



National Audit Office

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## **Report**

by the Comptroller  
and Auditor General

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**Department of Health & Social Care**

# Investigation into pre-school vaccinations

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Department of Health & Social Care

# Investigation into pre-school vaccinations

Report by the Comptroller and Auditor General

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National Audit Act 1983 for presentation to the House of  
Commons in accordance with Section 9 of the Act

Gareth Davies  
Comptroller and Auditor General  
National Audit Office

22 October 2019

This investigation sets out the system for providing vaccinations to pre-school children in England. It is prompted by public concerns about the levels of uptake of pre-school vaccinations.

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## **Investigations**

We conduct investigations to establish the underlying facts in circumstances where concerns have been raised with us, or in response to intelligence that we have gathered through our wider work.

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The National Audit Office study team consisted of: Finnian Bamber, Michael Burke, Marisa Chambers, Stephen Jobling, and Alison Taylor, under the direction of Ashley McDougall.

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## Key facts

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**7**

the number of types of pre-school vaccinations routinely provided in England

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**86.4%**

the percentage of children in England aged five who have had two doses of the measles, mumps and rubella vaccine (MMR) in 2018-19

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**90,000**

the number of five-year old children in England in 2019 that Public Health England estimates have not had both doses of MMR

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**95%**

NHS England's performance standard for uptake of pre-school vaccinations (except flu) set by the Department of Health & Social Care in 2017-18

**95%**

percentage of parents in England who report being confident about vaccinations in a Public Health England survey in 2019

**970**

the number of confirmed cases of measles in 2018 in England, compared with 266 confirmed cases in 2017

**94.2%**

percentage of children in England aged two who have had the 5-in-1 vaccination in 2018-19

**84.8%**

percentage of children in England aged five who have had the 4-in-1 booster vaccination in 2018-19

**£144.5 million**

NHS England's estimate of the funding for GP practices to provide the seven pre-school vaccinations in this investigation

# What this investigation is about

**1** Health professionals consider that vaccinations are a crucial tool in protecting the health of individuals and that of the wider population, particularly for people with existing health problems who are more vulnerable to infectious diseases and for those who cannot receive vaccinations themselves. Many vaccinations are given in early childhood to provide protection at a time when children are most vulnerable to disease.

**2** For vaccinations to be most effective, the World Health Organization (WHO) recommends that enough people need to be vaccinated to stop disease spreading across the population. This is called 'herd immunity', and the proportion of people that need to be vaccinated to achieve herd immunity varies by disease. For measles, the WHO recommends that 95% of the population need to be vaccinated with two doses of the Measles, Mumps and Rubella vaccine (MMR) for herd immunity to occur and for disease to be eliminated. In 2017-18, the Department of Health & Social Care (the Department) set NHS England a performance standard of 95% uptake for pre-school vaccinations (except flu). Vaccination is not compulsory in England.

**3** The Department is responsible for national strategic oversight of vaccinations in England and policy relating to them. It delegates responsibility for delivering population-based vaccination services through the NHS Public Health Functions Agreement (the Section 7A Agreement) to NHS England.<sup>1</sup> The Department holds NHS England to account for delivering the services described in the Section 7A Agreement. NHS England commissions pre-school vaccination services, which are usually given at GP surgeries. NHS England commissions these services through the GP contract and is therefore accountable for the delivery of vaccination services. NHS England estimates that GPs received £144.5 million in 2018-19 to provide the seven pre-school vaccinations examined in this investigation. Public Health England (PHE) is responsible for public health oversight of vaccination programmes and providing clinical advice to commissioners on delivery. This role also includes central procurement and distribution of specific vaccines for the national programme, public messaging and surveillance of vaccine-preventable diseases.

**4** There are seven types of vaccines (which protect against 13 diseases) routinely provided to children by the National Health Service (NHS) before they go to school aged five (**Figure 1** overleaf). There has been a general fall in uptake of pre-school vaccinations in England since 2012-13 and, in many cases, uptake of these vaccinations is below the Department's performance standard of 95% uptake, outlined in the Section 7A Agreement.

<sup>1</sup> Since 1 April 2019, NHS England and NHS Improvement have come together to act as a single organisation. However, legally the NHS England Board and the NHS Improvement Board continue to exist as two separate entities. Statutorily only NHS England is accountable as an organisation for the delivery of the Section 7A functions.

**Figure 1**  
Pre-school vaccines given in England

Vaccine	When given	Protection against
6-in-1	8, 12 and 16 weeks (replaced 5-in-1 in 2017)	Diphtheria, tetanus, whooping cough, polio, haemophilus influenzae type b (hib) and hepatitis B.
Pneumococcal (PCV)	8 and 16 weeks and 1 year	Some strains of pneumococcal infections
Rotavirus	8 and 12 weeks	Rotavirus
Men B	8 and 16 weeks and 1 year (introduced 2015)	Meningitis
Hib/Men C	1 year (booster for hib)	Meningitis and haemophilus influenzae type b (hib)
MMR	1 year, and 3 years and 4 months	Measles, mumps, rubella
4-in-1 pre-school booster	3 years and 4 months	Diphtheria, tetanus, whooping cough, polio

**Note**

1 The flu vaccine is also offered to children from the age of two but differs from the other programmes as it is given annually. It has also been on a phased roll-out to children since 2013. For these reasons, it has not been included in this investigation.

Source: NHS England

**5** This investigation sets out the system for providing vaccinations to pre-school children in England. It is prompted by public concerns about the levels of uptake of pre-school vaccinations. It sets out:

- the current levels of vaccination uptake and cases of disease across England;
- PHE's and NHS England's understanding of the problem; and
- PHE's and NHS England's response to the problem.

**6** We use the MMR vaccination, the 4-in-1 booster and the Hib/MenC booster to highlight many of the challenges that exist in the system for pre-school vaccinations and illustrate in more detail how uptake of vaccinations is falling.



# Summary

## Key findings

Trends in vaccination uptake and cases of disease

**7 NHS England has missed the Department of Health & Social Care's (the Department's) performance standard for uptake of nearly all routine pre-school vaccinations in England since 2012-13.** For example, in 2018-19:

- 4-in-1 pre-school booster had the lowest uptake of all pre-school vaccinations at 84.8%; and
- for children receiving the second dose of the Measles, Mumps and Rubella vaccine (MMR) by age five, uptake was 86.4%.

In July 2019, Public Health England (PHE) estimated that around 90,000 children (one in seven) aged five in England had not had both doses of MMR at that time (paragraphs 2.1 to 2.3, Figures 4 to 8).

**8 PHE reports that cases of diseases in children and adults have varied between 2006 and 2018.** For example:

- cases of **rotavirus** have dropped from a peak of 16,039 in 2010 to 2,152 in 2018 (paragraph 2.4, Figure 9);
- cases of **mumps** have fluctuated since 2006, with a high of 7,300 in 2009, and dropping below 1,000 in 2015 and 2016. Cases then increased to 1,796 in 2017 and reduced to 1,061 in 2018 (paragraph 2.4, Figure 9);
- cases of **whooping cough** reached a peak of 9,367 in 2012 and have decreased to 2,947 in 2018 (paragraph 2.4, Figure 9); and
- cases of **measles** have fluctuated from lows of 104 and 92 in 2014 and 2015 to 970 in 2018. Overall, 40% of measles cases in 2018 were in London, with a further 33% in the South East and South West combined. Measles is also increasing globally, and cases have increased by almost three-fold in the first six months of 2019 (based on 182 countries reporting to the World Health Organization (WHO)) compared with the same period in 2018 (paragraph 2.4, Figure 9).

**9 In 2019, the WHO withdrew the UK's measles elimination status.** In 2016, the WHO declared the UK had eliminated measles (this meant that there had been no endemic cases for 12 months – the original source of infection for reported cases was outside the UK and then spread through the population in the UK). In August 2019, the WHO announced that it had withdrawn this status in response to increasing cases of measles from the same strain for more than 12 months (paragraph 1.4).

**10 NHS England data show regional variations in uptake of vaccinations with low levels in London.** NHS England and PHE have an overview of the issues and probable causes of variation and NHS England's regional teams look at specific challenges for their local populations. London reports the lowest levels of uptake for all three case study vaccinations. PHE and NHS England believe that low levels of uptake in London may be due in part to children's medical records not being updated as they move areas and GPs, challenges with the general practice workforce and a highly mobile population. There is a wide range in national uptake in 2018-19:

- 4-in-1 from 96.2% in County Durham and Cumbria to 63.9% in Westminster (paragraph 2.5 and Figure 10);
- Hib/MenC (24 months) from 97.5% in County Durham to 71.2% in Hackney and City of London (paragraph 2.5 and Figure 11); and
- MMR (2nd dose) from 96.4% in County Durham to 64.1% in Westminster (paragraph 2.5 and Figure 12).

Understanding why uptake is declining

**11 The Department, PHE, and NHS England are concerned about the declining vaccination rates in nearly all pre-school vaccinations.** In summer 2018, the minister for public health and primary care requested a "foolproof" plan from PHE and NHS England to reverse the decline and reduce regional variation. Since then, PHE and NHS England have developed a number of actions which they think are most likely to help increase uptake, such as changing how NHS England commissions vaccination services from GPs, and have provided the minister with regular progress reports. In July 2019, in the Prevention green paper, the Department announced that it would launch a new strategy on vaccination by spring 2020 that included some of these actions (paragraphs 3.1 and 4.2).

**12 NHS England and PHE have identified several potential causes for the decline in uptake of pre-school vaccinations.** These potential causes operate together to reduce uptake: some are due to how the vaccines are delivered locally, such as access to GPs, others are more systemic, such as problems with the completeness of the reported data. No one factor on its own explains why the decline has been evident since 2012-13. There is evidence that the 2013 health system reorganisation in England resulted in fragmentation in the way the vaccination programme has been delivered. Many of these issues have been known for several years and cannot be reliably linked to the decline in uptake rates since 2012-13 (paragraphs 3.1 to 3.10).

**13 The way healthcare professionals remind parents to vaccinate their children is inconsistent.** ‘Call/recall’ for vaccinations is direct communication with parents or carers to arrange their child’s vaccinations. Before 2013, responsibility for call/recall was mixed between primary care trusts and service providers (Child Health Information Services or CHIS), who manage children’s clinical care records. When primary care trusts were abolished in 2013, NHS England took responsibility for commissioning call/recall. NHS England has not set out requirements of GPs for call/recall under the changed arrangements. As a result, call/recall is done inconsistently and there is no coherent system. In some cases, call/recall is done to a varying extent by GP practices. In other areas it is done by CHIS. NHS England central teams check how regional teams review the effectiveness of call/recall that is conducted by CHIS but not that done by GP practices (paragraph 3.3).

**14 Parents can find it difficult to access vaccination services.** An online survey of 2,622 parents by the Royal Society for Public Health in January 2019 found parents cited the timing and availability of appointments and childcare as barriers to getting their child vaccinated. Some communities (known as ‘under-served’ communities) do not access healthcare and vaccination services in expected ways, for example travellers and some religious groups. Medical records do not routinely state membership of specific small communities. PHE and NHS England have undertaken some small-scale work to determine the extent to which these communities are under-vaccinated, especially in London, but recognise that more work needs to be done on this issue (paragraphs 3.4 and 3.6).

