



Making measles history together: A resource for local government

Measles is highly infectious and can lead to serious complications and, on rare occasions, it can be fatal. Because measles is so infectious, very high coverage (over 95%) with two doses of the Measles Mumps and Rubella (MMR) vaccine is necessary to eliminate it.

Measles continues to circulate in many countries around the world and there are currently several large outbreaks in countries across Europe where MMR vaccine uptake has been low. Until measles elimination is achieved globally we will continue to see imported cases of measles to the United Kingdom (UK). The good news is that all the evidence supports the fact that global measles eradication is feasible and cost-effective.

In the fifty years since the first measles vaccine was introduced in the UK it is estimated that 20 million measles cases and 4,500 deaths have been averted. In 2016, uptake of the first dose of the MMR vaccine in 5 year olds reached 95% for the first time and the World Health Organisation (WHO) declared that the UK had achieved measles elimination. This is a huge achievement and a testament to the hard work of health professionals in our National Health Service (NHS).

Despite this, UK performance for the second dose of MMR remains sub-optimal – only 88% at 5 years of age. Public Health England (PHE) analyses suggest that immunity levels in teenagers and young people are also well below those required to interrupt measles transmission. Inequalities in vaccine uptake by ethnicity, deprivation and geography mean that the burden of measles falls disproportionately on certain communities. Local government, working alongside their partners, can contribute to reducing these inequalities by taking ownership of local plans to address specific issues in service delivery that affect their more vulnerable communities.

This resource highlights some successes that have been achieved but also those gaps that still need attention. We hope it will be a useful tool to help local authorities contribute to system leadership to close the measles immunity gap in their populations and to prepare for outbreaks. Together we can consign measles to the history books.

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Measles – Why does it matter?

The World Health Organization (WHO) confirmed that the UK had eliminated measles in 2016 – this means that the infection is no longer endemic to the UK. This is a huge achievement and is a testament to the hard work of our health professionals in the NHS. Immunisation with two doses of the measles, mumps, rubella (MMR) vaccination is the single most effective way to prevent these infections.

What is measles?

Measles is a highly infectious viral illness that is spread through coughing and sneezing. Anyone can get measles if they haven't been vaccinated or they haven't had it before.

It can lead to serious complications such as infections of the lungs (pneumonia) and brain (encephalitis) and, on rare occasions, can be fatal. About 40% of the measles cases reported in 2018 to date have been hospitalised, posing a significant burden on the NHS.

Complications of measles are more likely to develop in some people, including:

- babies younger than one year old
- people with a weakened immune system, such as those with leukaemia
- pregnant women

MMR vaccine

The measles mumps and rubella (MMR) vaccine is given as part of the routine NHS childhood vaccination programme. The first dose is offered to all children on or after their 1st birthday and the second dose is offered before they start school, usually at three years and four months.

Two doses of the vaccine provide long lasting protection.

Anyone who has missed out on their MMR vaccine or is unsure if they have had two doses should call their GP practice and if required can get caught up for free regardless of their age.

In 2016, for the first time uptake of the first dose of the MMR vaccine in 5 year olds in England reached the 95% WHO target.

Despite this progress, measles remains a threat to the UK population. There have been several outbreaks across Europe in countries where MMR uptake has been historically low. Over 41,000 children and adults in the WHO European Region have been infected with measles in the first 6 months of 2018. Forty-eight measles deaths have been reported in the European Union since 2016.

In England, there have already been more than 800 laboratory confirmed cases of measles in 2018, with several outbreaks across the country mainly linked to importations from Europe. Young people and adults aged 15 years and over – who missed out on MMR vaccine when they were younger – and some under-vaccinated communities have been particularly affected. As a result, Public Health England (PHE) declared a national measles incident.

In part, this is a legacy of the late 1990 to early 2000s. In 1998 Andrew Wakefield published his now infamous and discredited paper linking MMR to autism. This resulted in intense media coverage in the UK and worldwide which peaked in 2002. It had an important impact on MMR coverage in the childhood programme which dropped to about 80% nationally in 2003.



