Centre for Public Scrutiny

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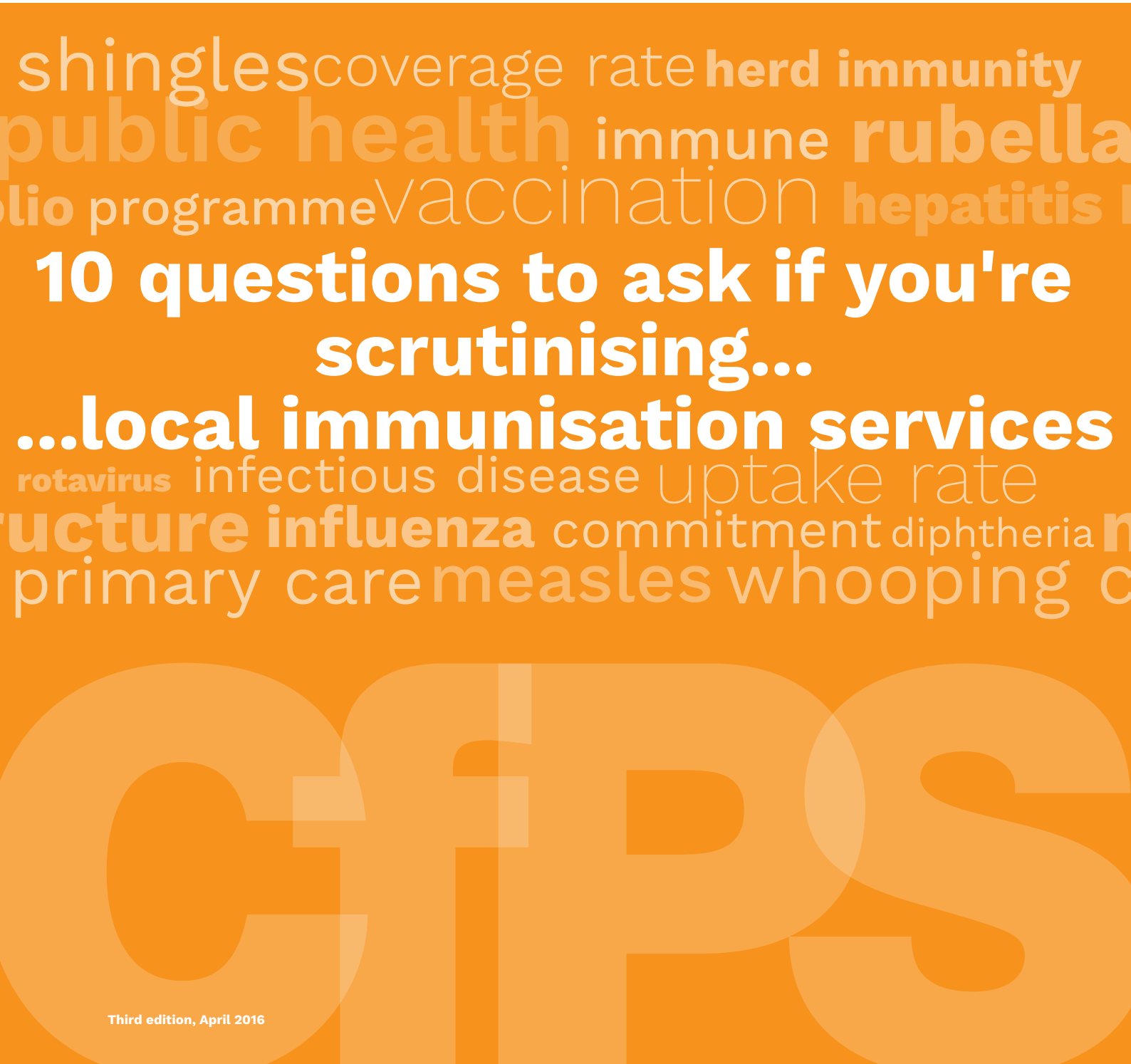
10 Questions To Ask If You're Scrutinising...
...Local Immunisation Services



Third edition, April 2016

The Centre for Public Scrutiny

The Centre for Public Scrutiny (CfPS), an independent charity, is the leading national organisation for ideas, thinking and the application of policy and practice to promote transparent, inclusive and accountable public services. We support individuals, organisations and communities to put our principles into practice in the design, delivery and monitoring of public services in ways that build knowledge, skills and trust so that effective solutions are identified together by decision-makers, practitioners and service users.

This guide on the scrutiny of immunisation provision is one of a series by CfPS designed to help Health Overview and Scrutiny Committees (HOSCs) carry out their scrutiny work around various health, healthcare and social care topics.

The guide identifies ten key question areas and their detailed questions, which can be used by the HOSC to scope out a wide review or to concentrate on an area of particular interest or bearing; this is important if local needs are to be identified and areas are to provide an effective response.

Other guides in the series include:

- Child and Adolescent Mental Health Services
- Services for people with dementia
- Adult social care
- Reducing unintentional injury in the under 15s
- Preventing cardiovascular disease
- Men's health
- Service for Looked After Children

THIS SCRUTINY GUIDE HAS BEEN PRODUCED AS A COLLABORATION BETWEEN THE CENTRE FOR PUBLIC SCRUTINY AND SANOFI PASTEUR MSD; THE GUIDE WAS COMMISSIONED AND FUNDED BY SANOFI PASTEUR MSD, WHO HAVE CONTRIBUTED TO AND REVIEWED THE CONTENT. THE GUIDE IS PRIMARILY INTENDED FOR HEALTH OVERVIEW AND SCRUTINY COMMITTEE MEMBERS AND ASSOCIATED STAKEHOLDERS.

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CONTENTS

FOREWORD

Asking well-informed questions about immunisation is an essential component of effective scrutiny. This publication provides the material and framework to enable members and officers to explore the complex and multifaceted topic in a clear and accessible way. As the authors have identified, immunisation is one of the great success stories of modern public health with a strong evidence base of successful interventions.

However, there are also specific challenges for the layperson as they engage with some of the more specialist and technical elements. The situation on the ground is increasingly complex with a wide range of approaches to commissioning and provision. At times this can appear inconsistent and liable to change. As a result there is significant variation across the country in terms of uptake and impact. Understanding who holds local responsibility for immunisation is critical. Local authorities are well placed to bring together networks and use their influence and leadership to build stakeholder approaches to mapping and understanding the system.

The immunisation of young children between 0 and 5 years old provides the foundations for lifelong immunity and helps to protect the most vulnerable members of our communities. It is essential that scrutiny committees understand the positive impacts of infant programmes and the reasons for any patterns of low take-up. But it is also important to consider the significance of a life course approach to immunisation for other groups such as young people, adults and older people as well as the broader issues of diversity and health inequalities. Scrutiny offers the opportunity to assess some of the wider, more holistic aspects of immunisation and share learning with other local authority functions in areas such as early years, housing, education and communications. Listening and understanding the experiences of children, young people and families can also ensure that scrutiny reviews take account of local voices and perspectives – placing them at the core of a review.

10 Questions to ask if you're scrutinising local immunisation services will be of great benefit to scrutiny committees, health and wellbeing boards and other local partnerships that want to understand more about the factors that drive effective and inclusive immunisation programmes. The Centre for Public Scrutiny looks forward to seeing how local committees use this resource to lead effective reviews.

Lord Kerslake,
Chair of the Centre for Public Scrutiny

INTRODUCTION

Nowhere has public health achieved more success than in the protection against infectious disease. Over the centuries improved living standards, sanitation, hygiene and nutrition have all been contributory factors. After clean water, vaccination is recognised as one the most effective public health interventions for saving lives and promoting good health. It is seen as the most cost-effective activity undertaken by healthcare professionals and is a critical element of preventive health care around the world. [1]

Immunisation is the process whereby a person is made immune or resistant to an infectious disease. This is achieved through vaccination but also when an individual has the disease naturally. Vaccination is the term used when a vaccine is introduced into the body to invoke an immune response. Vaccines are products developed to immunise against a specific disease. The terms vaccination and immunisation are used interchangeably.

BACKGROUND

In the United Kingdom, vaccine policy is advised by the Joint Committee on Vaccination and Immunisation (JCVI). The success of immunisation policy in the UK relies on vaccines protecting the individual from the specific disease. It is also dependent on achieving high uptake of the vaccines across the population, which thereby minimises the spread of infections. The UK is successful in this and although it is not compulsory for anyone to receive vaccines, the uptake for most vaccinations is high and vaccine-preventable disease is now relatively rare in the UK. The programmes rely on a complex process of policy decision, contract development and implementation to ensure access is equitable. This includes vaccine procurement and appropriate training and support for staff involved.

