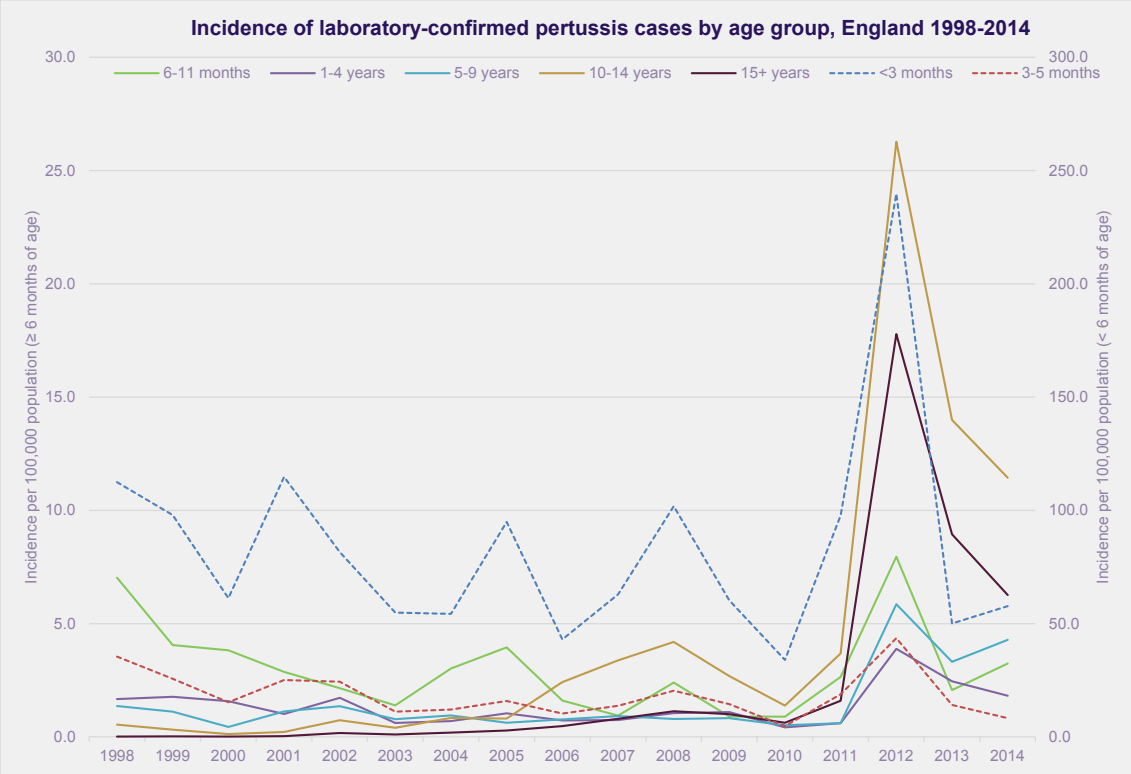

Figure 1. Incidence of pertussis in England.

Childhood Immunisation Schedule

Table 2 shows the schedule of childhood and adolescent vaccines available on the NHS. They are offered to pregnant women and children through maternity services, in general practices and schools.

Age	Vaccine	Comment
In pregnancy	Pertussis	Offered to pregnant women (between 28-32 weeks of pregnancy).
	Influenza	
2 months old	DTaP/IPV/Hib	This 5-in-1 vaccine protects against five diseases, with children immunised in three stages in their first four months. They are diphtheria (D), tetanus (T), pertussis (aP also known as whooping cough), polio (IPV inactivated polio vaccine) and meningitis and pneumonia that can be caused by Haemophilus influenza type b (Hib).
	Rotavirus	Protects against rotavirus, a common cause of a highly infectious stomach bug that typically affects babies and young children.
	Pneumococcal infection conjugate vaccine (PCV)	Protects against pneumonia, septicaemia (blood poisoning) and meningitis caused by the bacterium *Streptococcus pneumoniae*.
	Meningococcal B (Men B)	Protects against meningitis and septicaemia caused by the bacterium *Neisseria meningitidis.*
3 months old	DTaP/IPV/Hib	Second dose
	Rotavirus	Second dose
	Meningococcal C (Men C)	Protects against meningitis and septicaemia caused by meningococcal group C bacteria.
4 months old	DTaP/IPV/Hib	Third dose
	PCV	Second dose
	Men B	Second dose
12-13 months old	Hib/Men C booster	Single jab containing Hib (fourth dose) and Men C (third dose).
	PCV	Third dose
	MMR	A 3-in-1 vaccine to protect against measles, mumps and rubella.
	Men B booster	Third dose
3 years, 4 months old	MMR	Second dose
	DTaP/IPV	A 4-in-1 pre-school booster vaccine for diphtheria, tetanus, pertussis and polio.
2 years old	Influenza*	Nasal spray, contains vaccines against four influenza strains, based on annual recommendations made by the World Health Organisation.
3 years old	Influenza	Nasal spray
4 years old	influenza	Nasal spray
12-13 years old**	Human Papillomavirus (HPV)	Girls only, two doses given at least six, and not more than 24 months apart to protect against some strains of the virus that causes cervical cancer.
Around 14 years old	Men ACWY	Teenage booster for Men C and protection against Men W
	Td/IPV	3-in-1 booster vaccine against diphtheria, tetanus and polio. (MMR status is also checked.)