The path to measles elimination

Measles is easily prevented by the measles mumps and rubella (MMR) vaccine, yet it remains an important cause of morbidity and mortality globally.

Eliminating measles and rubella is a core goal of the European Vaccine Action Plan 2015–2020¹ and an important part of global efforts to improve health and reduce inequalities.

Before the introduction of measles vaccine in 1968, between 160,000 to 800,000 measles cases were reported each year in the UK. More than 90% of adults had evidence of previous infection and around 100 deaths from acute measles were recorded each year (see the graph on the right).

The combined MMR vaccine was introduced in 1988 with a second dose added in 1996 to provide optimal protection and to pave the way towards measles and rubella elimination.

MMR vaccine coverage in England is currently high in young children however, coverage levels dipped to a low of 80% in 2003. This means that there are significant numbers of unprotected teenagers and young adults who could catch measles, both in England, particularly in environments of close mixing such as summer festivals, and when they travel abroad for the holidays.

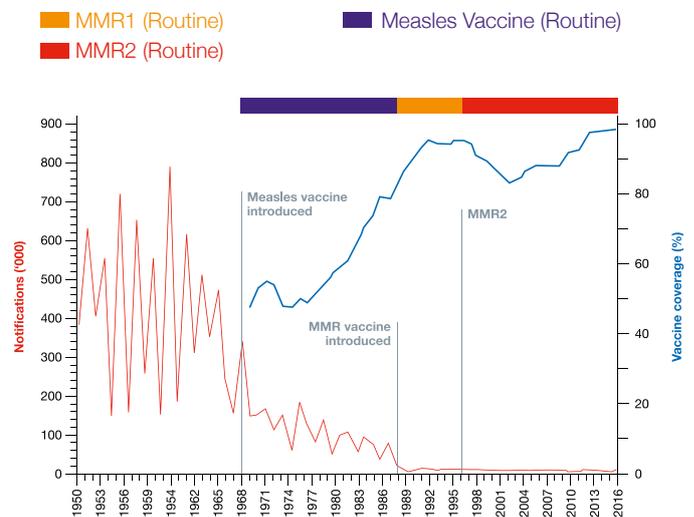
Although the WHO target of 95% coverage with the first dose of MMR (MMR1) at two years of age has never been achieved, in 2015/16, 7 of the 9 regions in England had an estimated coverage of over 95% for MMR1 when measured at five years.

London and the South East were the two regions that did not achieve this target. Worryingly, MMR1 coverage at two years has been decreasing since 2013/14

(cohorts born in 2011–2012) with a reversal of a decade long trend of year on year improvement.

Measles vaccine coverage has also been sub-optimal in several European countries with only five EU/EEA countries 'reporting at least 95% vaccination coverage for both doses of measles-containing vaccine.' This means that measles continues to spread in our neighbouring countries with ongoing potential for cases to continue to be imported into the UK.

UK coverage of measles vaccination* and measles notifications** from 1950 to 2016



* Vaccine coverage – MMR Dose 1 measured at 5 years of age

** Scottish notification data available only from 1968

Inequalities in MMR vaccine uptake and measles disease burden

There are inequalities in vaccine uptake by ethnicity, deprivation and geography – the burden of measles falls disproportionately on some communities.

NICE guidance on reducing differences in the uptake of immunisations describes groups of children² and young people who are at risk of not being fully immunised, for example, unregistered children, younger children from large families, children with learning disabilities and those from non-English speaking families. The main barrier to vaccination is access to immunisation services

that meet the needs of different communities. However there are also communities whose religious or cultural beliefs result in low or delayed vaccine uptake. Herd immunity extends the benefits of the national immunisation programme to unvaccinated individuals thus intrinsically reducing inequalities, however the extent of this effect will depend on overall vaccine coverage and population mixing patterns. When large numbers of unvaccinated individuals live in close proximity, their communities become particularly vulnerable to outbreaks (see next page).

What can local authorities do to increase vaccination uptake?