Vaccines are routinely given across the life course to those at most risk of contracting serious illnesses, including;

- Children between 0 and 5 years of age receive the majority of routine vaccinations.
- School-aged children require certain vaccines; some as boosters which will prolong the longevity of the immunity acquired and some deemed best to be given to teenagers.
- Adults require vaccines depending on age and if they have underlying medical conditions.
- Travellers will also be recommended some vaccines depending on where they are going.
- Some vaccines are recommended for certain occupational groups. This is to protect the individual who is at an increased risk of exposure. It is also to protect the wider public from any subsequent spread of infection.

HOW TO USE THIS GUIDE

This third edition of the guide is intended to be used as a tool to provide local authority councillors and others involved in Health Overview and Scrutiny Committees (HOSCs) and Health and Wellbeing Boards (HWBs), with useful background information about immunisation and a series of questions that may be helpful to consider when scrutinising the effectiveness of local services.

The right to receive the vaccinations that the JCVI recommends under an NHS-provided national immunisation programme is enshrined in the NHS constitution. [2] The effectiveness of the programme is dependent on the uptake of the specific vaccine being high and equitable across the eligible population. This requires close scrutiny of all the elements of the programme and the role of the local authority is to make sure the needs of their population are being met. This scrutiny falls broadly into three main groups:

- Vaccines for children aged 5 and under
- Vaccines for school-aged children
- Vaccines for adults.

This '10 Questions' guide is designed to give an overview of the rationale and policy for immunisation. It provides a basis to discuss the specific issues relating to each of these groups and how to make sure services are equitable across the population so that uptake is maximised.

Immunisation is very effective at reducing the incidence of infectious disease. The graphic below from Public Health England (PHE) demonstrates how once very common and potentially fatal infections are now very rarely seen in the UK following the introduction of vaccination.

Source PHE : https://publichealthmatters.blog.gov.uk/2015/11/12/phe-data-week-immunisation-in-numbers-5-fascinating-facts/

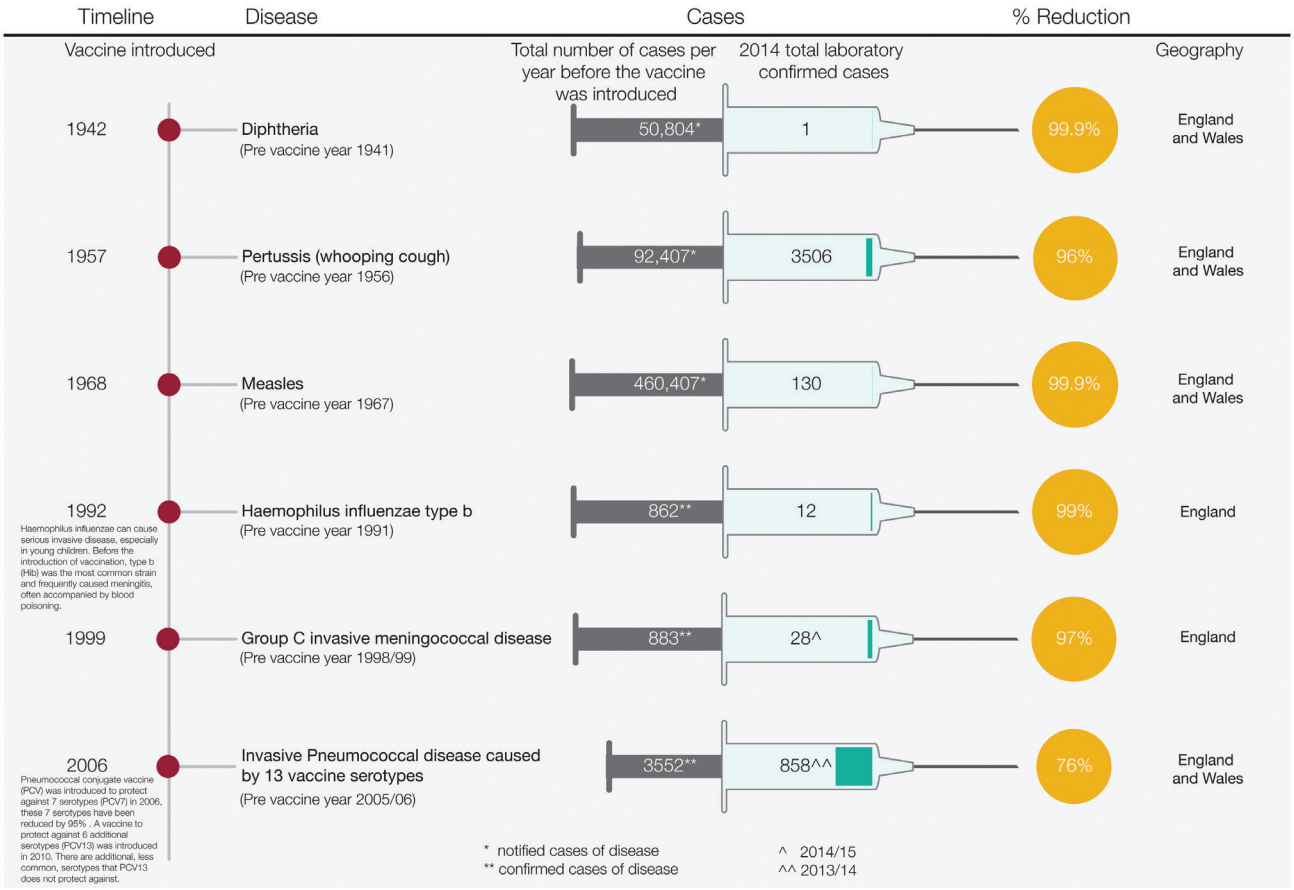


Image reproduced with permission from PHE.

A glossary of technical and medical terms can be found at the end of the document along with a Useful Links section to provide you with further resources should you wish to know more.

10 QUESTIONS TO CONSIDER WHEN SCRUTINISING LOCAL IMMUNISATION SERVICES

These questions are designed to give background and context for HOSCs and HWBs to consider and explore to ensure local immunisation services are effective and responsive.

1. Why is immunisation important and how is policy for vaccination decided in the UK?

Background and policy context

Immunisation is a proven tool for controlling and eliminating infectious diseases and the World Health Organisation (WHO) have estimated it to avert between two and three million deaths globally each year. [3] The primary aim of vaccination is to protect the individual. However, because vaccinated individuals are less likely to be a source of infection to others the risk to those not protected by vaccination being exposed to infection is reduced, this is a concept known as 'herd immunity' (or 'community immunity'). It is, however, important to note that not all diseases can be eradicated. Infections such as tetanus can only be kept at bay by protection of the individual. Tetanus spores are present in soil or manure and can be introduced into the body through a puncture wound, burn or scratch so protection against tetanus is individual.

Vaccine policy in the United Kingdom is advised by the JCVI, whose remit is;

"To advise UK health departments on immunisations for the prevention of infections and/or disease following due consideration of the evidence on the burden of disease, on vaccine safety and efficacy and on the impact and cost effectiveness of immunisation strategies. To consider and identify factors for the successful and effective implementation of immunisation strategies. To identify important knowledge gaps relating to immunisations or immunisation programmes where further research and/or surveillance should be considered."

The JCVI has no statutory responsibility to provide advice to ministers in Scotland or Northern Ireland. However, health departments from these countries may choose to accept the Committee's advice or recommendations. UK health departments are made aware of all JCVI advice through their designated observers who attend JCVI and sub-committee meetings and receive committee papers.

Decisions on the national vaccination programmes are taken after scrutiny of available evidence and literature both published and unpublished, alongside analysis of epidemiological data of disease incidence and consideration of the economic and health benefits of specific vaccinations and the benefit of making changes to the schedule.