**15 There is limited evidence of any major impact on vaccination uptake rates from anti-vaccination messages.** So-called ‘anti-vaxxers’ oppose specific or all vaccinations and promote messages that are not based on accepted scientific or medical evidence. PHE conducts an annual survey into parents’ attitudes to vaccinations. It has found no evidence that anti-vaccination social media activity has had a major impact on vaccination uptake in England. PHE considers the main reasons for the decline in uptake are related to delivery by local primary care providers. NHS England and PHE consider that anti-vaccination messages on social media are affecting the uptake of vaccinations elsewhere in the world. They are therefore alert to the possible impact in England and the risk that such messages could contribute to, and compound, the problem of poor vaccination uptake. As a result, they are emphasising the positive case for vaccination (paragraph 3.7).

**16 A small minority of parents are reluctant to have their children vaccinated because of their concerns about vaccinations.** Parents may be reluctant to vaccinate their children for many reasons and not be opposed to vaccination. The WHO defines vaccine hesitancy among parents as a reluctance or refusal to vaccinate their children and has identified complacency, inconvenience in accessing vaccines and lack of confidence as key reasons for this reluctance. It has named vaccine hesitancy as one of the top 10 global health risks for 2019. PHE's survey reports that parents have confidence in the vaccination system and found that 95% of parents in 2019 reported feeling confident or very confident in vaccinations. The survey reported in 2019 that the percentage of parents refusing or postponing vaccination fell from 11% in 2015 to 8% in 2019 (paragraphs 3.8 and 3.9).

**17 NHS England and PHE do not know the relative impact of the possible causes on the declining uptake of vaccinations.** PHE, public health organisations and research bodies have done some work to understand the impact of all these factors. This research is localised and small-scale and does not indicate the extent to which each factor impacts on uptake nationally (paragraph 3.10).

**18 NHS England and PHE monitor regional variations at a high level.** NHS England expects its seven regional teams to do detailed monitoring and performance management to increase uptake. In August 2019, NHS England published an action plan to improve uptake of MMR. This identified work to provide more detailed data at national level. Our report on health screening noted that NHS England's reliance on local and regional monitoring of health screening programmes risked omissions not being identified by national performance monitoring (paragraphs 3.11 and 3.12).<sup>2</sup>

#### Actions to improve uptake

**19 Since 2016, PHE and NHS England have developed several actions that aim to improve uptake of vaccinations.** They do not have evidence that all of their actions will address the causes of the decline. Some of these actions, for example some changes to how NHS England commissions vaccination services from GPs, are part of ongoing initiatives that NHS England hopes will also address the decline in vaccination uptake as well as other aims. NHS England's action plan published in August 2019 included guidance to regional teams on how to improve uptake of MMR vaccination. In July 2019, in the Prevention green paper, the Department announced that it would launch a new strategy on vaccination by spring 2020 although the Prime Minister has since requested it be brought forward to autumn 2019. In September 2019, the Secretary of State for Health and Social Care announced that he was looking at the case for compulsory vaccinations (paragraphs 4.1 and 4.2).

<sup>2</sup> Comptroller & Auditor General, *Investigation into the management of health screening*, Session 2017–2019, HC 1871, National Audit Office, February 2019.

**20 NHS England and PHE do not use a consistent national approach to engage with under-served groups.** Instead, they use an adaptable, locally focused approach and expect regional and local NHS England and PHE teams to work with under-served groups in their areas to improve uptake. This type of activity varies from team to team. For example, in 2018 a small-scale review of GP practices in England by PHE and the London School of Hygiene and Tropical Medicine found that no GP practices (out of nine) had services to increase uptake in groups with low uptake or to identify vulnerable or under-served populations. In July 2019, regional teams provided NHS England with their plans to improve uptake of vaccinations. Some of these included plans to engage with under-served communities (paragraphs 4.3 and 4.4).

**21 PHE, NHS England and the Department are developing a joint communications strategy to promote positive messages about vaccinations and to help overcome vaccine hesitancy.** PHE also monitors public sentiment about vaccination on various media, including social media sites such as Mumsnet, Facebook and Twitter, and uses various forms of media to promote positive messages about vaccination. PHE's policy is not to generally engage with anti-vaccination activists as it considers that doing so raises the profile of these activists. NHS England and PHE have not always taken the same approach to anti-vaccination messages and 'myth busting'. In July 2019, the Secretary of State for Health and Social Care discussed with social media companies how they can help to stop the spread of anti-vaccination messages at a summit about social media and mental health (paragraphs 4.5 and 4.6).

# Part One

## Governance and accountability of the pre-school vaccination programme

### **Aims of the pre-school vaccination programme**

**1.1** Health professionals consider that vaccinations are a crucial tool in protecting the health of individuals and that of the wider population, particularly for people with existing health problems who are more vulnerable to infectious diseases and for those who cannot receive vaccinations themselves. Many vaccines are given in early childhood to provide protection at a time when children are most vulnerable to disease. The World Health Organization (WHO) recommends that for vaccinations to be most effective, enough people need to be vaccinated to stop disease spreading across the population. This is called 'herd immunity' and the proportion of people that need to be vaccinated to get herd immunity varies by disease. For measles, the WHO recommends that 95% of the population needs to be vaccinated with two doses of the Measles, Mumps and Rubella vaccine (MMR) for herd immunity to occur and for the disease to be eliminated. In 2017-18, the Department of Health & Social Care (the Department) set NHS England a performance standard of 95% uptake for pre-school vaccinations (except flu).

**1.2** In this investigation we use the MMR vaccination, the 4-in-1 booster, and the Hib/MenC booster to highlight many of the challenges that exist in the system for pre-school vaccinations in England and illustrate in more detail how uptake of vaccinations is falling. The 4-in-1 vaccine protects against diphtheria, polio, whooping cough and tetanus. Polio can cause paralysis and was once a common infectious disease. Europe has been certified polio-free. Hib/MenC protects against meningitis C and haemophilus influenzae type b (hib). Both can cause meningitis and septicaemia, which can be life-threatening.

**1.3** MMR protects against measles, mumps and rubella. Measles is a highly infectious viral illness that sometimes leads to serious and long-term complications such as pneumonia, encephalitis (inflammation of the brain) or neurological complications that can cause disabilities. MMR is given in two doses, the first at 12 months and the second at three years and four months. The second dose is considered important given the highly infectious nature of measles, as it provides the highest level of immunity from disease.

**1.4** In 2016, the WHO declared the UK had eliminated measles (this meant that there had been no endemic cases for 12 months – that is, the original source of infection was outside the UK and then spread through the population in the UK). In August 2019, the WHO announced that it had withdrawn this status in July 2019 for the UK, Albania, Czechia and Greece in the European region. For the UK, this was in response to increasing cases of measles from the same strain for more than 12 months. During the same period, the WHO declared that Austria and Switzerland had eliminated measles. The WHO reported that 35 of the 53 nations in the WHO’s European region had eliminated measles in 2018 (compared to 37 in 2017). There were approximately 90,000 cases of measles reported for the first half of 2019 in Europe (compared with approximately 84,000 cases for the whole year in 2018).

### **The pre-school vaccination programme**

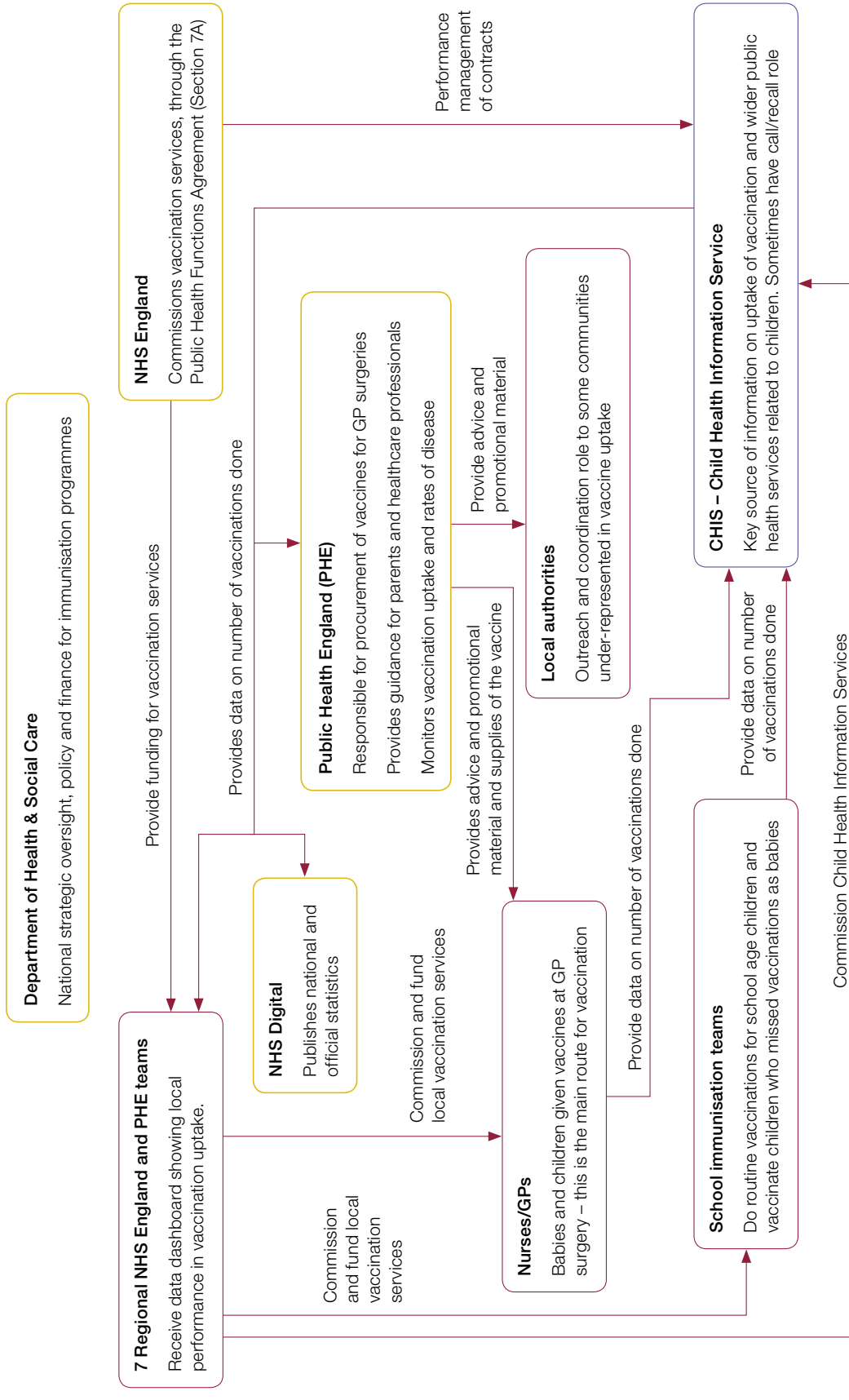
**1.5** The UK’s pre-school vaccination programme is based on the WHO’s Expanded Programme on Immunisation, and the Global Vaccine Action Plan 2011–2020. Vaccination services for pre-school children are usually provided in GP practices and NHS England estimates that they received £144.5 million in 2018-19 for providing the seven pre-school vaccinations examined in this investigation. Many pre-school vaccines are given in several doses, with a booster after the initial dose to provide the highest level of protection against disease (Figure 1). Some vaccines – such as the 6-in-1 – give protection against more than one disease.

