Public Health England

Changes to the meningococcal C conjugate (MenC) vaccine schedule 2013-2015

Information for healthcare professionals

About Public Health England

Public Health England's mission is to protect and improve the nation's health and to address inequalities through working with national and local government, the NHS, industry and the voluntary and community sector. PHE is an operationally autonomous executive agency of the Department of Health.

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Background

The meningococcal C (MenC) vaccination programme was first introduced into the UK routine immunisation programme in November 1999. All children and adolescents under the age of 18 years were offered immunisation over the subsequent two-year period. In 2002, the catch-up campaign was extended to include all adults under 25 years of age.[1] In 2006, following studies that showed two doses of MenC vaccine provided good protection in the first year of life but protection waned during the second year, the primary immunisation course was changed to two doses – one at three months of age and one at four months – with the addition of a booster dose at 12 months of age to extend the duration of protection.[1,2]

Since the introduction of this revised vaccination programme, disease caused by MenC has fallen by over 95% and cases are now at an extremely low level in the UK. This is due to both individual direct protection and indirect protection or herd immunity. However, in order to maintain these low levels of disease and herd immunity, the Joint Committee on Vaccination and Immunisation (JCVI) has recommended further changes to the schedule.

Meningococcal disease

Meningococcal disease is caused by invasive infection with the bacterium *Neisseria meningitidis*, also known as the meningococcus. There are 12 identified serogroups of which groups B, C, W and Y were historically the most common in the UK. Since the introduction of the routine MenC vaccination programme, cases of invasive meningococcal disease in the UK due to serogroup C have reduced dramatically, with serogroup B accounting for the majority of cases.
Meningococcal infection most commonly presents as either meningitis or septicaemia, or a combination of both.

Meningococci colonise the nasopharynx of humans and are mostly harmless commensals. Between 5 and 11% of adults and up to 25% of adolescents carry the bacteria without any signs or symptoms of the disease. In infants and young children, the carriage rate is low.
Meningococcal disease is transmitted by respiratory aerosols, droplets or by direct contact with the respiratory secretions of someone carrying the bacteria. The incubation period is from two to seven days and the onset of disease varies from fulminant with acute and overwhelming features, to insidious with mild prodromal symptoms.

Who is affected by meningococcal disease

Meningococcal disease can affect all age groups, but the rates of disease are highest in children under five years of age, with the peak incidence in those under one year of age. There is a second peak in incidence in young people aged 15- 19 years.

The vaccination programme

Why the MenC vaccination programme is changing

JCVI has advised that changes to the schedule will make the overall MenC immunisation programme more effective and offer greater protection in teenagers and young adults. Studies show that vaccination against MenC disease in early childhood provides a relatively short-term protective immune response. Protection given by vaccination at 12 months wanes by the teenage years, but vaccination later in childhood provides higher levels of antibody that persist for longer. [3,4,5,6] Evidence also shows that MenC vaccination significantly reduces nasopharyngeal carriage of the serogroup C meningococcus, providing indirect protection through herd immunity.[7,8]

Infant programme

The second dose of MenC vaccine given at four months of age was removed from the routine schedule from 1 June 2013. This recommendation follows a study that showed a single priming dose in infancy at three months of age is sufficient to provide protection against MenC disease in the first year of life.[9]

Teenage booster

JCVI has recommended the introduction of a MenC adolescent booster to be given at the same time as the teenage tetanus, diphtheria and polio vaccine (Td/IPV), to extend protection into early adulthood.

New starters at universities

JCVI noted that older adolescents, who will be beyond the age of the routine adolescent booster at the time of its introduction, (introduced in 2013/14 academic year) may have only received a single dose of MenC vaccine at a young age (under the age of ten years). This group are at increased risk of contracting MenC disease if they enter into higher education in a university setting for the first time and should be offered a single dose of Men C conjugate vaccine. This is because the disease can spread quickly in

areas where people live closely to each other, eg in university halls of residence or shared accommodation.

Changes to the MenC programme

From summer 2013, the MenC routine schedule will change to the schedule shown in Table 1.

Table 1 Men C routine vaccination schedule revised 2013

Age	Primary/ Booster	Dosage
3 months	Primary	One dose – Men C vaccine **NeisVac-C® or Menjugate® Kit ONLY**
12-13 months	Booster	One dose – Hib/Men C vaccine **Menitorix®**
Around 14 years	Booster	One dose – MenC conjugate vaccine
"freshers" ***First time entrants to university catch up programme**	Booster Commencing 1 August 2014	One dose – Men C conjugate vaccine

MenC programme changes start point

The national or local child health computer systems stopped scheduling the four month dose of MenC vaccine from 1 June 2013.

The routine MenC booster immunisation for teenagers was introduced in the 2013/14 academic year and continues to be offered at the same time as the current teenage Td/IPV booster in 2014/15.

The programme for new starters at universities will begin from 1 August 2014 and will be offered to those aged between 17 and under 25 years entering university for the first

time and who have not received a dose of MenC conjugate vaccine over the age of ten years.