The NHS delivery of immunisation programmes is good and uptake rates in the UK are generally very high. The key reasons for this are:

- A right to be immunised, free of charge, is enshrined under the NHS Constitution and as such vaccines for the NHS programme are provided free of charge to patients.
- The COVER programme (Cover of Vaccine Evaluated Rapidly); [4] since 1987 this programme has improved coverage by collecting, analysing and publishing data on vaccine uptake at local level in a consistent way across the country enabling changes in vaccine coverage to be detected quickly.
- The ongoing surveillance of all immunisation programmes to ensure maximum benefit to the individual as well as safety and cost-effectiveness through the JCVI.
- The continued high priority given by the government to the national childhood immunisation programme. With a commitment within NHS England and PHE structures that supports the effective delivery of immunisation programmes.

- Regular updates and information via tripartite (Department of Health (DH), PHE and NHS England) communications.
- Requirements for training and updates at a local level. PHE have developed a core curriculum and national minimum standards as well as a range of training resources. [5] There is a joint RCN and PHE training guidance resource [6] and a framework to asses staff competence in the workplace. [7]
- The regular updating of national policy guidance in the online resource, 'Immunisation against infectious disease' ('The Green Book' [8]).
- Publicity and information materials to support the programmes, including leaflets and factsheets developed by the immunisation team at PHE and made available via NHS Choices and the government website.

Questions to ask/consider?

An effective immunisation programme should encompass key 'Quality Criteria' - these were previously defined by the Health Protection Agency (HPA) in 2012; the HPA is now part of PHE. [9]

1) How is information and advice on changes and amendments to the schedule cascaded to services delivering vaccination?

2) Is immunisation a high priority area locally and does the local Joint Strategic Needs Assessments (JSNA) reflect the importance of maximising immunisation uptake across the life course for adults and children and is it updated to reflect new vaccines added into the national programme?

3) Is vaccination available easily and actively offered to those who need it and the service designed to make sure that every opportunity is taken to make sure those eligible are assessed and offered vaccination appropriately.

4) Are there call and recall systems in place in primary care and are staff alerted to the fact that a patient is due a vaccine?

5) Are there effective documentation and record keeping processes to ensure accurate information is available on population coverage and that the individual has a lifelong record?

6) Are vaccine related incidents reported and managed appropriately and are lessons learnt and disseminated.

7) Are there effective mechanisms to ensure vaccines are transported and stored appropriately so that vaccines given are of optimum quality?

8) Is training available for staff? The vaccine programmes are complex; training and access to support should be available for anyone involved in immunisation. All staff need to know where and how to access this.

9) Is there effective coordination so that all the elements of the immunisation programme are appropriately aligned and accountable?

2. Why is it important to scrutinise immunisation?

Background and policy context

Systematic review of vaccination uptake has been a key requirement for many years, to enable close analysis of pockets of poor uptake in order to support prediction of potential problems and implementation of early measures to mitigate these. The Public Health Outcomes Framework (PHOF), 'Improving outcomes and supporting transparency' [10] includes immunisation coverage rates as a continued outcome measure for reporting with the addition of the requirement to report on the uptake for targeted vaccinations and those given to teenagers and adults in a similar way to routine childhood vaccinations.

The PHOF Data Tool (under Indicator 3.03) enables individual local authorities to "compare and contrast" data, across a spectrum of immunisation indicators, against neighbouring authorities within the region and against an England average. [11]

The NHS England commissioning, Immunisation and Screening National Delivery Framework and Local Operating Model 12 sets out the arrangements for delivery and governance of immunisation and screening programmes and, importantly, who is responsible for the various aspects of immunisation.

NHS England/Public Health England

NHS England local offices are responsible for commissioning the national immunisation services locally and for providing system leadership to all those involved. Each NHS England local office has one or more public health commissioning teams made up of both NHS England-employed staff and public health professionals who are employed by PHE but are "embedded" within NHS England in order to provide public health leadership and expertise for these programmes.

Contracts to provide immunisation services are held with a range of providers;

- General practices for immunisations given in primary care (this includes vaccines given to children up to 5 years old and others)
- Community providers for immunisations that are given in a school setting (for example the childhood flu and the teenage vaccines).
- Contracts may also be held with community pharmacists (for example for flu vaccine) and sometimes with maternity services for the vaccines given to women who are pregnant (whooping cough and flu).

The NHS England teams will offer help and support to immunisation providers as well as monitoring uptake and taking action where uptake could be improved whilst acknowledging that immunisation is also a choice for parents and patients.

NHS England also holds contracts with the local provider of the Child Health Information System (CHIS). The CHIS should keep a record of every child's immunisation status and is the source for the childhood immunisation uptake data.

Clinical commissioning groups (CCGs)

CCGs have a responsibility for the quality of primary care services provided by the general practices within their organisation. CCGs are encouraged to see immunisation uptake rates as a marker for good quality primary care. Many CCGs include measures such as flu immunisation uptake and MMR uptake as quality measures in a "balanced scorecard" approach to quality.

Local Authority Director of Public Health (DPH)

The DPH has an assurance function. They need to assure themselves that the arrangements for immunisation are fit for purpose and are delivering service of high quality. Many local authorities exercise this responsibility via a health protection board as a sub-group of their health and wellbeing board.

Relationships between the local providers and commissioners and the HOSC and HWB are crucial in making sure the links between the various elements are transparent.

Increasingly the discussion about immunisation has expanded to recognise that immunisation is not only important in reducing preventable illness but also in minimising the consequences of infection for those with chronic conditions. For example, seasonal flu immunisation prevents not only excess winter deaths but reduces both hospitalisation and winter pressures on accident and emergency departments and it may, in turn, reduce nursing costs and residential home placements.

Immunisation should not always be a subject of scrutiny in isolation. When HOSCs are considering other topics, immunisation pathways should be included in the review. For example, a scrutiny of local maternity services could include a review of the provision of pertussis vaccination or of hepatitis B immunisation for at-risk neonates and, similarly, a review of support for older or vulnerable adults with long term conditions could consider how well they are protected through seasonal flu immunisation programmes.

Questions to ask/consider?

1) Is it clear who is responsible for commissioning immunisations within the NHS England local office?

2) Are providers of immunisation services (general practices and school-aged immunisation providers) clear who is responsible for commissioning and system management of immunisation services locally?

3) What are the reporting mechanisms within NHS England locally to show that immunisation performance is being given sufficient importance?

4) What systems does the DPH have in place to provide themselves with the assurance they need that immunisation services locally are fit for purpose?

5) Are practice level immunisation rates used by CCGs as a quality measure of general practice in their area?

3. How do you know which vaccines are available on the NHS?

Background and policy context

The routine schedule constantly evolves as research identifies better use of the vaccines currently available and as new vaccines become available. The schedule is developed to ensure that the most cost-effective programme is in place to protect the public from vaccine-preventable illness. Some vaccines are recommended for everyone whereas others are only recommended for those at greatest risk of developing severe disease or at particular risk of infection.

The timeline below shows when vaccines were introduced into the UK schedule.