### **Accountability for pre-school vaccination programmes**

**1.6** The Health and Social Care Act 2012 provided for widespread reform of the health system in England. It allowed the Secretary of State for Health and Social Care to delegate public health functions, including vaccination, to other bodies including NHS England. These public health functions are set out in the Public Health Functions Agreement. This agreement is made under Section 7A of the 2006 National Health Service Act and the functions are known as Section 7A services.

**1.7** A large number of organisations are involved in vaccination services, ranging from the Department to local GP practices (**Figure 2** overleaf). The Department is responsible for national strategic oversight of vaccinations in England and policy relating to them. It delegates responsibility for delivering population-based vaccination services through the NHS Public Health Functions Agreement (the Section 7A Agreement) to NHS England, which it agrees with NHS England each year. The Department holds NHS England to account for delivering the services described in the Section 7A Agreement. NHS England is responsible for commissioning pre-school vaccination services, usually from GP practices. NHS England commissions these services through the GP contract and is therefore accountable for the delivery of vaccination services.

**Figure 2**  
Roles and responsibilities for the delivery of the pre-school vaccination schedule in England



- Local delivery
- National delivery
- Data

Source: National Audit Office analysis of roles and responsibilities



**1.8** Public Health England (PHE) was created as an executive agency of the Department in April 2013. It is responsible for the public health oversight of vaccination programmes and providing clinical advice to commissioners on delivery. This role includes central procurement and distribution of specific vaccines, public messaging and surveillance of vaccine-preventable diseases. PHE spent £606.5 million on vaccination services and emergency countermeasures (countermeasures help prevent the spread of outbreaks of disease) in 2018-19.

## **Governance**

**1.9** The Department chairs the Section 7A accountability meeting which is a public health oversight meeting where the performance of vaccination programmes and other public health services are discussed every three months. The Department, NHS England, and PHE attend these meetings. The purpose of the meetings is to hold NHS England to account for delivering the public health functions in England in the Section 7A Agreement. PHE and NHS England attend the Public Health Oversight Group which provides informal insights to the Section 7A accountability meetings as part of its wider role in monitoring performance of services delivered through Section 7A.

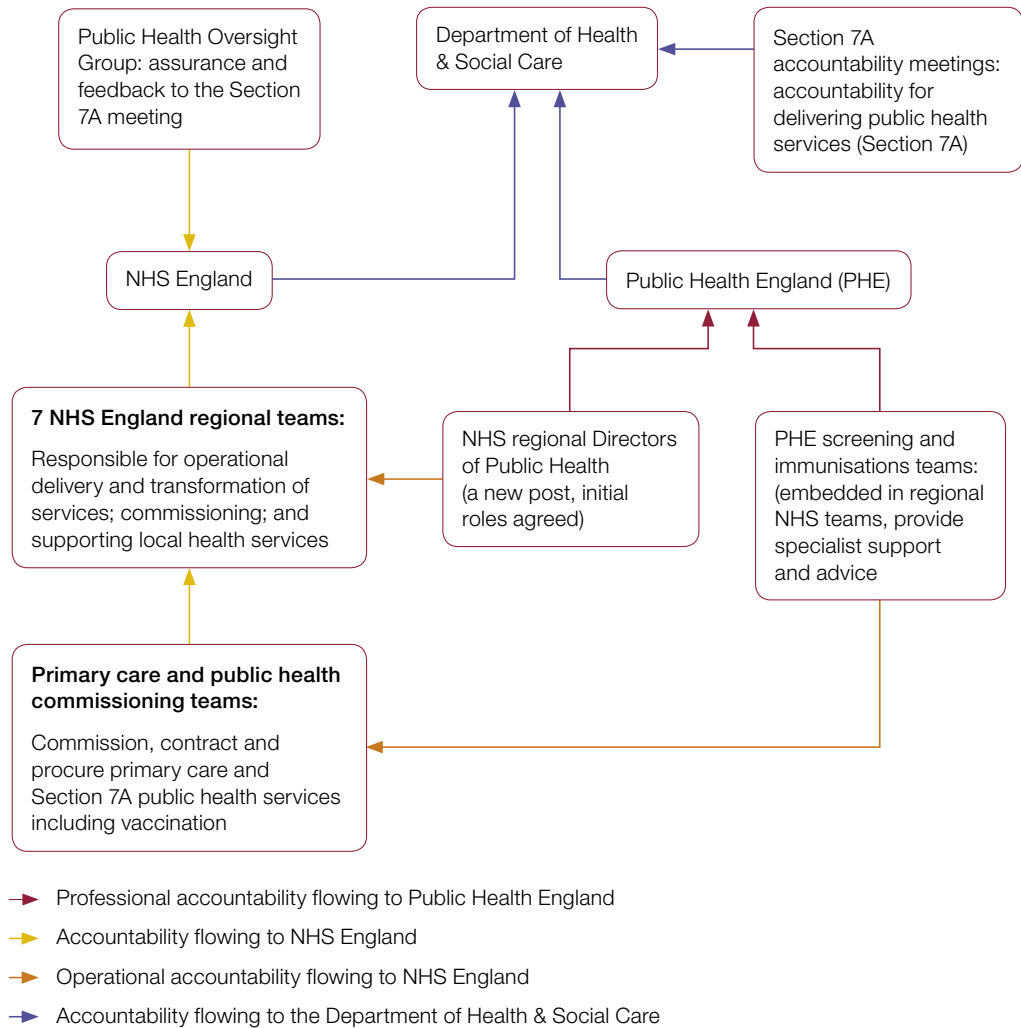
**1.10** NHS England holds its regional teams responsible for managing the performance of vaccination services.<sup>3</sup> Each region is responsible for operational delivery and transformation of services across its region. The seven regional teams support local NHS healthcare systems (**Figure 3** overleaf).

**1.11** The regional teams are responsible for the quality and financial and operational performance of all NHS organisations in their region. Each region has an NHS England Director of Commissioning, Director of Specialised Commissioning, and Health and Justice, and a Director of Commissioning for Primary Care and Public Health Services. NHS England introduced these executive roles in April 2019 to strengthen NHS England's commissioning delivery and oversight of public health services at regional level. The regional teams commission vaccination and Child Health Information Services (CHIS) within the regions.

<sup>3</sup> NHS England regional teams are: East of England, London, Midlands, North East and Yorkshire, North West, South East and South.

**Figure 3**  
Governance of pre-school vaccinations in England

**Governance involves the Department of Health & Social Care, NHS England and Public Health England**



Source: National Audit Office analysis of vaccination local governance structures

# Part Two

## Trends in pre-school vaccination uptake and cases of disease

### Vaccination uptake

**2.1** In 2018-19 NHS England missed the Department of Health & Social Care's (the Department's) performance standard of 95% uptake for nearly all pre-school vaccinations, outlined in the Section 7A Agreement (**Figure 4** overleaf). Only uptake of the 5-in-1 vaccination at age five years met this standard. For example, uptake of:

- the 4-in-1 booster was the lowest of all pre-school vaccinations at 84.8%; and
- 86.4% of children received the second dose of the Measles, Mumps and Rubella vaccine (MMR) by age five.

In July 2019, Public Health England (PHE) estimated that 90,000 children (one in seven) aged five in England had not had both doses of MMR at that time.

**2.2** NHS England monitors the uptake of pre-school vaccinations. These data show that, following increases from 2008-09, uptake of nearly all routine pre-school vaccinations has fallen since peaks in 2012-13, except for uptake of the Hib/MenC booster and the first and second dose of MMR, all for children aged five years (Figures 5, 6, 7 and 8).<sup>4</sup> For example, in 2018-19, uptake of:

- the 5-in-1 vaccination (replaced by the 6-in-1 vaccination from 2017) fell from 94.3% in 2013-14 to 92.1% in 2018-19 in children aged one year (**Figure 5** on page 19);
- MMR has seen a steady decline since 2014-15 (except for the first dose by age five) (**Figure 6** on page 20), with the population receiving two MMR doses by age five (giving the highest level of immunity) decreasing from a high of 88.6% in 2014-15 to 86.4% in 2018-19; and
- Hib/MenC booster at ages 24 months and at five years has never exceeded 95% (**Figure 7** on page 21). Uptake at the age of five reached its highest level of 92.6% in 2015-16 and 2016-17 and dropped slightly to 92.2% in 2018-19.

<sup>4</sup> Vaccinations that had data available.

**Figure 4**

## Uptake of pre-school vaccinations 2018-19 in England

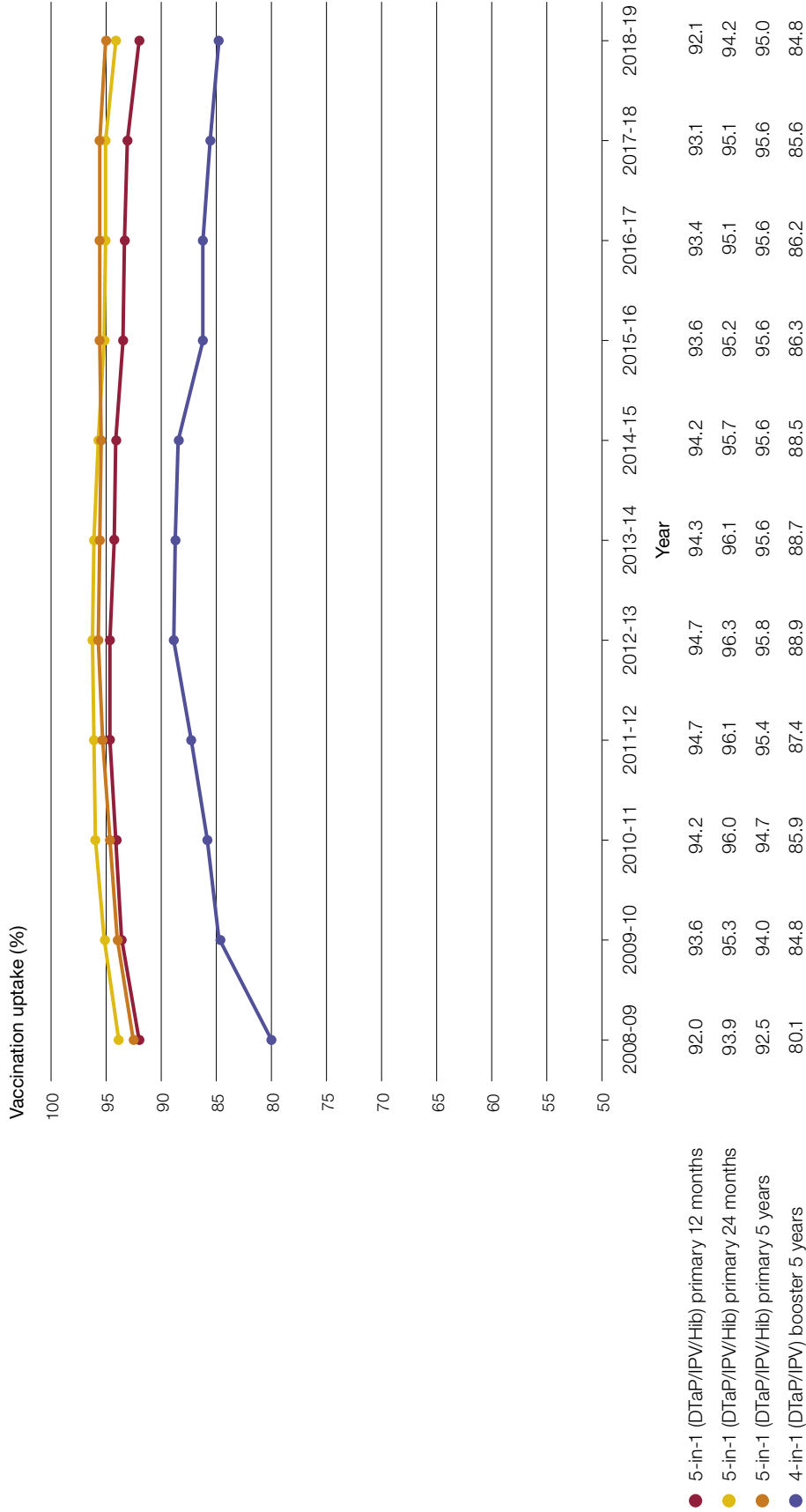
Uptake of vaccinations is below the Department of Health &amp; Social Care's performance standard of 95%