Local authorities (LA) are in a unique position to understand the health needs of their population. We know from experience of past outbreaks that under-vaccinated communities are often geographically co-located and may find it challenging to access routine healthcare services, so efforts to improve uptake via general practice may pass them by. It is likely that these communities will be linked in to other local authority funded services and may have contact with housing, social care or health visiting services and so health promotion messages may be best delivered through these routes.

Every opportunity should be taken to raise awareness of measles, MMR vaccine and immunisation in general. This should go hand in hand with encouraging general access to health care, in conjunction with the NHS. The Immunisation & Screening National Delivery Framework & Local Operating Model (2013) sets out the roles and responsibilities of different partners and organisations in the delivery of immunisations. Local Authorities are responsible for providing independent scrutiny of NHS England, Public Health England and providers via locally agreed mechanisms. Local authorities also have a responsibility to provide information and advice to protect the population's health (see next page).

Local authorities have an important role to play to support outbreak response locally through community engagement and outreach. By working collaboratively with local PHE and NHS England teams, local authorities can ensure that interventions such as immunisation clinics are more effectively targeted at the communities who are most at risk.

We include two case studies highlighting recent measles outbreaks affecting the Romanian and Roma communities in Liverpool and Leeds that illustrate how local partners came together to mount an effective outbreak response.

Under-vaccinated communities

Traveller communities

The majority of travellers in England are Irish Travellers, Gypsies or Roma. Approximately half of all Gypsies, Roma and Travellers in the UK live in 'bricks and mortar' housing, many directly as a consequence of a shortage of Traveller sites. The majority (77%) of Gypsies, Roma and Travellers living in caravans live on either privately funded permanent authorised sites (46%) or on socially rented local authority (LA) sites (31%). It is widely accepted that Gypsies, Roma and Travellers have some of the worst outcomes for a wide range of social indicators including health when compared to other communities.

In 2015, an immunisation audit in a General Practice in the East of England serving a high proportion of Irish Travellers found that only 45% of Irish Traveller children had two MMR doses by 5 years of age compared to 90% of non-Traveller children.

The low immunisation coverage rates are reflected in an increased disease burden and frequent outbreaks of vaccine preventable diseases in the Traveller communities. A retrospective analysis of 2006 to 2009 data estimated the excess risk of measles infection to be over one hundred fold in Traveller communities, compared to the general population.

Anthroposophic communities

Anthroposophy is a spiritual movement based on the teachings of Rudolf Steiner, an Austrian philosopher who suggested that febrile illnesses such as measles could benefit a child's spiritual development, and consequently parents may view immunisation negatively.

There are a number of Steiner-Waldorf schools, early years providers and Camphill communities throughout England. The schools are a mixture of independent and state funded academies that have received Steiner accreditation or are affiliated. Whilst there is no official Steiner-Waldorf position on immunisation, the schools do not generally promote immunisation or facilitate school based programmes.

Outbreaks of measles have occurred regularly in Steiner schools and centres with spread to other anthroposophic communities.

Migrants

A recent report from WHO Europe shows that migrants are more likely to be under-immunised – putting them at increased risk of circulating vaccine-preventable diseases – and may face greater disease, disability, and deaths from vaccine-preventable diseases than the host population.

European Centre for Disease Prevention and Control (ECDC) noted that cross-border migration within the region has contributed to large measles outbreaks spreading in 2017 and 2018 to several countries in Europe with suboptimal vaccination coverage.

Data show that newly arrived migrants to Europe have lower rates of vaccine coverage than the host population and might present with incomplete vaccination history or missing documentation of previous vaccinations. In the UK, immunisation status should be checked at the GP practice on registration and new migrants should be brought up to date with the UK schedule for free.

Several measles outbreaks in the UK in 2017 and 2018 have been linked to importations from Europe. Many of the cases were unregistered and did not speak English and so community engagement and outreach was a key component of outbreak response. Alternative service provision through domiciliary vaccination and community clinics were essential to ensure contacts were immunised.

European studies have highlighted that migrant women are less likely than native women to be immunised for rubella. In the UK, the vast majority of rubella infections in pregnancy are in non-UK born women who are more likely to be unvaccinated and are at greater risk of exposure to infection as they regularly travel to rubella endemic countries or have friends and relatives who visit from those countries. Compounding these issues are migrants' exposure to key social determinants including poor living conditions and disparities in access to health services on arrival due to language barriers, inability to pay, cultural beliefs, and fear of discrimination.