Source PHE : https://www.gov.uk/government/publications/vaccination-timeline

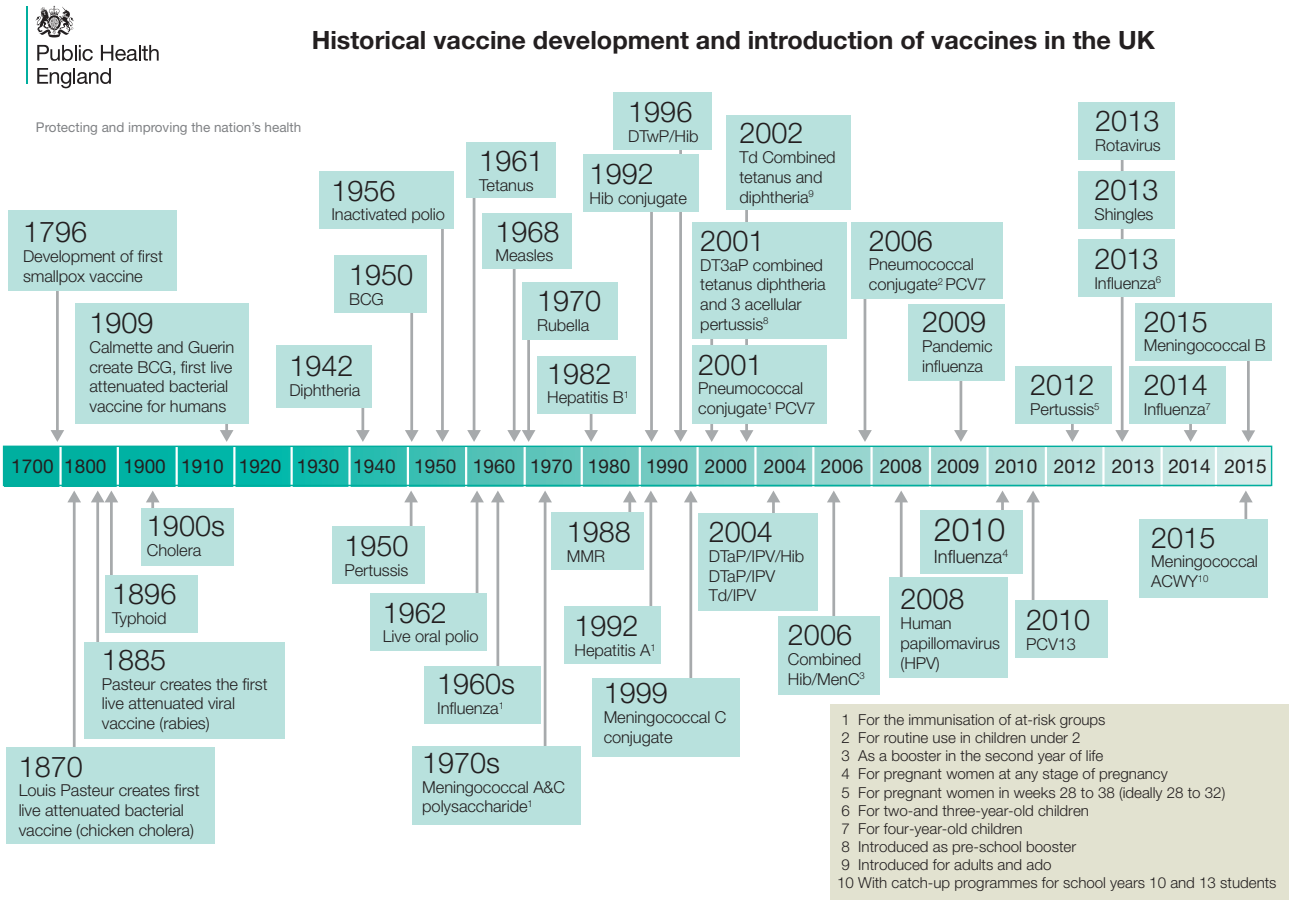


Image reproduced with permission from PHE.

The current complete routine schedule is available from PHE. [13] The detail behind it is presented in the DH publication 'Immunisation against infectious disease', [8] the Green Book which is regularly updated and only available on-line.

Childhood vaccines (under 5 years) are given to protect against the following diseases;

- rotavirus
- diphtheria
- tetanus
- polio
- meningococcal serogroup B (Men B)
- pertussis (whooping cough)
- haemophilus influenzae type b (Hib)

- meningococcal serogroup C (Men C)
- pneumococcal disease
- measles
- mumps
- rubella
- influenza
- hepatitis B } For babies identified as being at risk.
- BCG for tuberculosis } For those in defined high risk groups

School-aged vaccines are given to protect against the following diseases;

- tetanus
- diphtheria
- polio
- meningococcal serogroups ACWY (Men ACWY)
- human papilloma virus (HPV); in girls
- influenza

Adult vaccines are given to protect against the following diseases;

- shingles
- pneumococcal disease
- influenza
- pertussis; vaccine given in pregnancy to protect the new-born infant.

This guidance covers vaccines given as part of national immunisation programmes to protect the public's health. Certain vaccines are given for specific clinical need to those with particular health problems; these are not monitored for uptake as part of wider public health scrutiny.

It is important to note that the schedule will continue to change and evolve with the development of new vaccines and with ongoing evidence from surveillance of diseases. Changes are often widely reported in the press and sometimes cause some anxiety amongst the public and also in staff delivering the services.

The schedule may change to make sure individuals are protected against infections for as long as possible, for example, introducing a booster of pertussis (whopping cough) vaccine to teenagers and changing the schedule for meningococcal vaccination. HPV vaccination for boys may be recommended in due course, if it can be shown to be cost effective. These decisions are for the JCVI to make.

Questions to ask/consider?

1) Are staff locally aware of how to access the current schedule and where to look when things change?

2) Are staff locally aware of the local commissioning arrangements and who to contact for advice and support?

3) Are publicity campaign materials available? These are generally developed nationally and can be useful in raising awareness but there is also a need to ensure that professionals receive appropriate training to promote immunisation and support children, parents and adults taking up the offer to protect themselves.

4. How does your local authority know what the uptake of particular vaccines is in the local population?

Background and policy context

Data is key to understanding how successful local immunisation programmes are in protecting local people from preventable diseases through vaccination.

Different immunisations are reported through different data collection pathways, most of which involve an element of time delay between the immunisation being administered and recorded at a local level and the immunisation being reflected in local authority statistics. Data and reports for England on the coverage of vaccinations offered under the national immunisation programmes are available from PHE. [4]

Immunisation data for seasonal flu is the timeliest, collated via GP practice systems. Routine childhood immunisations are reported through the COVER system. The delay on this can be up to 18 months as the data is extracted based on the age of the child, not the chronology of the immunisation. For example, a child who is appropriately immunised at 12 months old with MMR will not be reflected in the statistics until they reach 24 months and are included in the 2 year old data cohort.

Despite various initiatives over the years there continues to be a wide variation of uptake to immunisation programmes across the country. Every effort should be made to ensure that all those eligible are offered immunisation. Some vaccines continue to be indicated even if they are not given at the ideal time. This would include vaccines such as MMR and tetanus. Some other vaccines may not continue to be indicated if the child has exceeded the aged where the risk is highest. This would apply to rotavirus and to childhood pneumococcal vaccines for example.

Questions to ask /consider?

1) What activities are in place to ensure these figures are increased to meet WHO “aspirational” targets?

The PHOF Data Tool [11] (under Indicator 3.03) enables an individual authority to “compare and contrast” data, across a spectrum of immunisation indicators, against their neighbouring authorities within the region and against an England average. Comparisons with ONS-defined peer authorities can be a very useful way of using this sort of data as this helps to lessen the impact of population factors (such as deprivation) and increase the impact of service differences. The following highlight the key areas to look at.

Children aged 0-5

2) What is the uptake of 2 doses of MMR vaccine in children at 5 years of age? WHO Europe has a regional goal to eliminate measles and rubella disease. [14] To achieve this, there is a recommendation of 95% coverage of two doses of measles-containing vaccine.

3) What are the uptake rates across the programme; 12 months – primary immunisation, 2 years – child immunisation course and 5 years – completed primary immunisations and boosters?

4) How is the local area performing against national standards for childhood immunisation? How well is the area performing both in absolute terms and in comparison to neighbouring/ peer authorities and to national rates?

5) Is practice level data fed back to practices on a regular basis? Do practices know how well they are doing in comparison to national targets and to neighbouring practices?

School-aged children

6) What is the uptake for HPV vaccine and how well is the area performing both in absolute terms and in comparison to neighbouring/peer authorities and to national rates?

7) What is the uptake for the teenage booster vaccine and how well is the area performing both in absolute terms and in comparison to neighbouring/peer authorities and to national rates?

8) What is the uptake for the Meningococcal ACWY vaccine, given as part of the teenage booster, and how does this compare to neighbouring/peer authorities and to national rates?

9) What is the uptake for the influenza vaccine given to school-aged children and how well is the area performing both in absolute terms and in comparison to neighbouring/peer authorities and to national rates?

Adult vaccines

10) What is the uptake locally for the seasonal flu vaccine and how does this compare to neighbouring and/or similar areas?

- in those aged 65 and over,
- in those in clinical at-risk groups,
- in pregnant women,
- in carers in receipt of an allowance
- in local health and social care staff

11) What is the uptake for the adult pneumococcal vaccination and how well is the area performing both in absolute terms and in comparison to neighbouring/peer authorities and to national rates?

12) What is the uptake for the shingles vaccination and how well the area is performing both in absolute terms and in comparison to neighbouring /peer authorities and to national rates?

13) What is the uptake for the pertussis vaccination in pregnancy and how well is the area performing both in absolute terms and in comparison to neighbouring /peer authorities and to national rates.