Vaccine	Age uptake measured	Uptake % (2008-09)	Uptake % (2013-14)	2013-14 versus 2008-09	Uptake % (2018-19)	2018-19 versus 2013-14
5-in-1 (DTaP/IPV/Hib primary) or 6-in-1 (DTaP/IPV/Hib primary/HepB)	12 months	92.0	94.3	↑	92.1	↓
5-in-1 (DTaP/IPV/Hib primary)	2 years	93.9	96.1	↑	94.2	↓
5-in-1 (DTaP/IPV/Hib primary)	5 years	92.5	95.6	↑	95.0	↓
4-in-1 (DTaP/IPV booster)	5 years	80.1	88.7	↑	84.8	↓
Hib/MenC booster	2 years	85.4	92.5	↑	90.4	↓
Hib/MenC booster	5 years		91.9	n/a	92.2	↑
Pneumococcal disease (PCV) primary	12 months	91.3	94.1	↑	92.8	↓
Pneumococcal disease (PCV) booster	2 years	81.5	92.4	↑	90.2	↓
Meningococcal group B (MenB) primary	12 months			n/a	92.0	n/a
Rotavirus primary	12 months			n/a	89.7	n/a
MMR first dose (MMR1)	2 years	84.9	92.7	↑	90.3	↓
MMR first dose (MMR1)	5 years	88.9	94.1	↑	94.5	↑
MMR second dose (MMR2)	5 years	78.0	88.3	↑	86.4	↓

Source: NHS Digital, *Childhood Vaccination Coverage Statistics – England 2018-19*, 2019. Available at: <https://digital.nhs.uk/data-and-information/publications/statistical/nhs-immunisation-statistics/england-2018-19>

**2.3** After 1998, uptake of MMR was affected by concerns about its safety. In 1998, a gastroenterologist, Andrew Wakefield, challenged the safety of MMR in an article in the medical journal *The Lancet*. He suggested there was an association between the vaccine and autism. Subsequently, uptake of the vaccination in children (first dose at 24 months) dropped to its lowest level of 79.9% in 2003-04 (Figure 6) and cases of measles started to rise from 2005. This research has since been discredited and retracted by *The Lancet*. Andrew Wakefield was struck off the medical register in 2010 and is not currently registered with the General Medical Council. The fall in vaccination uptake generated what is known by PHE as the 'Wakefield cohort' of children who were not vaccinated between 1998 and 2004 and are at higher risk of catching mumps, measles and rubella. After these years, uptake improved and reached highs in 2013-14.

**Figure 5**  
Levels of uptake of the 5-in-1 (or 6-in-1) vaccination, 2008-09 to 2018-19 in England  
Uptake of vaccinations has fallen since 2012-13



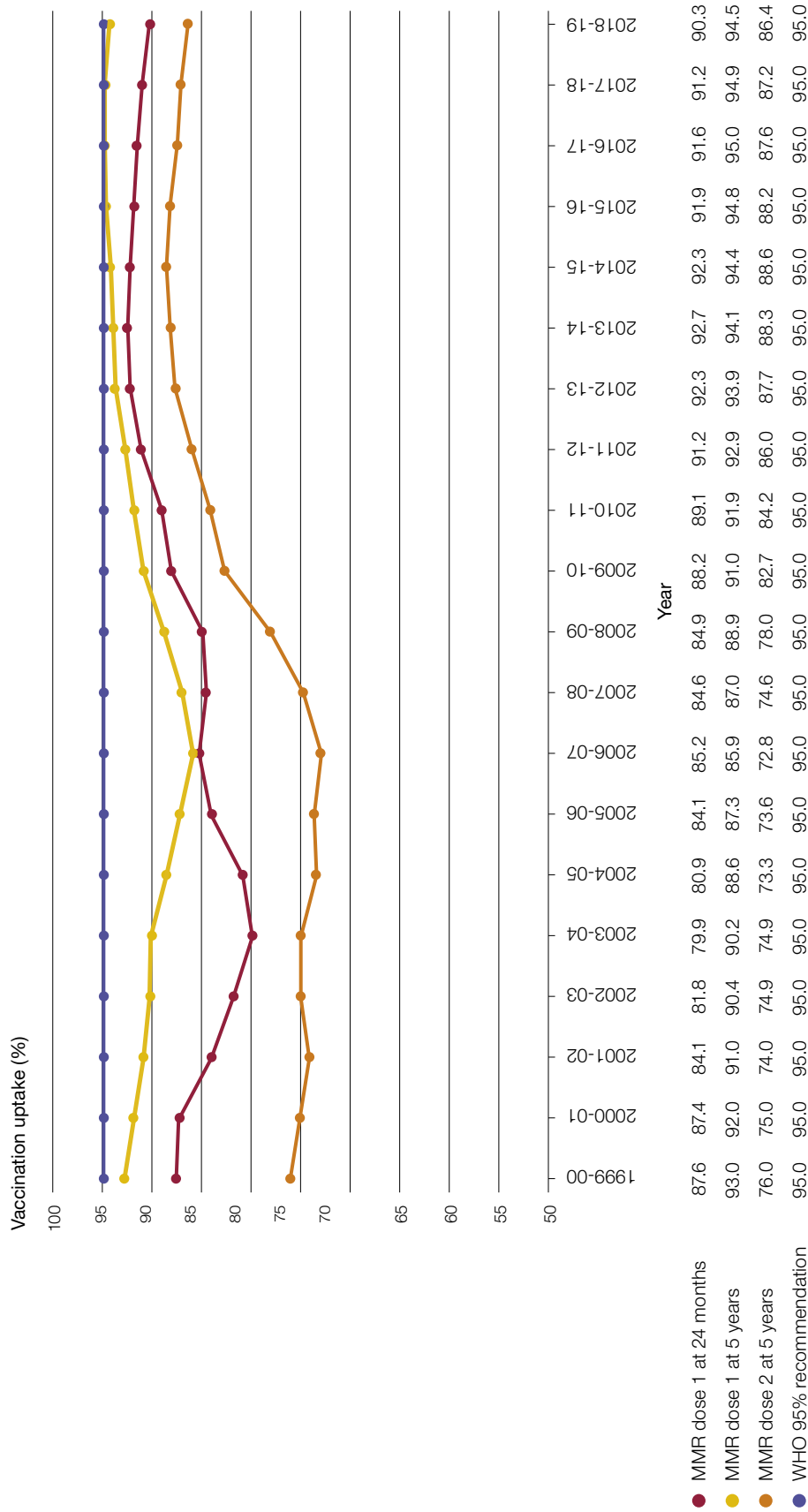
**Note**

1 The 5-in-1 vaccine (DTaP/IPV/Hib) included: diphtheria, tetanus, whooping cough, polio, and hib (haemophilus influenzae type b). It was replaced in 2017 by the 6-in-1 vaccine which also covers hepatitis B. In 2018-19, children in the 12-month cohort received either the 5-in-1 or the 6-in-1 vaccination, depending on when they were vaccinated. The 4-in-1 pre-school booster is administered at age 3 years and 4 months and provides protection against: diphtheria, tetanus, whooping cough (pertussis) and polio.

Source: NHS Digital, *Childhood Vaccination Coverage Statistics - England 2018-19*, 2019. Available at: <https://digital.nhs.uk/data-and-information/publications/statistical/nhs-immunisation-statistics/england-2018-19>

**Figure 6** Levels of uptake of the first and second dose of the Measles, Mumps and Rubella vaccination (MMR), 1999-00 to 2018-19 in England

Uptake of the second dose of MMR has fallen slightly since 2014-15



**Note**

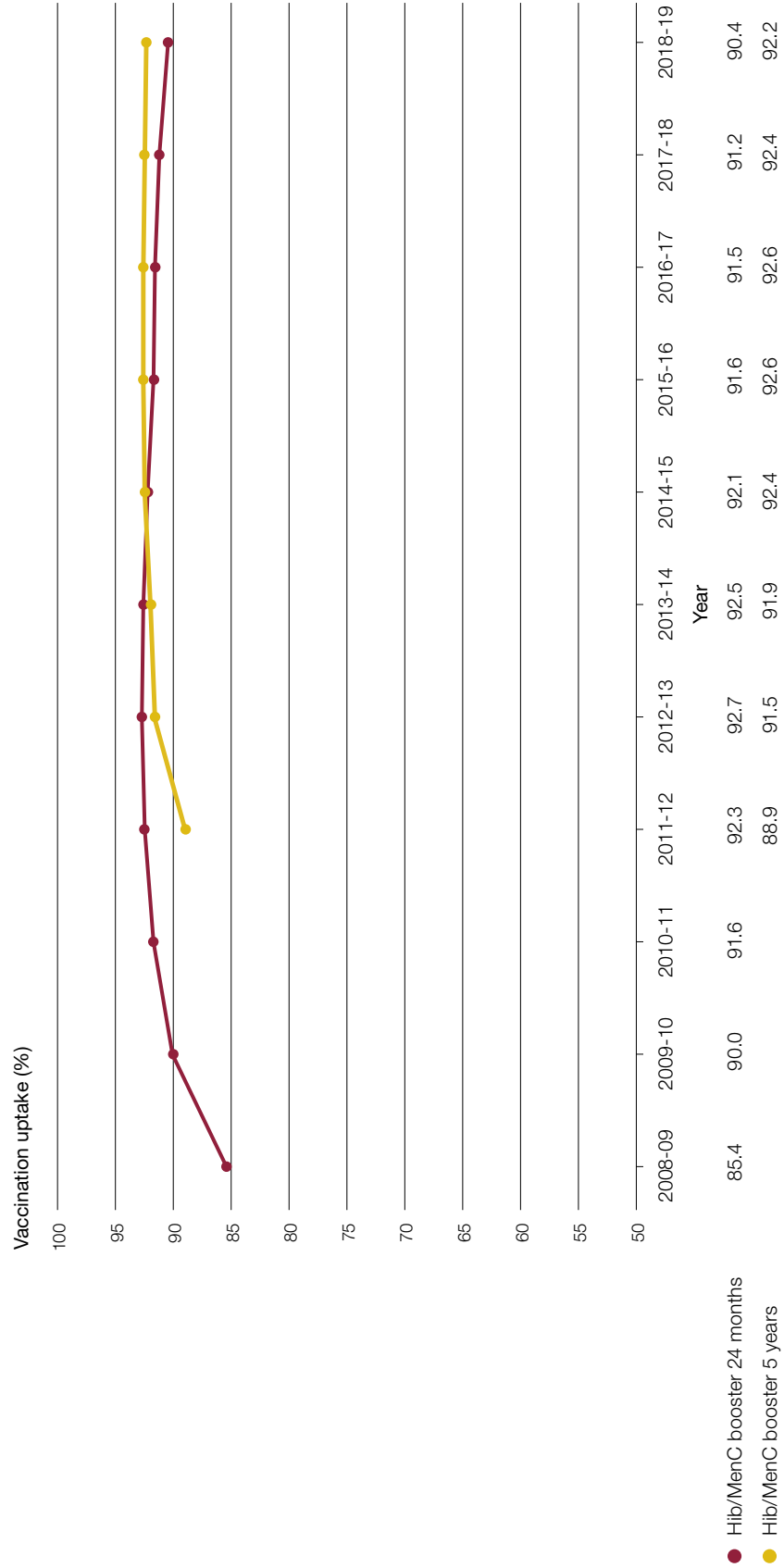
1 This graph gives the trend from 1999-00 to demonstrate uptake of MMR after Andrew Wakefield published his paper in the medical journal *The Lancet*, as well as more recently.