Recommended MenC vaccine for the primary dose at three months of age

NeisVac-C® or Menjugate Kit® should only be used for the dose given to infants at three months of age because these vaccines provide a good immune response after one dose under one year of age, and strong immune responses when boosted with Hib/MenC vaccine routinely given at 12 to 13 months.[3]

Meningitec® should **not** be used for primary vaccination of infants as one dose is less immunogenic under one year of age.

Recommended Men C vaccine for the teenage booster dose at around 14 years of age

Any Men C conjugate vaccine can be used for the teenage booster dose.

What ‘Around 14 years’ means

Whilst JCVI has advised that the adolescent MenC booster dose be given in school year nine (13 to 14 years of age) and at the same time as the Td/IPV vaccine booster dose, we are aware that presently, a significant proportion of Td/IPV vaccine is offered at a later age, eg school year 10 (14 to 15 years of age). Eventually arrangements should be made to align the new routine schedule into school year 9 (13 to 14 yrs), however, the MenC conjugate booster dose may, for a period of time, be administered in other school years alongside the adolescent Td/IPV booster. The term ‘around 14 years’ is to avoid being prescriptive about the age at which vaccination should occur, thus allowing for local differences in the age at which the teenage booster vaccinations will be offered.

Teenagers who have already received their school leaver booster (Td/IPV) and are entering university for the first time

Prospective students entering university for the first time are at increased risk of contracting Men C disease. The JCVI noted that older adolescents who will be beyond the age of the routine adolescent booster (introduced during2013/14 academic year) may only have received a single dose of Men C vaccine at a young age, leaving them susceptible to infection. Therefore, prospective students who are unimmunised or partially immunised against Men C disease should be offered a single dose of Men C vaccine prior to entering university. This includes:

- those aged 17 to under 25 entering university*[1] for the first time and who have not received a dose of MenC conjugate vaccine over the age of ten years

- students entering university for the first time, irrespective of age, who have never received a dose of MenC conjugate vaccine

- all Individuals under 25 years who have never received a dose of MenC conjugate vaccine. This may include students entering or being at university who have never received a dose of MenC conjugate vaccine

Prospective students who have previously received a dose of Men C conjugate vaccine at the age of ten years or over do not require an additional dose as they will still be protected. For simplicity, if a prospective student's immunisation history cannot be confirmed before attending university, it is acceptable to offer a dose of MenC conjugate vaccine. Ideally the dose should be administered at **least** two weeks before attending university to ensure timely protection.

Offering a dose of Men C vaccine over the age of ten years to those students who may be unimmunised or partially immunised will ensure satisfactory boosting of their antibody levels prior to starting university. This is important, as evidence shows that the acquisition of meningococcal bacteria and increased risk of disease occurs within the first few weeks after entry.

This time-limited catch-up programme starting on 1 August 2014 will run for several years until university entrants have received a dose of MenC conjugate vaccine routinely as part of their adolescent booster vaccines.

How new starters at university* will be informed that they require a MenC booster vaccine and how they will receive it

Prospective students will be informed about the need for a booster dose of Men C vaccine through the Universities and Colleges Administration Service (UCAS). It is expected that eligible prospective students will attend their GP practice for vaccination from 1 August 2014. If required, GP practices can opportunistically offer a booster dose

[1] ***University is defined as any University or College that is a member of the Universities and Colleges Admissions Service (UCAS).**

of Men C vaccine before August 2014 to prospective students who they are expecting to go to university in autumn 2014.

It is important that eligible students, including overseas students, receive vaccination at **least** two weeks before they attend university whenever possible to ensure timely protection. Students who are not vaccinated before leaving for university should be offered the vaccine as soon as possible after they arrive.

Are students aged 17 to under 25 years entering university*[1] for the first time eligible to receive MenC conjugate vaccine after 31 October 2014?

Eligible students entering university for the first time are encouraged to receive MenC conjugate vaccine at **least** two weeks prior to attending university to ensure timely protection. However, GP's may wish to consider immunising eligible students after 31 October 2014 where there is a clinical indication for doing so. Offering the vaccine after this time will be at the discretion of the GP surgery.

Are individuals under 25 years of age who have never received a dose of MenC conjugate vaccine previously eligible to receive the vaccine?

Yes, MenC conjugate vaccine should be offered to all individuals under the age of 25 who have never received a dose of MenC conjugate vaccine previously. GP's are encouraged to consider immunising such individuals where there is a clinical indication for doing so.

Young people not entering university

Studies show that young people not entering higher education in a university setting are not exposed to the same level of risk of developing Men C disease.[11] However, Men C vaccine should be offered to anyone under the age of 25 who have never received a dose of Men C conjugate vaccine previously.

Young people entering further education (ie college)

The JCVI considers prospective students entering university as being at an increased risk of Men C disease as these students are more likely to stay in halls of residence and/or have close contact with new students during freshers' week. Given that the current levels of Men C disease are very low, the JCVI does not recommend vaccination for those attending further education colleges as they are unlikely to be exposed to the same level of risk.