5. Why and when should children aged 0-5 years receive vaccinations?

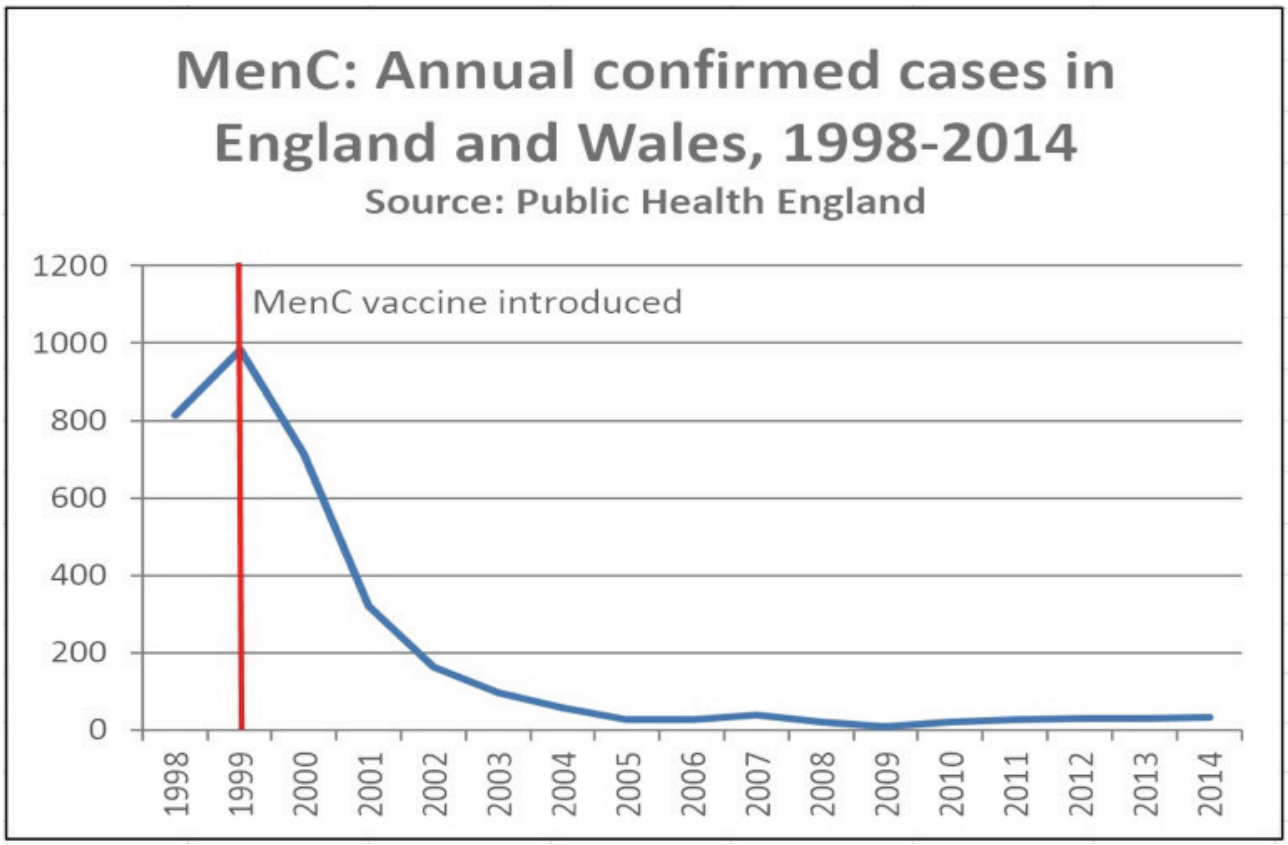
Background and policy context

The childhood immunisation programme in the United Kingdom (UK) protects young people against a wide number of infectious diseases, such as measles, polio, diphtheria and pertussis (whooping cough). What has been forgotten is how, in the past, large numbers of children either died or were left with permanent damage to their health and wellbeing because of these infections and their complications. The success of the immunisation programme can reduce the perception of the severity of these diseases both with the public and amongst health professionals.

The immunisation programme is an essential part of protecting children's health. Low vaccine uptake puts children at risk, particularly in view of recent outbreaks of measles, mumps and pertussis.

As examples, it is worth noting that:

- Before the introduction of MMR vaccine in 1988, approximately 1,200 people across England and Wales were admitted to hospital each year because of mumps. [8]
- Since 2000, the Meningitis C vaccination programme has prevented over 9,000 cases of serious disease and more than 1,000 deaths. There have been only 2 deaths in children and young people under 20 in the last 5 years, compared to 78 deaths the year before the vaccine was introduced. [8]



- Before the introduction of the haemophilus influenzae type b (Hib) vaccination in 1997, one in every 600 children developed Hib meningitis or other serious forms of disease before their fifth birthday. Today, there are only a handful of cases in young children. [8]

Vaccines should be given as soon as a child reaches the age at which the vaccine is indicated. Generally young infants are most at risk and therefore the majority of vaccines are given in infancy and childhood.

The schedule is complex, with boosters and repeat doses recommended during the child's life to complete the programme and maximise protection.

Where children are born in other countries they should be offered relevant vaccinations to bring them into line with the UK schedule as quickly as possible. Wherever possible the vaccines should be given together to minimise the number of appointments the child needs to attend.

Guidance on this is clearly detailed in the Green Book [8] and in a specific PHE resource vaccination of individuals with uncertain or incomplete immunisation status. [15]

Questions to ask/consider?

1) What structure is in place to achieve oversight, monitoring and coordination of services (e.g. a local strategy and/or implementation committee)? Are the responsibilities of those involved clearly defined?

2) What arrangements are in place to provide appropriate, regular reports to the local authority, CCG, Children's Trust Board, HWBs etc. about local providers' performance?

3) Are local immunisation providers aware of new structures, sources of expertise and key contacts?

4) The majority of vaccines at this age are given in primary care, are the mechanisms between primary care and the local CHIS system robust to ensure accurate data transfer so the figures reported are correct?

5) Who is responsible for inviting children for their routine immunisations? If it is general practices do we know that every practice is actively inviting children at the correct time for each vaccine? If invitations come from the child health information system are we sure their registers are complete and that they are calling children at the correct time?

6) Do we know if any practices have waiting lists for routine childhood immunisations?

7) Do the local systems enable opportunistic and catch-up vaccination?

8) Many practices have fixed immunisation clinics, for example, every Tuesday morning. Are practices able to offer appointments at other times if parents are unable to attend the fixed clinic?

6. Why and when should school-aged children receive vaccinations?

Background and policy context

Vaccines given to school-aged children are part of the wider schedule, giving boosters for certain vaccines given first in early childhood and infancy or specific vaccines recommended to be given at this age. The timing of when to give vaccines is often a balance between when the disease is most likely to be contracted and the age when the vaccine would be most effective. Vaccines are given in early childhood to provide timely protection at a time when they are most vulnerable. As the immune system matures through childhood and into teenage years, boosters of vaccines given in early childhood prolong the longevity of the protection, thus ensuring that protection against these infections lasts through to adulthood.

The meningococcal ACWY vaccine which is given alongside the teenage booster for diphtheria, tetanus and polio will enhance the protection against the meningococcal C serotype, from the vaccines given to children in early childhood, and add protection against A, W and Y serotypes. Vaccines are also given to school-aged children because this is the most appropriate age; for example the HPV vaccine which protects against cervical cancer and is given to teenage girls before the age when they are likely to become infected. The influenza vaccine for children is given in primary care settings to those in early childhood and then normally in school as children gets older.

In terms of access it makes sense to give vaccines at a venue where children already are. This helps improve uptake and makes it as easy as possible for individual children to be able to benefit, preventing additional appointments out of school and potential time out from the school day.

It is important that records of vaccines given at school are shared with each child's GP so that their patient records are kept up to date. The information also needs to be recorded on the CHIS system. For vaccines given in primary schools, written parental consent is always sought in advance and vaccines will not be given without this being available. For children in secondary schools written consent is normally sought in advance involving both the parent/guardian and the young person. On occasions, if a young person wishes to receive a vaccine and is considered to be 'Gillick' competent, a vaccine may be given in the absence of parental consent. [16]

The process for school-based vaccination requires close liaison between the service providing the vaccination (often but not always the school nursing service), the schools, parents or guardians and the children or young people themselves.

It needs to consist of a process for advising parents and guardians and the school staff and gaining consent. It requires administration for the vaccination sessions, arranging appropriate times in liaison with the school to avoid for example school examinations. School-based vaccination sessions also need to consider the practicalities of providing a clinical health procedure in school such as maintaining infection control, having a process for transporting vaccines so that they stay at the correct temperature, this normally requires the use of appropriate medical cool boxes. It also needs to consider the disposal of needles and syringes, so having appropriate sharps disposal.