Source: NHS Digital, *Childhood Vaccination Coverage Statistics – England 2018-19*, 2019. Available at: <https://digital.nhs.uk/data-and-information/publications/statistical/nhs-immunisation-statistics/england-2018-19>

**Figure 7**

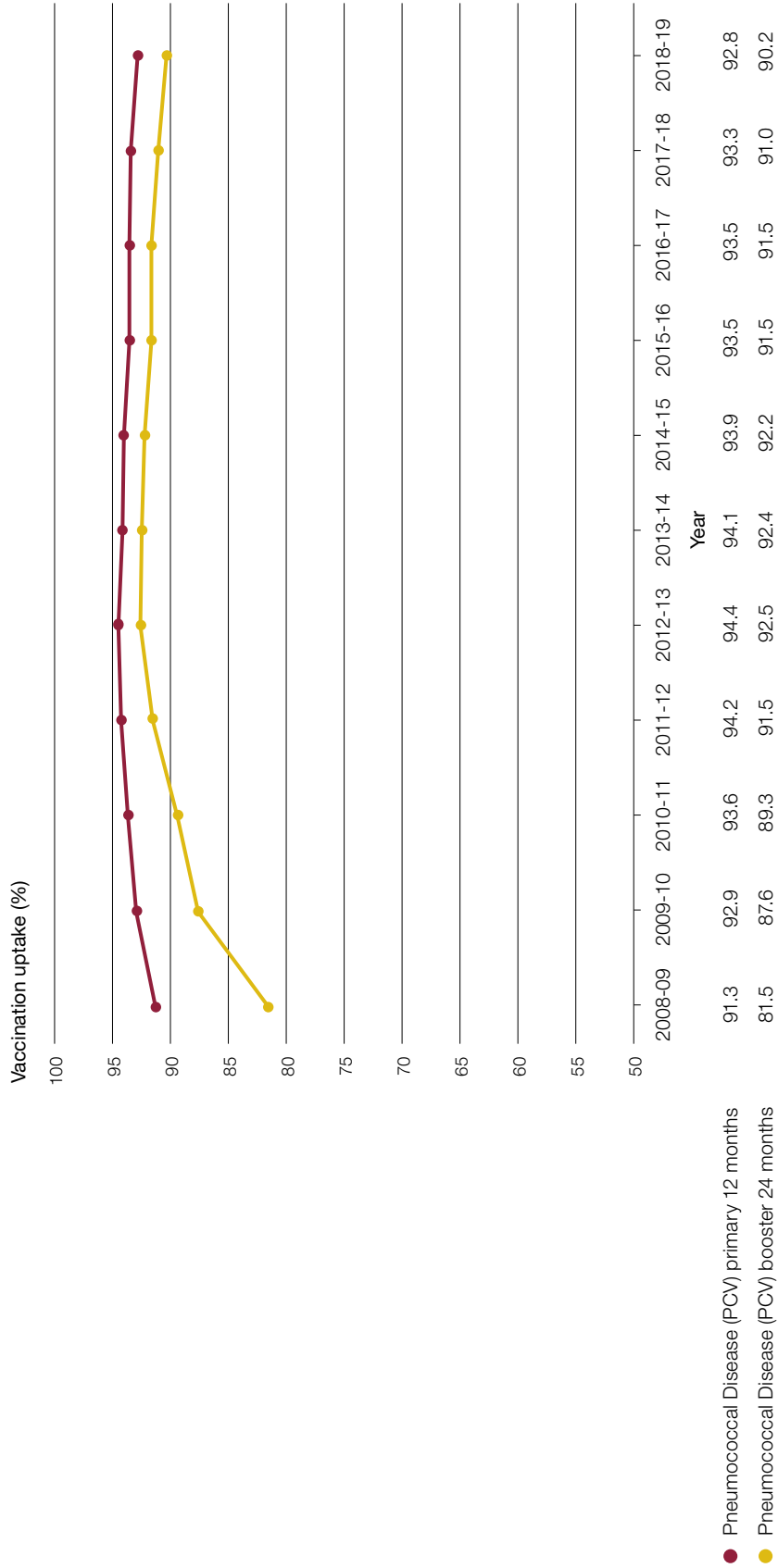
Uptake of Hib/MenC vaccination 2008-09 to 2018-19 in England

Uptake of Hib/MenC vaccination at 24 months has decreased between 2012-13 and 2018-19 but uptake of the booster has increased slightly in the same period



Source: NHS Digital, *Childhood Vaccination Coverage Statistics – England 2018-19*, 2019. Available at: <https://digital.nhs.uk/data-and-information/publications/statistical/nhs-immunisation-statistics/england-2018-19>

**Figure 8**  
 Uptake of PCV vaccination 2008-09 to 2018-19 in England  
 Uptake of PCV vaccination has decreased slightly between 2012-13 and 2018-19



Source: NHS Digital, *Childhood Vaccination Coverage Statistics - England 2018-19*, 2019. Available at: <https://digital.nhs.uk/data-and-information/publications/statistical/nhs-immunisation-statistics/england-2018-19>



## Cases of diseases

**2.4** PHE is responsible for monitoring cases of disease. Its data show that cases of diseases in children and adults have varied between 2008 to 2018 (**Figure 9** overleaf).<sup>5</sup>

- For **rotavirus**, cases have dropped from a peak of 16,039 in 2010 to 2,152 in 2018.
- Cases of **mumps** have fluctuated since 2008, with a high of 7,300 in 2009, and dropping below 1,000 in 2015 and 2016. Cases have started to increase since then with 1,796 in 2017, and reduced to 1,061 in 2018.
- Cases of **whooping cough** reached a peak of 9,367 in 2012 and have decreased to 2,947 in 2018.
- Cases of measles have fluctuated from lows of 104 and 92 in 2014 and 2015 to 970 in 2018. Overall, 40% of measles cases in 2018 were in London, with a further 33% in the South East and South West combined. Measles is also increasing globally, and cases have increased by almost three-fold in the first six months of 2019 (based on 182 countries reporting to the World Health Organization (WHO) compared with the position at the same stage in 2018. Cases in adults may have resulted from vaccinations missed years or decades ago.

## Regional variations

**2.5** NHS England data show that two of our three case study vaccinations have regional variations in uptake (**Figures 10** on page 25, **Figure 11** on page 26 and **Figure 12** on page 27). There is a wide range in uptake:

- 4-in-1 from 96.2% in County Durham and Cumbria to 63.9% in Westminster;
- Hib/MenC (24 months) from 97.5% in County Durham to 71.2% in Hackney and City of London; and
- MMR (2nd dose) from 96.4% in County Durham to 64.1% in Westminster.

NHS England and PHE have an overview of the issues and probable causes of variation and NHS England regional teams look at specific challenges for their local populations. London reports the lowest levels of uptake for all three case study vaccinations and lowers the national average. PHE and NHS England believe that this may be due in part to children's medical records not being updated in the system immediately as they move areas and GPs, although they do not suggest that this is the only reason for low levels of uptake in London. They cite a highly mobile population as an additional factor, challenges with the general practice workforce and changes to the way data were collated in 2017-18.

<sup>5</sup> Figures for hepatitis B, hib, measles, meningitis, mumps, whooping cough and rubella are for England only; figures for polio and rotavirus are for England and Wales combined; figures for diphtheria are England and Wales combined, however, there were no reported cases in Wales after 2014; figures for tetanus are for England and Wales until 2016 and for England only from 2017

**Figure 9**  
Cases of diseases covered by the pre-school vaccination programme in children and adults from 2008 to 2018

Cases of diseases in children and adults have varied between 2008 and 2018

Year	Diphtheria	Tetanus	Whooping cough	Polio	Hib (type b)	Hepatitis B	Rotavirus	Meningitis	Measles	Mumps	Rubella
2008	6	4	877	0	68	620	13,902	1,109	1,331	2,348	27
2009	4	7	693	0	36	597	15,551	858	985	7,300	9
2010	2	10	409	0	28	512	16,039	1,009	372	3,880	12
2011	2	3	1,051	0	20	589	15,997	730	1,068	2,299	4
2012	1	6	9,367	0	14	554	15,289	769	1,912	2,592	65
2013	3	7	4,621	0	19	414	14,950	636	1,413	3,752	13
2014	1	7	3,387	0	12	488	4,405	724	104	2,680	3
2015	6	6	4,191	0	9	457	4,823	811	92	761	5
2016	6	5	5,949	0	n/a	453	2,705	748	530	537	2
2017	5	5	4,341	0	8	445	3,677	755	266	1,796	3
2018	11	5	2,947	0	10	381	2,152	525	970	1,061	3

#### Notes

- Figures for hepatitis B, hib, measles, meningitis, mumps, whooping cough and rubella are for England only; figures for polio and rotavirus are for England and Wales combined; figures for diphtheria are England and Wales combined, however, there were no reported cases in Wales after 2014; figures for tetanus are for England and Wales until 2016 and for England only from 2017.
- Figures for meningitis are based on epidemiological year (July 1 through to June 30 – this is to ensure the peak (generally occurring over the winter period) is not missed from one year. Figures for 2006-07 are reported as 2006, etc. The figure provided for 2018 is provisional.
- Hib (type b) figure is not available for 2016 due to data processing capacity.