Table 2. Current NHS Childhood Immunisation Schedule from 1 September 2015

* In the 2015/16 flu seaon, this will also be offered to five and six year olds.

**Girls who began vaccination before September 2014 receive three injections.

Extra vaccinations other than those listed in Table 2 are offered to babies and children in specific at-risk groups. They include targeted immunisations against hepatitis B and tuberculosis. Other immunisations such as respiratory syncytial virus and chickenpox are offered only to specific groups of people at risk. Chickenpox (varicella) immunisation is not on the routine schedule but it is recommended for contacts of immunocompromised patients in order to protect them. For instance, it would be offered to the child(ren) of a parent undergoing chemotherapy.

Rotavirus vaccination was introduced in July 2013. Surveillance data from Public Health England shows that it is having a significant impact on the incidence of infections, see Figure 2.

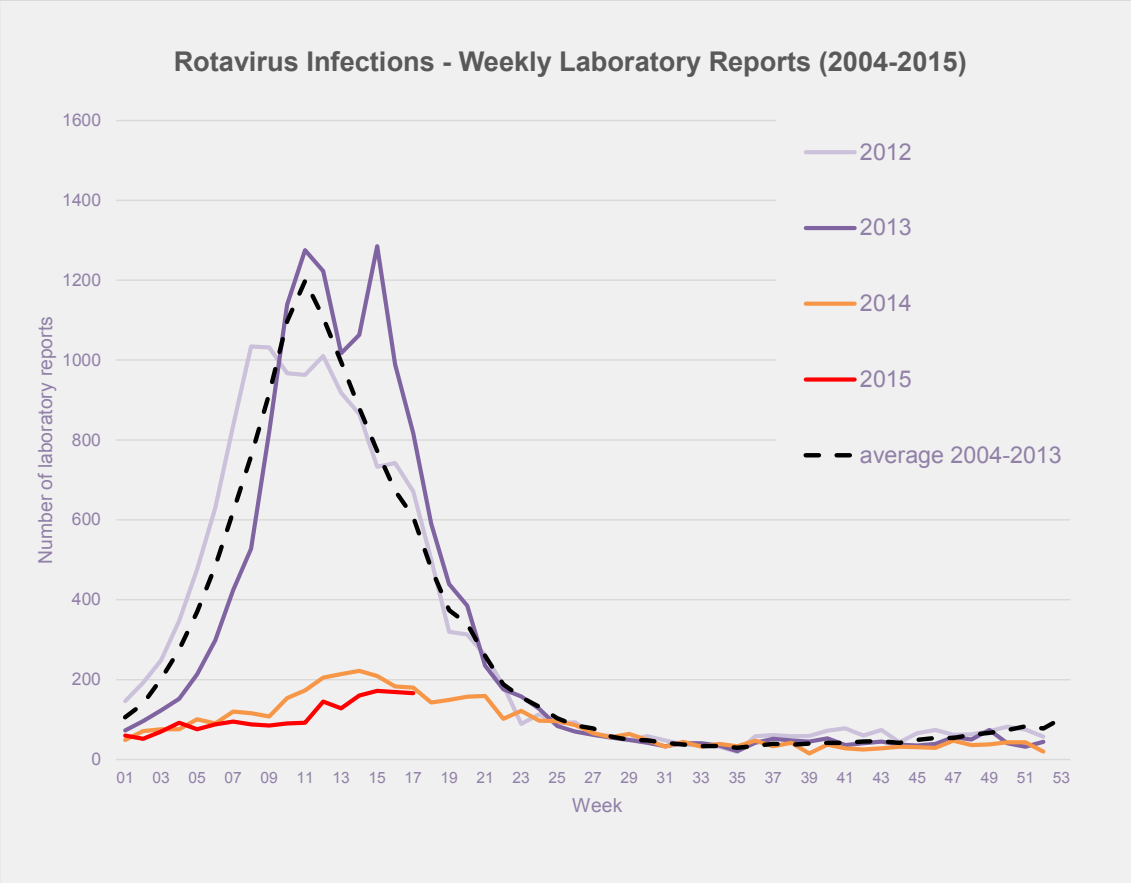

Figure 2. Rotavirus Infections in England 2004-2015.[3] The rotavirus vaccine was introduced in September 2013, offered only to infants.

3 Rotavirus: Guidance, Data and Analysis, Public Health England

Recent Advice from the JCVI

Meningococcal Disease

There are twelve different types of meningococci (A, B, C, E, H, I, K, L, W, X, Y and Z), of which groups B, C, W and Y have historically been the most common in the UK. Meningococcal B has been responsible for about 90% of meningococcal disease, although incidence has decreased since 2000. Meningococcal C was common until a vaccine was introduced in 1999, with only a few cases every year since.

Meningococcal Group B

A new vaccine (Bexsero) against meningococcal B bacteria was licensed by the European Medicines Agency in January 2013. JCVI issued a statement in March 2014 which recommended that the vaccine should be offered to infants or toddlers, with two doses in infancy and a booster dose at 12-13 months old. However the Committee considered that there was considerable uncertainty about the cost-effectiveness of routinely vaccinating adolescents, and that a study to assess this should be undertaken. The Committee agreed to review the impact of the infant programme, including duration of protection in infants, changes in meningococcal B epidemiology, medically attended events following vaccination and impact on coverage of other infant vaccines. A year after this recommendation, the Government reached agreement with the manufacturer GSK for supply of Bexsero in March 2015. The Department of Health will add the vaccine to the childhood immunisation programme from 1 September 2015; the first country in the world to begin national and publicly-funded meningococcal B immunisation.

Meningococcal Group W