The school-based sessions, as well as at school entry at reception and year 7 or whenever the child joins the school, are good opportunities to check on the child's immunisation history and can serve as a useful reminder to parents or guardians. Similarly school trips can be helpful in checking the child is fully protected. For many vaccines it will still not be too late if the child has previously missed out and parents or guardians can be advised to go to their GP surgery. Given the complexity it may be appropriate, depending on the staff and service available, to think of what other health promotion could be built in around these sessions.

Questions to ask/consider?

1) Are vaccines for school-aged children given in a school setting or by general practice?

2) If not given in school how is the access for children ensured so they do not have to miss too much school. For example, is there provision for evening and weekend clinics?

3) If given in schools, are all schools included (e.g. academies, public schools, independent schools, special schools etc)?

4) Are there any schools that do not allow immunisation sessions within the school? If so, what arrangements are in place to offer the children a service?

5) How are those not at school on the day offered a service, for example those who are sick, are home educated or attend pupil referral centres?

6) If children miss the opportunities in school can these vaccines be given in general practice, if necessary?

7) Are health screens used to check on immunisation history at school entry or for school trips?

8) Do schools use health promotion opportunities on, for example, school admission documentation on which vaccines children should have received with advice on where to go?

9) Do local services support young people to check they are fully immunised before leaving school?

7. Why and when should adults receive vaccinations?

Background and policy context

Immunisation is often seen as the domain of children, however, immunisation should be seen as a necessary intervention across all stages of life, as part of a life course approach.

Analysis from Age UK, [17] demonstrate that the population is ageing rapidly. There are currently approximately 15 million people over 60 years of age and the projections estimate that this will rise to 20 million over 60 by 2020. By 2040, 24.2% of the UK population will be aged 65 or over and the number of people who are over 85 will more than double. Evidence demonstrates that older people are at greater risk of morbidity and mortality from vaccine-preventable diseases. Research from the University of Birmingham has identified several reasons why vaccination is increasingly important within older age groups: [18]

- Older people may be at increased risk of serious illness or death resulting from certain common infections.
- Immune function decreases with age, leading to increased susceptibility to more severe and frequent infections.
- Older people may not have received immunisations in younger years and newer vaccines may not have been available to them when they were children.
- Boosters may be recommended for immunity that decreases with age.

As well as the increase of co-morbidities, increasing frailty and moving to institutional living, where infections are more easily transmitted, may also be contributing factors.

Adults require protection against vaccine-preventable disease when travelling – this increasingly includes those "Visiting Friends and Relatives" (VFR) as well as trips for business or holiday. While many of the vaccines recommended for travel are not covered by the NHS, it does provide an opportunity to make sure adults are up to date with the routine scheduled vaccinations.

The Best Practice Guide 'Vaccination programmes in older people' from the UK British Geriatric Society [19] recommends greater emphasis on vaccination in older people. It is recognised that while the immune response to vaccines is less than in younger people there is good evidence that they can significantly reduce the impact of infectious illnesses and therefore should be actively promoted. There has also been a call for a life course approach to vaccination by the International Longevity Centre UK [20] as an essential part of preventative health care across the population.

There is similar recognition from the EU that the older population is not properly protected from vaccine-preventable disease. [21] The WHO recommends that where national flu vaccination policies exist, strategies should be established and implemented to increase vaccination coverage of all people at high risk, including the elderly and persons with underlying diseases, with the goal of attaining vaccination coverage of the elderly population of at least 75% as well as in those under 65 years of age with clinical risks and for pregnant women and to also encourage healthcare workers to take up the vaccination. [22]

Herpes Zoster (shingles) vaccine is recommended for those aged 70 with a phased 'catch up' so that those up to 79 are offered the vaccine.

Vaccinations offered in pregnancy through the maternal vaccination programme include influenza, given during the flu season as pregnant women are at higher risk of complications that can threaten both mother and baby. Maternal vaccination also helps protect babies during the first few months of life when pertussis (whooping cough) can be a very serious illness.

Some vaccines are recommended for specific occupations to protect the staff but also the public from inadvertent cross infection. These include; health and social care staff, environmental health staff, laboratory technicians etc. These vaccines are the responsibility of the employer to provide and are not part of NHS provision. Apart from monitoring of the uptake for seasonal flu vaccination in health and social care staff, occupational health vaccination is not part of the NHS and as such detailed description of occupational health vaccination is not included in this guidance.

Whilst the UK is well ahead of most countries of the EU, with uptake of seasonal flu vaccination for the over 65 year olds at just below the WHO target of 75%, the uptake in certain groups remains inadequate, for example, frontline health and social care workers (HCW). 4

Questions to ask/consider?

1) What specific measures are in place to ensure that those older people who are living together in settings, such as long-stay residential care homes, are suitably immunised?

2) How are local services delivering immunisation to pregnant women? Are vaccinations available via midwifery services?

3) The Department of Health recommends that every employer has ambitious flu immunisation programmes for frontline health and social care workers to significantly improve upon their uptake; what is the % coverage rate for front line HCW staff in local primary and secondary care settings, and what activities are in place to ensure that this figure is increased? What initiatives are in place to ensure high coverage of HCW flu vaccination uptake?

4) Is there any local data relating to seasonal flu vaccination of frontline social care staff? If yes, how well is the area performing? If not, are there any plans to gather this important data in future?

8. Are sufficient measures being taken to ensure that local people are adequately protected from vaccine-preventable illnesses whilst abroad "Visiting Friends and Relatives" (VFR)?

Background and policy context

Travel, whether for leisure or business purposes or in order to visit friends and relatives, has steadily increased from the 1980s until now. Provision of travel vaccines as part of NHS core responsibilities is limited to diphtheria, polio and tetanus as a combined booster, typhoid, hepatitis A and cholera. [23] Other vaccinations for travel purposes may entail payment and not all primary care providers will wish to provide a service.

There are instances of mandatory vaccination for travellers. For example, Saudi Arabian authorities require those undertaking pilgrimage to Mecca to have certain vaccinations and vaccination against Yellow Fever (YF) is still required for travellers to many YF endemic countries or for entry into other countries for travellers arriving from YF endemic countries. General information on immunisation, travel advice and health risks when travelling overseas, can be found at the NaTHNaC (National Travel Health Network and Centre) website. [24]

Few of the health hazards associated with travel outside the UK are preventable by vaccination, however, those that can be prevented by vaccination can be very serious and potentially fatal.

Attendance for vaccination also offers the opportunity for the practitioner to offer additional travel health advice, particularly around malaria, food and waterborne illness such as salmonella and typhoid as well as HIV and other sexually transmitted diseases.

Questions to ask/consider?

1) Have there been any initiatives to make information available to members of ethnic minority communities about the need to seek health protection advice and services for those VFR travellers?

2) Do all practices actively promote travel advice and vaccination in their surgeries?

3) What means are taken to ensure that comprehensive education and awareness information is made available for those VFR, in order to promote correct messaging and encourage immunisation?

4) Do local pharmacies offer advice on protecting health when travelling abroad?

5) From a wider perspective, how much engagement takes place with religious community leaders to ensure that health protection messages around the benefits of immunisation are properly communicated and in turn cascaded out to their communities?

9. What policies are in place for the two childhood programmes that are offered to specific at-risk groups?

Background and policy context

There are two childhood immunisation programmes that are not universally offered to all but are offered to those at specific risk. These are the programmes for BGC vaccine for tuberculosis (TB) and hepatitis B vaccine to babies born to mothers who are infected with the hepatitis B virus.

BCG vaccine for tuberculosis

BCG vaccine used to be given to all children in their teenage years to help prevent TB in young adults. This strategy was ceased in 2005 due to a continuous decline in TB in the indigenous UK population and was replaced by a targeted approach. BCG should now be offered to the following groups: [8]

- All infants (aged 0 to 12 months) living in areas of the UK where the annual incidence of TB is 40/100,000 or greater
- All infants (aged 0 to 12 months) with a parent or grandparent who was born in a country where the annual incidence of TB is 40/100,000
- Children older than 12 months who have not been previously vaccinated, with a parent or grandparent who was born in a country where the annual incidence of TB is 40/100,000.

BCG is a difficult vaccine to give and most people who give other childhood vaccines are not trained to give BCG vaccine. It is important that staff who do give BCG vaccine are adequately trained in the specific technique.