Source: Public Health England, Health Protection Infectious Diseases, October 2019. Available at: [www.gov.uk/topic/health-protection/infectious-diseases](http://www.gov.uk/topic/health-protection/infectious-diseases)

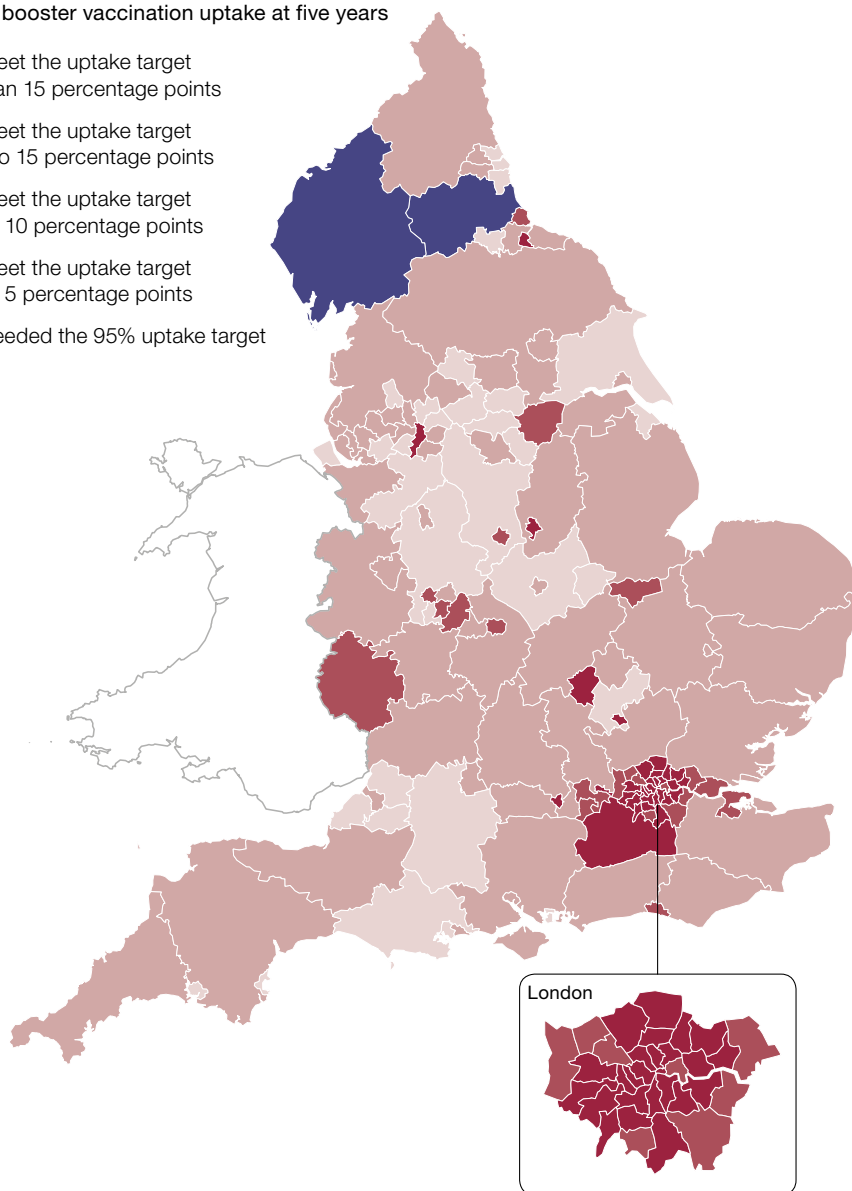
**Figure 10**

Uptake of 4-in-1 booster vaccination at five years in 2018-19 in England

Uptake of 95% or more of the 4-in-1 vaccination is seen in two local authority areas in 2018-19

Rate of 4-in-1 booster vaccination uptake at five years

- Failed to meet the uptake target by more than 15 percentage points
- Failed to meet the uptake target by 10.001 to 15 percentage points
- Failed to meet the uptake target by 5.001 to 10 percentage points
- Failed to meet the uptake target by 0.001 to 5 percentage points
- Met or exceeded the 95% uptake target



Source: NHS Digital, *Childhood Vaccination Coverage Statistics – England 2018-19*, 2019.  
 Available at: <https://digital.nhs.uk/data-and-information/publications/statistical/nhs-immunisation-statistics/england-2018-19>

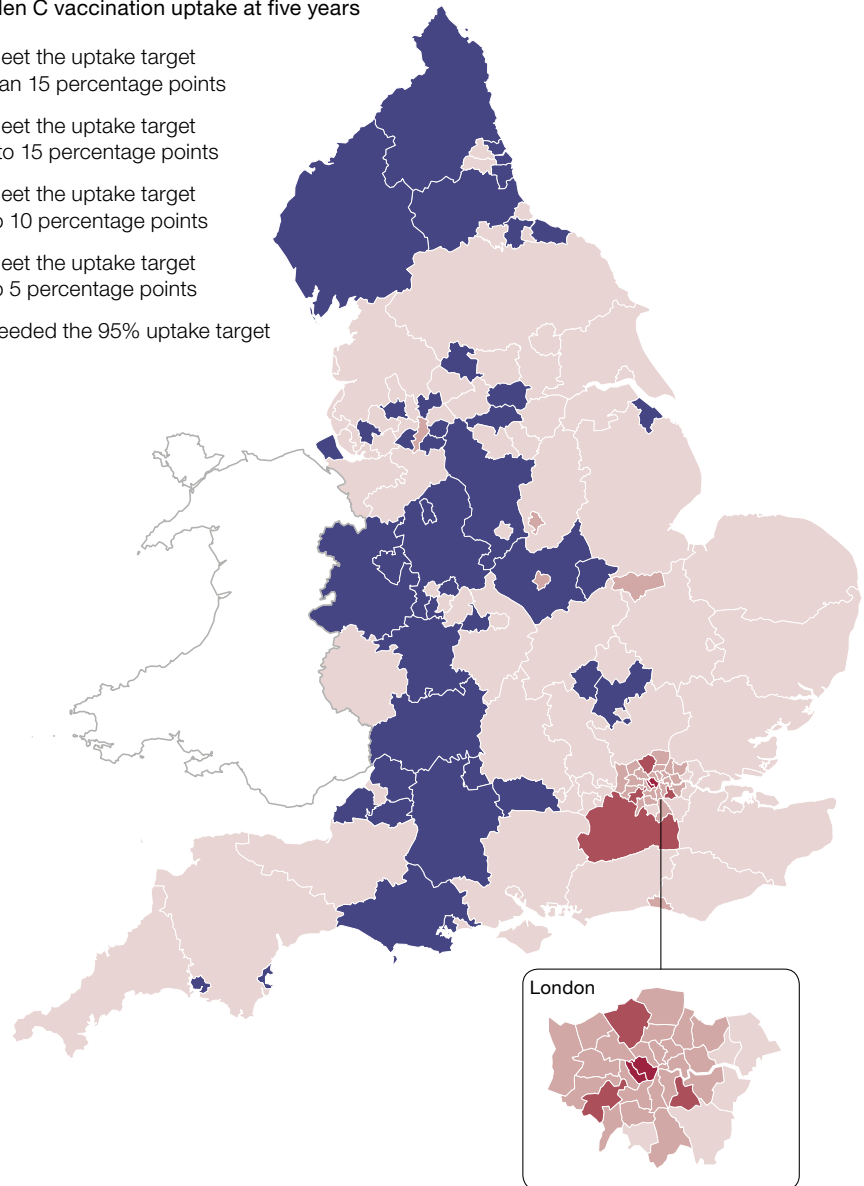
### Figure 11

#### Uptake of Hib/MenC vaccination at five years in 2018-19 in England

Uptake of Hib/MenC vaccination has several areas of high uptake in 2018-19

Rate of Hib/Men C vaccination uptake at five years

- Failed to meet the uptake target by more than 15 percentage points
- Failed to meet the uptake target by 10.001 to 15 percentage points
- Failed to meet the uptake target by 5.001 to 10 percentage points
- Failed to meet the uptake target by 0.001 to 5 percentage points
- Met or exceeded the 95% uptake target



Source: NHS Digital, *Childhood Vaccination Coverage Statistics – England 2018-19*, 2019.

Available at: <https://digital.nhs.uk/data-and-information/publications/statistical/nhs-immunisation-statistics/england-2018-19>

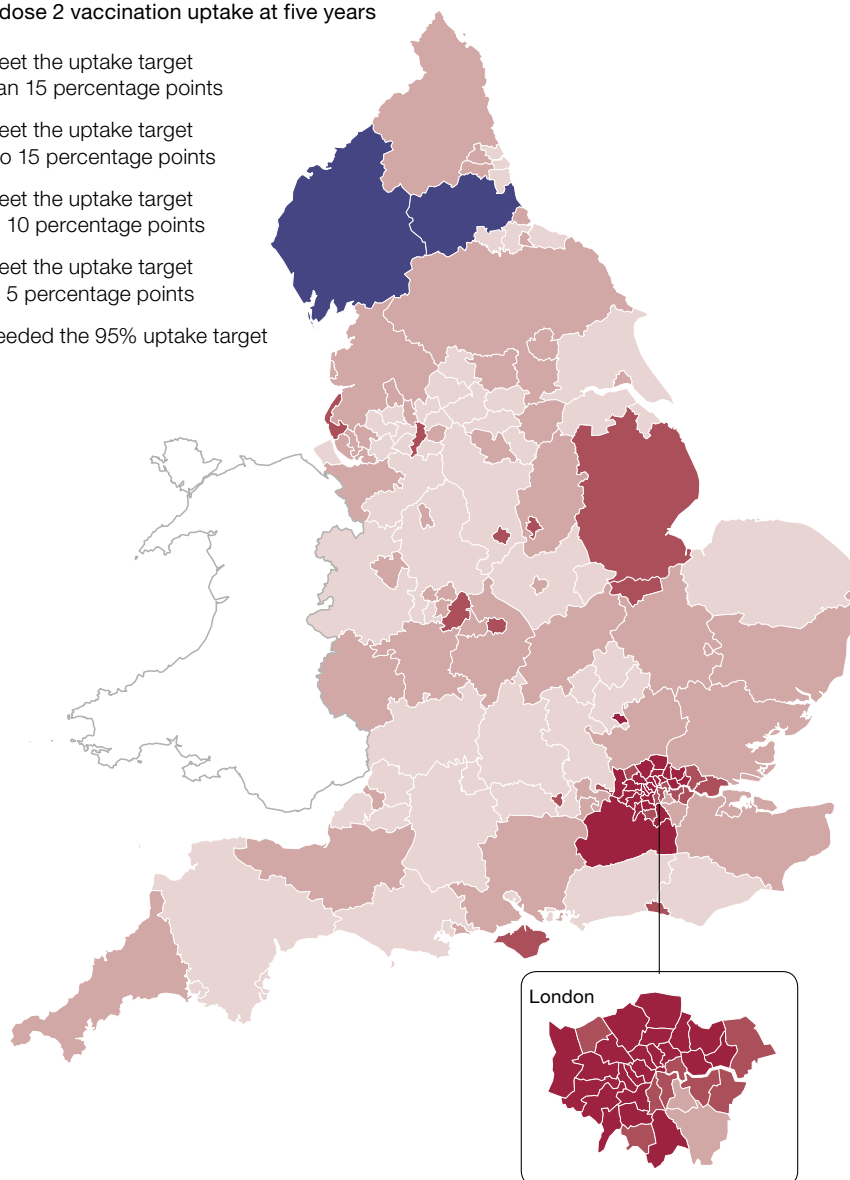
**Figure 12**

Uptake of the second dose of the Measles, Mumps and Rubella vaccination (MMR) at age five in 2018-19 in England

**Uptake of 95% or more of the second dose of MMR is seen in two local authority areas in 2018-19**

Rate of MMR dose 2 vaccination uptake at five years

- Failed to meet the uptake target by more than 15 percentage points
- Failed to meet the uptake target by 10.001 to 15 percentage points
- Failed to meet the uptake target by 5.001 to 10 percentage points
- Failed to meet the uptake target by 0.001 to 5 percentage points
- Met or exceeded the 95% uptake target



Source: NHS Digital, *Childhood Vaccination Coverage Statistics – England 2018-19*, 2019.