Consistently high levels of migration across Europe, coupled with low national MMR uptake in many countries, poses a challenge to achieving measles and rubella elimination in the region.

The Charedi Orthodox Jewish Community

The London borough of Hackney is home to one of the largest Charedi Orthodox Jewish communities, outside of Israel and New York. Membership of the community is not systematically recorded in medical records but is estimated at around 30,000. Immunisation uptake within the community is consistently lower than the rest of the borough and the rest of England. For example in the fourth quarter of 2014-15 General Practices serving the Charedi community achieved 78% uptake of MMR1 at 2 years of age compared to 86% in the rest of the borough.

Sub-optimal immunisation coverage has led to recurrent outbreaks of vaccine preventable diseases, with measles outbreaks occurring in the borough of Hackney in 2007 and 2013.

During these outbreaks the Charedi community suffered a higher burden of disease, with an estimated rate of measles five to tenfold higher than the rates observed in the rest of the population. There are two smaller Orthodox Jewish communities in Salford (population, 10,000) and Gateshead (population, 5,000) who also have lower than average immunisation uptake e.g. MMR1 coverage in Salford is around 60%.



MMR immunisation programme and measles outbreak health check for local government

1

Assess the state of local MMR uptake by asking the following questions

- What is MMR coverage in 2 and 5 year olds?
- Are trends moving in the right direction?
- How does local uptake compare to the national average and statistical neighbours?
- What measures are in place to ensure that MMR check and offer is embedded in routine practice in primary care?
- What measures are in place to ensure that MMR check and offer is included in health visiting and in school immunisation contracts?

2

Assess inequalities in uptake

- What intelligence (including from NHS England and PHE) is available around particular community groups or areas that are under-vaccinated and at risk of outbreaks?
- What are the needs of these communities in terms of communication and access to services? The WHO Tailoring Immunisation Programmes (TIP)³ provides an evidence-based framework for doing this.
- What measures are in place locally to ensure that communities at risk of being under-immunised are identified locally (including unregistered, vulnerable, migrant, transient or mobile communities)?
- What measures are in place to engage with these communities and promote access to immunisation services that meet their needs?

3

Assess the ability of local services to target individuals and communities that miss routine vaccination

- Are effective protocols in place to ensure that opportunities to immunise at-risk communities are optimised, especially for those with an unknown vaccination history or likely to have incomplete schedules e.g. migrants?
- Can more be done to ensure that unvaccinated individuals are able to access immunisation services, across a wide variety of settings?
- Are sufficient measures being taken to ensure that local people are adequately protected from vaccine-preventable illnesses whilst abroad 'Visiting Friends and Relatives' (VFR)?

4

Make good use of existing local authority resource and the third sector

- Are customer-facing departments in the LA aware of the routine immunisation programme?
- Are customer-facing LA staff able to signpost communities to healthcare services? It is important that everyone is aware that they have the right to register with a GP and access to immunisation services for free.
- Are charities and the third sector who serve under vaccinated communities aware of particular challenges around access to healthcare services and immunisation services in particular?
- What opportunities exist to raise awareness of immunisation among communities, for example, before travel to home countries during school holidays?

5

Support early response to outbreaks

- Is the LA able to support community mapping exercises during outbreaks to better target response?
- Can resources be made available for immunisation clinics in the event of an outbreak e.g. children's centres, local halls?
- Can resources for community engagement be mobilised to support communities identified as being at risk of the outbreak and encourage them to take up vaccination?
- Are translation and interpretation services available that could be tailored to the local situation?

Case Studies

Leeds

The problem: The measles outbreak in Leeds lasted from November 2017 to January 2018, with a total of 36 confirmed cases. The outbreak affected a number of different communities, however almost all cases had not received two doses of the MMR vaccine.