The vaccine is shown to have varying efficacy. It is most effective at preventing the most severe forms of the disease, such as TB meningitis, in young children and this is the reason it is given in this context. It has limited effect on pulmonary disease which tends to affect older people.

Neonatal hepatitis B vaccine

All women who are pregnant are offered a blood test to see if they are infected with hepatitis B virus. It is not uncommon for people to become chronically infected with the hepatitis B virus and this poses a threat to the baby if the mother is infected in this way. If babies contract hepatitis B from their infected mother then 90% will themselves become chronically infected with the risk of serious liver disease later in life including cirrhosis and liver cancer.

Babies born to mothers who are known to be hepatitis B positive should be offered a course of hepatitis B vaccine with doses given at birth, 1 month, 2 months and 12 months, so four doses in all. The children should also be tested at 12 months to check whether they have become infected with hepatitis B. It is very important that these children receive all four doses of the vaccine in a timely manner. [8]

Questions to ask/consider

1) What BCG policy currently applies in the local authority area and why? Are all neonates offered BCG because it is a high prevalence area or is it offered only to those with a parent or grandparent from a high prevalence country?

2) If it is a targeted approach is there a clear and written pathway describing who assesses the need and who is responsible for giving the vaccine?

3) If eligible babies get discharged from hospital without receiving BCG vaccine what are the follow up and fail-safe processes to ensure that the child is offered the vaccine?

4) What data is available on the number of babies born in the area who are eligible for BCG vaccine and the number of these babies who received a BCG vaccine?

5) Is there a clear and written pathway for identifying babies born to mothers who are hepatitis B positive? Does this clearly identify the necessary communication required between maternity services, health visitors, general practice and child health information departments?

6) Who is responsible for scheduling each immunisation appointment and what are the failsafe procedures to ensure that children are not lost to the system?

7) What data is available on the number of babies born to hepatitis B positive mothers and the completeness of each eligible child's immunisation status?

8) Who is responsible for undertaking the blood test for each eligible child at 12 months and what proportion of these tests are completed?

10. How do you know vaccination is easily accessible to everyone in the population?

Background and policy context

Immunisation provides clear protection for the health of the individual; systematic and unjustified differences in immunisation rates between population groups should be viewed as an avoidable inequality in health.

For most immunisation programmes improving uptake impacts on the herd immunity. Reducing inequalities in uptake therefore also improves the overall effectiveness of immunisation and its health benefits.

There is a moral justification for reaching out to as many of those who can benefit from immunisation as possible. If some groups are systematically 'not reached' then services need to work hard to ensure that their offer is set out, or tailored, in the right way, so that the benefits of immunisation are clearly expressed and understood by the intended recipient groups.

The local JSNA may include case studies of inequalities in vaccinations and immunisations.

NICE guidance, [25] demonstrates the evidence which shows that the following groups are more likely to be at risk of not being fully immunised:

- Those who have missed previous vaccinations (whether as a result of parental choice or otherwise)
- looked-after children
- those with physical or learning disabilities
- children of teenage or lone parents
- those not registered with a GP
- younger children from large families
- children who are hospitalised or have a chronic illness
- those from some minority ethnic groups
- those from non-English speaking families
- vulnerable children, such as those whose families are travellers, asylum seekers or are homeless

Patient reminders and recall systems are also shown to be effective in developed countries such as the UK. [26]

Although population level coverage is presented in the PHOF national benchmarking tool, [7] coverage of vaccinations can be compared to other local authorities. The area statistics are not broken down by important inequalities groups. Therefore, monitoring uptake is not possible but HOSCs should consider how accessible and available the services are across the population.

Infectious diseases contribute to health inequalities. The burden of disease falls disproportionately on disadvantaged groups such as older people, the homeless and the chronically ill. [27] These vulnerable groups are also those most likely to be at risk of not being fully immunised.

The scrutiny needs to focus on what arrangements are there to identify patients who are resident within the area but are not registered with primary care providers. Although most people are registered with primary care providers, there are certain recognised groups who are known to fail to engage with services, including vaccination services. Those groups include the homeless, drug and

alcohol abuse clients, asylum seekers (either through fear of detection if staying illegally or through ignorance/lack of information about access to health services), traveller communities, those with learning difficulties, looked-after children, children excluded from school and young offenders.

Questions to ask/consider?

1) Has an equity audit been undertaken to understand different uptake of immunisation in different population groups?

2) Given the importance of repeated failure to attend immunisation appointments as a warning sign in several high profile child protection cases, how does the local immunisation programme integrate its safeguarding responsibilities around children who repeatedly do not attend immunisation appointments?

3) How are local GPs being encouraged and/or incentivised to achieve higher coverage?

4) How are the local GP practices being monitored and supported to ensure that 'early years' immunisations are optimised?

5) Are opportunities optimised to immunise immigrants from developing countries? And are translated materials or translator access available for immunisation appointments?

6) Is advice about vaccinations available and/or promoted at pharmacies, libraries, community centres, retail outlets, etc. (i.e. places other than those where vaccinations are given)?

7) Is enough being done to ensure people are fully able to access immunisation services? For example, weekend clinics and/or opportunistic services?

8) Is vaccination advised at other opportunities e.g. A&E, Outpatients, Developmental Assessments and Child Health Reviews, so that every opportunity is taken to identify unprotected individuals and advise on vaccination?

9) Can the Scrutiny Committee be reassured that providers;

- regularly review their arrangements to assess who is at increased risk of vaccine-preventable diseases?
- are making efforts to offer appropriate advice and services to the most vulnerable groups?

10) If there are homeless hostels or gypsy and traveller sites in the area, how is the immunisation programme making specific outreach and engagement efforts to provide services in these locations?

11) What arrangements/agreements are in place for dealing with single cases or outbreaks of communicable disease for which vaccination of contacts may be required? Does any agreement/ plan identify resources that can be mobilised, as required?

USEFUL LINKS

Inside Government – Gov.uk website

'The Green Book' ('Immunisation against infectious disease') has the latest information on vaccines and vaccination procedures for all the vaccine-preventable infectious diseases that may occur in the UK.

Available From:
https://www.gov.uk/government/collections/immunisation-against-infectious-disease-the-green-book

The complete immunisation schedule can be found at:

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

There are also other general and specific resources on vaccination including; training resources, Q&A documents, leaflets and posters.

Available From: https://www.gov.uk/government/collections/immunisation

PHE Vaccine uptake guidance and the latest coverage data

Vaccine coverage data reports for England of vaccinations offered under the national immunisation programme for;

- influenza,
- human papillomavirus (HPV),
- rotavirus,
- pertussis (whooping cough) for pregnant women
- shingles
- COVER data programme which evaluates childhood immunisation in England.

Available from: https://www.gov.uk/government/collections/vaccine-uptake

Health and Social Care Information Centre (HSCIC)

NHS Information Centre (for Health and Social Care) publishes uptake statistics on an annual basis which looks at the number of children who are immunised against childhood diseases by their first, second and fifth birthdays, those people over the age of 65 immunised against influenza and immunisation against tuberculosis (BCG).

Available from: http://www.hscic.gov.uk/searchcatalogue?productid=18810&topics=1%2fPublic+health%2fHealth+protection&sort=Relevance&size=10&page=1#top

Public Health Outcomes Framework

The Public Health Outcomes Framework, part of 'Healthy lives, healthy people: Improving outcomes and supporting transparency' sets out desired outcomes and indicators to provide an understanding of how well local public health is being improved and protected.

Available from: http://www.phoutcomes.info/

The indicators for 'population vaccination coverage' are under the health protection section covers all vaccination programmes across the life course.

Available from: http://www.phoutcomes.info/public-health-outcomes-framework#gid/1000043

The on-line framework is set out as an interactive tool which enables an individual local authority to "compare and contrast" (across a spectrum of immunisation indicators) their performance against their neighbouring authorities within the region and against an England average:

NHS Choices

Set up as a first-line for information for the public and includes a comprehensive section on immunisations recommended across the life course. It includes which vaccinations are offered to all on the NHS, at what age, and the optional vaccinations for those considered at-risk.

Available from:
http://www.nhs.uk/Conditions/vaccinations/Pages/vaccination-schedule-age-checklist.aspx

NICE

PH21; reducing differences in the uptake of immunisations (issued September 2009, reviewed March 2013): Provides guidance on differences in the uptake of immunisations (including targeted vaccines) in people younger than 19 years. The guidance aims to increase immunisation uptake among those aged under 19 years from groups where uptake is low. It also aims to ensure babies born to mothers infected with hepatitis B are immunised.