Available at: <https://digital.nhs.uk/data-and-information/publications/statistical/nhs-immunisation-statistics/england-2018-19>

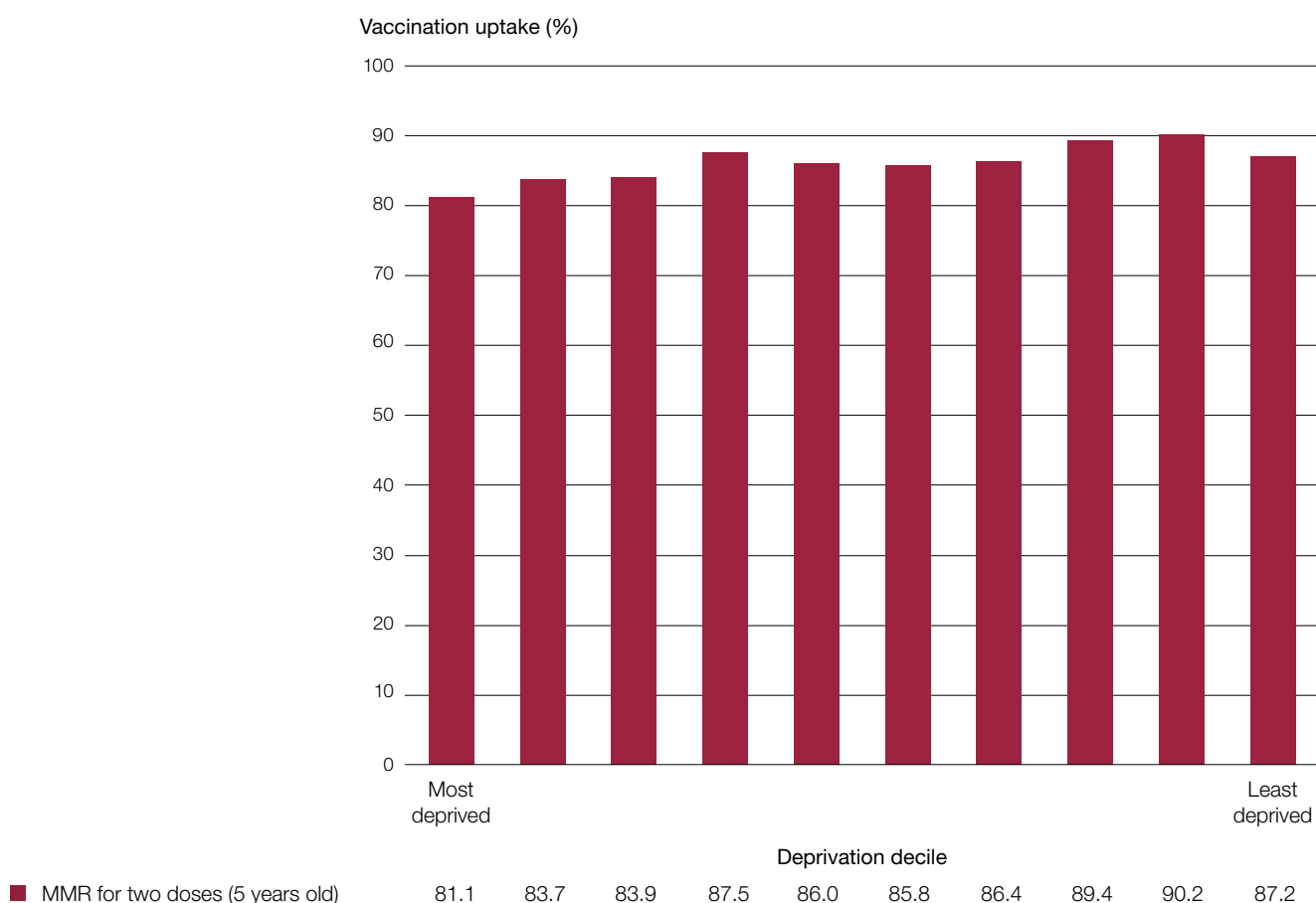
## **Deprivation**

**2.6** NHS England considers that there is a link between deprivation and uptake of MMR. Specifically, that while higher deprivation can be associated with lower vaccination uptake, there is also, in its view, some evidence of wider dissemination of anti-vaccination messages and vaccine hesitancy amongst higher income groups. However, the data, when analysed by areas of deprivation (**Figure 13**), indicate that uptake of MMR is lower in the most deprived local authorities.

**Figure 13**

Uptake of the Measles, Mumps and Rubella vaccination (MMR) by deprivation, 2018-19 in England

Uptake of MMR varies across levels of deprivation

**Notes**

- 1 The 'Income Deprivation Domain' of the Index of Multiple Deprivation 2015 measures the proportion of the population in each local area who are experiencing deprivation relating to low income. The definition of low income used includes both those people that are out of work, and those that are in work but who have low earnings (and who satisfy the respective means tests).
- 2 Here we use the 'Income Deprivation Affecting Children Index' (IDACI) subset of Income Deprivation. This measures the proportion of children aged 0 to 15 who are living in income-deprived families, where the word 'family' is used to designate a 'benefit unit', that is the claimant, any partner and any dependent children (those for whom Child Benefit is received).
- 3 Overall outcomes for local areas are grouped to yield aggregate scores for the 152 upper-tier councils in England. These scores are then ordered, and the councils allocated a rank. These ranks can then be grouped into 10 equally sized cohorts, with the boundaries between these cohorts referred to as deciles, from the most to the least relatively deprived councils in England. Vaccination data for these cohorts of councils have then been pooled to create the rates shown in the chart above. In deriving these cohorts, we have used the 149 published local authorities, whereby Rutland is aggregated with Leicestershire; Isles of Scilly is aggregated with Cornwall; and City of London is aggregated with Hackney. The first nine cohorts each contains 15 local authorities, and the final cohort contains the 14 least deprived local authorities.
- 4 Further details regarding English indices of deprivation are available at: [www.gov.uk/government/statistics/english-indices-of-deprivation-2015](http://www.gov.uk/government/statistics/english-indices-of-deprivation-2015)
- 5 We have not assessed the statistical significance of variation.

Source: NHS Digital, *Childhood Vaccination Coverage Statistics – England 2018-19*, 2019. Available at: <https://digital.nhs.uk/data-and-information/publications/statistical/nhs-immunisation-statistics/england-2018-19> and Ministry of Housing, Communities & Local Government, *English indices of deprivation 2015*: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/464465/File\\_11\\_ID\\_2015\\_Upper-tier\\_Local\\_Authority\\_Summaries.xlsx](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/464465/File_11_ID_2015_Upper-tier_Local_Authority_Summaries.xlsx)

## Part Three

### NHS England's and Public Health England's understanding of why uptake of pre-school vaccinations is declining

**3.1** The Department of Health & Social Care (the Department), NHS England and Public Health England (PHE) (the national bodies) are aware that uptake of pre-school vaccinations is falling. In 2016, NHS England and PHE began work to try to understand causes of the decline initially focusing on the Measles, Mumps and Rubella vaccination (MMR). Since then, they have identified multiple potential causes of the decline which operate together. Some of these problems are due to how the vaccines are delivered locally, such as access to GPs; others are more systemic, such as problems with the completeness of the reported data. Many of these problems have been evident for several years and no one factor on its own explains why the decline in uptake has been evident since 2012-13. Research in the peer reviewed journal *BMC Public Health* in 2016 concluded that the reorganisation of the health system in April 2013 in England has fragmented the way the vaccination programme was delivered.<sup>6</sup> The paper did not link the reorganisation to a decrease in uptake rates at that time and noted that:<sup>7</sup>

- The fact that vaccination uptake in England overall remained relatively stable in the years following the April 2013 health system reorganisation was credit to the diligence of programme planners, commissioners and providers.
- To protect and enhance delivery, attention needed to be paid to developing system-wide strategies for addressing weaknesses.

**3.2** NHS England and PHE have identified potential factors contributing to declining vaccination uptake including:

- inconsistent call/recall;
- difficulties in timely access to healthcare professionals;
- incomplete data on vaccination uptake;
- 'under-served' populations;
- anti-vaccination messages; and
- vaccine hesitancy among a small minority of parents

<sup>6</sup> Tracey Chantle et al: 'It's a complex mesh'- how large-scale health system reorganisation affected the delivery of the immunisation programme in England: a qualitative study' *BMC Public Health*, 2016.

<sup>7</sup> While uptake had declined for the majority of the vaccines for which there is data, the decline from 2013-14 to 2015-16 was less than 1% (except for the 4-in-1 booster at five years).



## **Call/recall**

**3.3** ‘Call/recall’ for vaccinations is direct communication with parents or carers to arrange their child’s vaccinations. Before 2013, responsibility for call/recall was mixed between primary care trusts and service providers (Child Health Information Services or CHIS) who help to inform and update vaccination records of children in their area. When primary care trusts were abolished in 2013, NHS England took responsibility for commissioning call/recall. NHS England has not set out requirements of GPs for call/recall under the changed arrangements. As a result, call/recall is done inconsistently and there is no coherent system. In some cases, call/recall is done to a varying extent by GP practices. In other areas it is done by CHIS. NHS England central teams check how regional teams review the effectiveness of call/recall in their areas that is conducted by CHIS but not that done by GP practices. The National Institute for Health and Care Excellence (NICE) produced guidance in 2006 on how to improve uptake of vaccinations, which included call/recall. However, NHS England does not monitor whether GP practices follow NICE guidance on call/recall. NHS England is considering how to clarify call/recall arrangements.

## **Difficulties in timely access to healthcare professionals**

**3.4** A small online survey of 2,622 parents by the Royal Society for Public Health in January 2019 found parents cited the timing and availability of appointments and childcare as barriers to getting their child vaccinated. There are no national data on the impact of this on decreasing vaccination uptake.

## **Data on vaccination uptake**

**3.5** As people move to different areas and change GPs, their health records may not be updated in the system immediately at their old GP practice and therefore duplicated in their new practice. NHS England considers this to be a particular problem in London. A study validating vaccination uptake data found that among London children aged 10–16 with no record of MMR vaccination, 60% were in fact vaccinated, compared with 40% in the rest of the country. This indicates that the numbers of children being reported as vaccinated are lower than actual levels. In addition, GPs may not routinely record ethnicity or vaccinations that happen outside general practices may not be added to medical records promptly. NHS England and PHE have identified a range of potential inaccuracies in the reported data and do not know the extent to which these affect the rates of vaccination uptake. They do not suggest that the decrease in rates of uptake is only because of problems with data.