However, Men C vaccine should be offered to anyone under the age of 25 who have never received a dose of Men C conjugate vaccine previously.

The summaries of product characteristics (SPCs) for NeisVac-C® and Menjugate Kit® state that two doses should be given two months apart to infants less than a year old but the Green Book meningococcal chapter says to only give one dose. Which recommendation to follow.

Evidence from a UK study shows that immunogenicity is adequate following a single priming dose in infants.[9] In this situation, where the SPC information differs from the information within the Green book, the recommendations in the Green Book should be followed as they are based on current expert advice received from the JCVI.

Children aged ten years or older who have received a booster dose of a MenC vaccine previously

Individuals vaccinated aged ten years or older have higher levels of antibody, and protection persists until at least early adulthood and possibly longer.[6] Therefore if a child received a dose of MenC conjugate vaccine (including quadrivalent meningococcal conjugate vaccine) aged ten years or older, they should be adequately protected and do not need further routine scheduled doses in adolescence.

What to do if an infant has inadvertently received a single dose of Meningitec® at three months of age?

For those children who inadvertently received Meningitec® at three months of age (instead of the recommended NeisVac-C® or Menjugate Kit®), the priority must be to ensure that they receive the 12-month Menitorix® booster and, where possible, ensure that this dose is **not** delayed.

A study investigating the immune response to MenC vaccine found that a lower proportion of children (around 53%) develop protective antibody after the first dose of Meningitec® at two months of age than those vaccinated with either Menjugate® or NeisVac-C® (>80%) [15,16,] The proportion of infants protected after a single dose of Meningitec® at 3 months is likely to be higher than published studies where infants received the vaccine at 2 months of age. After the booster dose of Menitorix® at 12 months, almost all children (>95%) will be expected to make protective antibodies against MenC, regardless of the initial vaccine received.[17]

Currently, MenC disease is extremely rare in the UK, especially in children, with most cases occurring in adults who often have a history of travel abroad or recent immigration to the UK. In England, less than 5% of meningococcal infections are caused by Meningitis C, amounting to

around 20-40 cases per year. In the past 10 years, on average, there have been only one or two cases each year in infants. The recent introduction of an adolescent MenC booster will also improve herd protection by boosting antibody levels prior to entering the age group at highest risk of carriage. The risk of MenC disease in infants is, therefore, likely to be very low and the period of risk is short, even if they have only received a single dose of Meningitec®.

GP practices will now only be able to order NeisVac-C® for both the infant and adolescent programmes. It is no longer possible to order Meningitec® from the national supply. Stock will still be held locally but we understand that the shelf life for this vaccine should not extend beyond July 2014. There is also no national supply of Menjugate®.

What to do if an infant, who was previously immunised with Meningitec® at three months of age, inadvertently receives NeisVac-C at four months instead of the recommended Meningitec® or Menjugate®

Most infants who receive Meningitec® vaccine at three months of age followed by NeisVac-C® at four months will be adequately protected with this combination and their immunity will also be boosted by the 12-month dose of Hib/MenC (Menitorix®) vaccine. However, one study has shown that a small number of infants who received a MenC vaccine with a CRM carrier protein (eg Meningitec® or Menjugate®) followed by a MenC vaccine with a tetanus carrier protein (ie NeisVac-C®) did not make as good an immune response to either Hib or MenC. For this reason, it is recommended that where an infant inadvertently receives this combination, they should be offered a dose of Menitorix® vaccine at least four weeks after the NeisVac-C® was given. They should then receive the 12-month Menitorix® booster as per the routine schedule.

Infants who received this combination prior to the programme change on 1 June 2013 do not need to be recalled for further vaccination. Hib and MenC infections are currently rare in infants in the UK and these infants will receive their 12 month Menitorix booster within the next few months.

Where can I get more information?

- DH/PHE/NHS England joint letter: Important changes to the national immunisation programme in 2013/14: changes to the schedule for meningococcal serogroup C conjugate vaccination
- *Immunisation against infectious disease* (the Green Book) Meningococcal chapter www.gov.uk/government/organisations/public-health-england/series/immunisation-against-infectious-disease-the-green-book

- Training slides available at www.gov.uk/government/organisations/public-health-england/series/immunisation
- Leaflets and poster resources available to order from the Publications Orderline www.orderline.dh.gov.uk/ecom_dh/public/home.jsf
- Information on meningococcal disease is available at: www.hpa.org.uk/Topics/InfectiousDiseases/InfectionsAZ/MeningococcalDisease/

Useful links

- Meningitis Research Foundation: www.meningitis.org
- Meningitis Now : www.meningitisnow.org
- NHS Choices: www.nhs.uk/Pages/HomePage.aspx
- Joint Committee on Vaccination and Immunisation: www.webarchive.nationalarchives.gov.uk/+/www.dh.gov.uk/ab/JCVI/index.htm

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