Meningococcal disease has been declining in England over the last decade, but there has been steady increase in one type, called meningococcal disease W (Men W) since 2009, with cases and deaths in all age groups. There were 22 cases in 2009 and 117 in 2014. There were 34 confirmed cases in January 2015, compared with 18 in January 2014 and nine in January 2013. JCVI considers that this is a public health emergency so has advised the Government to implement a programme to vaccinate teenagers aged 14-18 with the Men ACWY vaccine (which will replace the existing Men C vaccine).

Since adolescents starting university are at greater risk, from August 2015, all 17 and 18 year olds in school year 13 will be offered a combined vaccine that protects against the A, C, W and Y strains of meningococcal disease. It will also be available for 19-25 year olds starting university in autumn 2015. From spring 2016, a school-based programme for Men ACWY, will be offered to children in school years 9 and 10 and a catch-up programme for those in year 11. This can be given at the same time as the teenage 3 in 1 booster vaccine against

diphtheria, tetanus and polio (see Table 1). This would offer protection to children and adults across the population. The Committee intends to monitor the outbreak in order to inform advice about the possible need to vaccinate other age cohorts.

Forthcoming Work of the JCVI

In 2008, a vaccine against some strains of the human papillomavirus (HPV), responsible for some of the most common types of cervical cancers, was introduced into the childhood schedule for adolescent girls. The JCVI is considering whether it would be cost-effective to extend the HPV programme to include adolescent boys. Researchers at Warwick University have been commissioned to model cost effectiveness for this group, with a full report expected for JCVI consideration in late 2015. Further modelling is being undertaken by Public Health England that may not be complete until 2017, so the JCVI may not be able to provide final advice until then.

The Human Papillomavirus is also associated with anal, penile and oropharyngeal cancers, and anogenital warts. The JCVI is reviewing whether the HPV vaccine should be offered in sexual health clinics to 16-40 year old men who have sex with men (MSM), who are at particular risk from these conditions, and who receive very little indirect protection from the HPV-vaccinated population of adolescent girls.

There are concerns amongst some groups who argue that there should be equity of access in national vaccination policy. If a targeted programme for MSM were to be offered, they propose that vaccinating other groups (women aged over 17) and individuals other than MSMs attending sexual health clinics should also be considered.