## **Under-served populations**

**3.6** Under-served populations are communities who do not access healthcare in the usual ways and therefore can have lower vaccination uptake. These groups include travellers, recent migrants and some religious faiths. Medical records do not routinely state membership of specific small communities. PHE and NHS England have undertaken some small-scale work to determine the extent to which these communities are under-vaccinated, especially in London, but recognise that more work needs to be done. For example, in 2018 PHE and the World Health Organization (WHO) did some research on why a community of Charedi Jews in Hackney had low uptake of MMR. This found that access to GPs and family-friendly facilities in GP practices were important factors.

## **Anti-vaccination messages**

**3.7** Anti-vaccination activists oppose specific or all vaccinations. Their arguments are not based on accepted scientific or medical evidence. PHE conducts an annual survey into the wider public's and parents' attitudes to vaccinations. It has found no evidence that anti-vaccination social media activity has had a major impact on vaccination uptake in England. It considers the main reasons for the decline in uptake are related to delivery by local primary care providers. NHS England and PHE consider that anti-vaccination messages on social media are affecting the uptake of vaccinations elsewhere in the world. They are therefore alert to the possible impact in England and the risk that such messages could contribute to and compound the problem of poor vaccination uptake. As a result, they are emphasising the positive case for vaccinations.

## **Vaccine hesitancy**

**3.8** A small minority of parents may be reluctant to vaccinate their children for many reasons and may not oppose vaccination. The WHO defines 'vaccine hesitancy' as the reluctance or refusal to vaccinate despite the availability of vaccine services and has named it one of the top 10 global health risks for 2019. It has identified complacency, inconvenience in accessing vaccines, and lack of confidence as key reasons for hesitancy. In 2018, the Wellcome, a medical foundation, ran a global survey on people's attitudes to science and health, including vaccinations (*Wellcome Global Monitor 2018*). It showed that, across nations there were varying levels of scepticism about the safety and effectiveness of vaccinations. The survey reported that 75% surveyed in the UK; 73% of people surveyed in Northern Europe and 59% in Western Europe agreed that vaccines were safe.<sup>8</sup>

<sup>8</sup> Northern Europe includes Denmark, Estonia, Finland, Iceland, Ireland, Latvia, Lithuania, Norway, Sweden, United Kingdom. Western Europe includes Austria, Belgium, France, Germany, Luxembourg, Netherlands, Switzerland.

**3.9** PHE's survey of attitudes to vaccination in England reported that parents have a high level of confidence in the UK vaccination system. In its 2019 survey 95% of parents reported feeling confident or very confident in vaccinations. This has increased from 93% in 2017. PHE's survey reported in 2019 that the percentage of parents refusing or postponing vaccination fell from 11% in 2015 to 8% in 2019, with 3% of parents (2% in 2015 and 4% in 2018) refusing, or having no plans to have one or more of their child's vaccinations.

**3.10** PHE, public health organisations and research bodies have done some work to understand the impact of all these factors they believe affect uptake. This research is localised and small-scale and as a result, PHE and NHS England do not know the extent to which each factor impacts on vaccination uptake.

### **Understanding regional variations**

**3.11** The national bodies have data that enable them to see variations in vaccination uptake at individual GP practices. The national bodies began to monitor these variations at a high level centrally from 2018. In January 2019 they concluded that, from their analysis, geographical variation remains stark but appeared to have reduced for vaccination. They recommended that the national bodies discuss next steps in setting specific approaches for improving uptake, focusing on the lower performing areas, with a clear timeline for improvements. NHS England expects its seven regional teams to do detailed monitoring of and work to improve local and regional uptake. In August 2019, NHS England published an action plan to improve uptake of MMR. This included work to provide more detailed data at national level. Our report on health screening noted that NHS England's reliance on local and regional monitoring of health screening programmes risked omissions not being identified by national performance monitoring.<sup>9</sup>

**3.12** The national bodies do not consistently monitor uptake in certain populations who may generate regional differences. These populations include under-served communities or mobile populations, such as those often seen in London, who may change their GP frequently and may not register with a GP in their new area. NHS England expects regional teams to investigate uptake in these populations.

<sup>9</sup> Comptroller and Auditor General, *Investigation into the management of health screening*, Session 2017–2019, HC 1871, National Audit Office, February 2019.

# Part Four

## Improving uptake of pre-school vaccinations

**4.1** In 2016, the Department of Health & Social Care (the Department), NHS England and Public Health England (PHE) focused on trying to improve three under-performing public health functions (which were part of the Section 7A Agreement). This included the Measles, Mumps and Rubella (MMR) vaccination. They developed several actions to improve performance organised into five themes: data, behavioural insights, commissioning levers, partnership working and sharing good practice. However, uptake of MMR and other vaccinations continued to fall.

**4.2** In summer 2018, the minister for public health and primary care requested a “foolproof” plan from PHE and NHS England to reverse the decline and reduce regional variation. Since then, PHE and NHS England have developed a number of actions which they believed to be most likely to improve uptake of pre-school vaccinations. They do not have evidence that all of their actions will address the causes of the decline. In July 2019, in the Prevention green paper, the Department announced that it would launch a new strategy on vaccination by spring 2020 which included some of these actions. In August 2019, the Prime Minister highlighted the health risks of increasing cases of measles and reiterated actions to improve uptake of MMR. He also requested the new vaccination strategy be brought forward to autumn 2019. In August 2019 NHS England published guidance to regional teams on how to improve uptake in bowel and cervical cancer screening and MMR vaccination. In September 2019, the Secretary of State for Health and Social Care announced that he was looking at the case for introducing compulsory vaccination. Some of NHS England’s and PHE’s actions, such as changes to the GP contract, are part of wider ongoing initiatives. The key actions include:

- improving data through the digital child health programme. NHS England launched the programme in April 2016 at an estimated cost of £20.5 million to improve information on children’s health. NHS England believes that the proposed online record of children’s health – ‘digital child health records’, also known as the digital red book - will be an additional service to help identify children who need to be vaccinated. NHS England piloted digital child health records in summer 2019. As of July 2019, it expected digital child health records to be ready for use by parents by March 2022. This would help make data on vaccinations more complete.
- NHS England is working on ways to encourage clinical champions within local NHS systems to work on local MMR plans and provide a comprehensive response to outbreaks. Once the scope of the role is agreed, work would be coordinated by NHS England regional teams and others involved in liaising with local stakeholders in the broader system.

- Improving how vaccinations are given to children in GP practices. NHS England does not consider how it commissions services from GPs (through the GP contract) to be causing the decline in uptake of vaccinations. However, it has made changes to the contract which it hopes will help to reverse the decline, particularly in uptake of MMR. It is undertaking a review of all vaccination services and has created an MMR catch-up programme. This provides additional payments to GPs for vaccinating children aged 10-11 with MMR.
- Engaging other commissioners and providers to supplement the work of GPs. One example is through blogs setting out how to overcome barriers to vaccination. PHE and NHS England do not know if, and the extent to which, outreach services are failing to promote vaccination services.

**4.3** NHS England and PHE do not use a consistent national approach to engaging with 'under-served' groups. They take an adaptable, locally focused approach and expect regional and local NHS England and PHE teams to work with under-served groups in their areas to improve uptake. In July 2019, regional teams provided NHS England with their plans to improve uptake of vaccinations, some of which included plans to engage with under-served communities. The extent of this work to engage with under-served groups varies. In 2018, a small-scale review of GP practices in England by PHE and the London School of Hygiene and Tropical Medicine showed no GP practices (out of nine) had services to increase uptake in groups who had low vaccination uptake or to identify vulnerable or 'under-served' populations. In its action plan, NHS England requested that regional teams share examples of local responses to measles outbreaks in under-served communities.

**4.4** NHS England's London immunisation commissioning team has started to focus on under-served populations as part of work to improve uptake of pre-school vaccinations. This aims to identify communities who have low uptake of pre-school vaccinations, identify the gaps in vaccination services for these communities, and use both existing resources and newly developed ways to better reach these people. NHS England's London immunisation commissioning team estimates that it will implement these changes by March 2022, subject to approval by the London Immunisation Board in the NHS England regional team.

**4.5** PHE, NHS England and the Department are developing a joint communications strategy to promote positive messages about vaccinations and to help improve confidence in vaccinations and overcome vaccine hesitancy. PHE monitors public sentiment about vaccination on various media, including social media sites such as Mumsnet, Facebook and Twitter, and uses various forms of media to promote positive messages about vaccination. PHE's policy is not to engage generally with anti-vaccination activists as it considers that doing so raises the profile of these activists. Instead, it seeks to reinforce the benefits of vaccination. While NHS England, the Department and PHE consult with each other on how best to communicate messages on vaccinations, NHS England and PHE have not always taken the same approach to anti-vaccination messages and 'myth busting'. PHE has engaged with social media sites, advising them on reputable sources of vaccination information. In 2019, PHE set up an integrated vaccine communications board to include the Department, NHS England and PHE.

**4.6** In July 2019, the Secretary of State for Health and Social Care discussed with social media companies how they can help to stop the spread of anti-vaccination messages at a summit about social media and mental health. In August 2019, the Prime Minister called for a further summit with social media companies to discuss how they can help promote accurate information about vaccination. The Department has met with the Department for Digital, Culture, Media & Sport, which is leading on cross-government efforts to counter disinformation, to discuss anti-vaccination messages.

**4.7** In February 2019, PHE published its strategy for the elimination of measles and rubella. The strategy was based on a requirement from the WHO European Vaccine Action Plan 2015 to 2020. In summer 2019, the joint PHE, NHS England and Department measles and rubella strategy implementation board, tasked to implement the strategy, was developing an action plan with work strands to eliminate these diseases. The work strands cover a range of activities including training, workforce planning and commissioning.

# Appendix One

## Our investigative approach

### Scope

1 We conducted an investigation into the reasons for the declining rates in uptake of seven pre-school vaccinations in England. We have focused on three vaccinations: MMR, the 4-in-1 booster and Hib/MenC.

2 Our investigation focused on:

- governance and accountability;
- trends in vaccination uptake and regional variation;
- the Department of Health & Social Care's, NHS England's and Public Health England's (PHE's) understanding of why uptake of vaccinations is declining; and
- actions to improve uptake.

3 This investigation does not evaluate the effectiveness or value for money of vaccinations, nor does it seek to assess the efficacy or clinical effectiveness of the pre-school vaccination programme.

### Methods

4 In examining these issues, we drew on a variety of evidence sources.

- We interviewed key individuals involved in pre-school vaccinations including the Department of Health & Social Care, NHS England and Public Health England. In addition, we interviewed representatives from the Local Government Association and the Association of Directors of Public Health.
- We reviewed documents relating to governance and accountability arrangements, Section 7A accountability documents, performance dashboards and ministerial briefings.
- We analysed PHE financial information on vaccine procurement.
- We analysed data on vaccination uptake and cases of disease.

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