Available from: http://www.nice.org.uk/PH21

Key Operational Documents

NHS England work closely with the DH in commissioning a number of public health services, including immunisation. Key documents that underpin these services are:

- The NHS Public Health Functions Agreement (Section 7a services), which is the annual agreement between the Secretary of State for Health and NHS England for these services. NHS England has a specific role to commission specific public health services set out in this agreement and DH is the overall steward of the system. The document includes links to specific services agreements for the various programmes
- The Immunisation and Screening National Delivery Framework and Local Operating Model sets out the national, regional, and local operational and governance arrangements for national screening and immunisation programmes in England.

These two documents are available from:
https://www.gov.uk/government/publications/public-health-commissioning-in-the-nhs-2015-to-2016

and https://www.england.nhs.uk/commissioning/pub-hlth-res/

GLOSSARY

Consent: Consent is legally required before a vaccine is given. Where vaccines are given to those under 18 the consent is usually sought from the parent or guardian. However, those aged 16 /17 are generally deemed able to consent without their parents express permission. Younger children can sometimes consent. 'Gillick competent' is the term used in medical law to decide whether a child, of 16 years or younger, is able to consent to his or her own medical treatment, without the need for parental permission or knowledge is (see the NSPCC website for further information on Gillick competence).

Diphtheria: Diphtheria is an upper respiratory tract illness caused by the bacterium Corynebacterium diphtheriae. It is a contagious disease spread by direct physical contact or breathing the aerosolised secretions of infected individuals.

'The Green Book': The Green Book is the popular name for the document 'Immunisation against infectious disease'; this is the policy document on the principles, practices and procedures of immunisation in the UK. The document provides details of the diseases, how they are spread and the history of vaccination. It is only available on line and can be found at: https://www.gov.uk/government/organisations/public-health-england/series/immunisation-against-infectious-disease-the-green-book

Hepatitis A: Hepatitis A is an acute infectious disease of the liver caused by the hepatitis A virus, usually spread through the faecal-oral route; transmitted person-to-person by ingestion of contaminated food or water or through direct contact with an infectious person (The Green Book, section 17).

Hepatitis B: Hepatitis B is an infectious inflammatory illness of the liver caused by the hepatitis B virus (HBV); the virus can be transmitted by exposure to infectious blood or body fluids such as semen and vaginal fluids, and also from mother to child around the time of birth (The Green Book, section 18).

Herd immunity: Herd or community immunity describes a form of immunity that occurs when the immunisation of a significant portion of a population provides a measure of protection for individuals who have not been vaccinated or developed immunity.

Human papillomavirus (HPV): While the majority of the nearly 200 known types of human papillomavirus (HPV) cause no symptoms in most people, some types can cause warts, while others can – in a minority of cases – lead to cancers of the cervix, vulva, vagina, and anus in women or cancers of the anus and penis in men. The virus can also cause head and neck cancers (The Green Book, section 18a).

Immunisation: Immunisation is the process by which an individual's immune system becomes fortified against an agent (known as the antigen).

Immunocompromised: A term used to describe the state in which a person's immune system is weakened or absent. This can be as a result of underlying disease or condition (e.g. HIV/AIDS, pregnancy) or as a result of treatment (e.g. chemotherapy, radiotherapy).

Influenza: Commonly known as flu, a viral infection that affects mainly the nose, throat, airways and, occasionally, the lungs. The influenza virus is transmitted easily from person to person via droplets and small particles produced when infected people cough or sneeze. Influenza tends to spread rapidly in seasonal epidemics

Joint Committee on Vaccination and Immunisation (JCVI): The Joint Committee on Vaccination and Immunisation (JCVI) is an independent expert advisory committee that advises Ministers on matters relating to the provision of vaccination and immunisation services. JCVI gives advice to Ministers based on the best evidence reflecting current good practice and/or expert opinion. The process

involves a robust, transparent, and systematic appraisal of all the available evidence from a wide range of sources. Members of the committee are appointed on merit by the Appointments Commission.

Measles: Measles (sometimes known as English Measles) is a highly contagious infection of the respiratory system caused by a virus, and spread though contact with fluids from an infected person's nose and mouth, either directly or through aerosol transmission.

Meningococcal disease: Caused by the bacterium, neisseria meningitidis, also known as meningococcus, there are 12 known different serotypes of which groups A, B and C account for about 90% of meningococcal disease. Recently there have been increasing numbers of cases attributed to the Y and W135 strains. Many people "carry" meningococci without suffering any harm, but meningococcal disease is uncommon. When it occurs, however, it is very serious and can cause meningitis and/or septicaemia. Even with the best treatment about 10% of cases will die; and a high proportion of the survivors will have long-term damage

Mumps: A viral disease caused by the mumps virus. Before vaccination, it was a common childhood disease worldwide. Painful swelling of the salivary glands (classically the parotid gland) is the most typical presentation a rash may also occur. The symptoms are generally self-limiting and not severe in children but can lead to complications in teenagers and adults.

Pertussis (whooping cough): Is highly contagious bacterial disease caused by Bordetella pertussis. Symptoms are initially mild, and then develop into severe coughing fits, which produce the characteristic high-pitched “whoop” sound in infected babies and children when they inhale air after coughing. The coughing stage lasts for approximately six weeks before subsiding

Poliomyelitis: Often referred to as polio or infantile paralysis, is an acute viral, infectious disease spread from person to person, primarily via the faecal-oral route

Rotavirus: Is highly infectious virus which causes gastroenteritis, characterised with fever and diarrhoea and vomiting. Prior to vaccination nearly all children under five would have at least one episode of rotavirus gastroenteritis.

Rubella: A disease caused by the rubella virus, and often referred to as "German measles". Usually mild symptoms and attacks can pass unnoticed or last one to three days. Children recover more quickly than adults. Infection of the mother by rubella virus during the first 16 weeks pregnancy can disrupt the development of the baby and cause a wide range of significant health problems

Shingles (Herpes zoster): Shingles is caused by the reactivation of the virus that causes chickenpox. Once a person has had chickenpox, the varicella zoster virus (VZV) lies dormant in the nerves and can re-emerge at a later stage as shingles. Shingles, characterized by a rash of blisters, can be very painful but is seldom life-threatening. Shingles is most common in people over age 60 or in those with a weak immune system

Tetanus: Caused by the Clostridium tetani bacteria and often referred to as "lockjaw", tetanus infection generally occurs through wound contamination and often involves a cut or deep puncture wound. As the infection progresses, muscle spasms develop in the jaw (hence the name “lockjaw”) and elsewhere in the body.

Tuberculosis: Tuberculosis (TB) is a contagious bacterial infection which usually attacks the lungs but can also affect other parts of the body. It is spread through the air when people who have an active TB infection cough, sneeze, or otherwise transmit their saliva through the air

Typhoid: A highly contagious bacterial disease transmitted by the ingestion of food or water contaminated with the faeces of an infected person, which contain the bacterium, Salmonella typhii.

Varicella (chickenpox): A highly contagious illness caused by primary infection with varicella zoster virus (VZV). It usually starts with a skin rash mainly on the torso and head and becomes itchy, raw

pockmarks, which mostly heal without scarring. Chickenpox is an airborne disease spread easily through coughing or sneezing of ill individuals or through direct contact with secretions from the rash. There are very limited rationale for vaccination against varicella for chicken pox in the UK.

Visiting Friends and Relatives (VFR): "Visiting Friends and Relatives" or "VFR" travel is travel involving a visit whereby either (or both) the purpose of the trip or the type of accommodation involves visiting friends and/or relatives.

World Health Organization, (WHO): The World Health Organization (WHO) is the directing and coordinating authority for health within the United Nations system. It is responsible for providing leadership on global health matters, shaping the health research agenda, setting norms and standards, articulating evidence-based policy options, providing technical support to countries and monitoring and assessing health trends. In the 21st century, health is a shared responsibility, involving equitable access to essential care and collective defence against transnational threats.

Yellow fever: Yellow fever is an acute viral haemorrhagic disease; the virus is transmitted by the bite of female mosquitoes (the yellow fever mosquito, Aedes aegypti, and other species) and is found in tropical and subtropical areas in South America and Africa, but not in Asia. The only known hosts of the virus are primates and several species of mosquito (The Green Book, section 35).

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