The solution: Access to local intelligence was vital. Vulnerable, unvaccinated populations were identified using vaccine coverage data for children aged 1 to 15 years. Whilst Leeds had an overall vaccination rate of above 95% for the first dose of MMR, uptake was as low as 70% in some parts of the city. Mapping of communities at risk of being under-vaccinated and therefore susceptible to measles, led to setting up pro-active community immunisation clinics.

- GPs were asked to vaccinate opportunistically and invite patients with incomplete vaccination histories.

- The Clinical Commissioning Group (CCG) organised GP hub clinics to add immunisation capacity.
- Immunisation sessions were conducted in schools or close to schools within the local community.
- Localised leaflets in different languages were developed and local health improvement officers visited areas identified with low uptake to speak to the local populations and promote GP registration and MMR vaccination.
- Local Authority interpreters supported all activity and were particularly helpful out and about in the community and in gaining consent for vaccination from parents.
- Leeds City Council Public Health team organised a series of briefings for all front line staff including children's centres, housing, and third sector contractors.

Liverpool

The problem: A measles outbreak occurred in Liverpool in November 2017, with a total of 22 confirmed cases during this time. The first cases were reported in an extended family of Romanian origin and with recent travel to Romania. Those affected were mainly young children who had not been vaccinated. Spread in the community was limited to one discrete area, with a high proportion of Romanian population. Information from families of cases suggested a language barrier due to poor English and literacy skills and a lack of engagement with local health services. As the community were known to be under vaccinated, there was a risk of prolonged spread in the community.

The solution: The local authority led the immunisation response, working closely with partners, including the local children's centre, community nurses, Liverpool Clinical Commissioning Group (CCG), local GP practices, the third sector and PHE. A multi-pronged approach was used to make it as easy as possible for families to get vaccinated quickly. Over 10 days, more than 500 children were protected by vaccination – at home, at their GP practice, in the local children's centre or in school. GPs were asked to vaccinate opportunistically and invite patients with incomplete vaccination histories.

- Children's centre staff, who were already known and trusted in the local community, went door-to-door to invite families to a meal

with the offer of health advice; they shared a pictorial leaflet about measles. This was highly successful with around 80 people vaccinated in one evening at the Centre. Families were also enabled to register with local General Practices.

- Over the following days, an immunisation team, based in a van provided by the third sector, operated from a local community car park. The team went door to door to encourage people to get immunised.
- Local GP practices proactively invited unimmunised families for vaccination.
- School nurses set up urgent family vaccination sessions in local schools.
- There was an emphasis on engaging everyone to encourage MMR vaccination, including local schools, nurseries and health visitors and community workers. Easy to read pictorial measles and MMR leaflets were produced in Romanian, Spanish, Arabic and Czech (all the relevant local languages) and distributed via the local children's centre, GPs, community centres and churches. Immunisation sessions were supported by interpreters.
- Targeted vaccinations in local schools have continued since the outbreak with the aim of ensuring every child has had at least one MMR vaccination.

Useful resources

Measles adverts

<https://publichealthengland-immunisati.box.com/s/ryqncn7vk7c5xqsgskhlmrce0r4rtiy>



MMR and measles social media banners

<https://publichealthengland-immunisati.app.box.com/s/rhrtl6io3fuiumougtp6zt2xj3ue8jdg>



World Health Organisation Measles gif

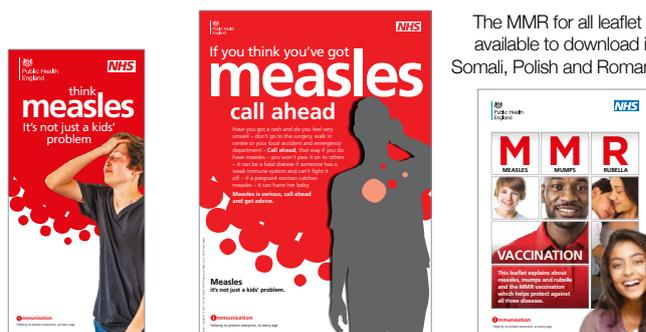
<https://publichealthengland-immunisati.box.com/s/mgppw733nelj3s4mtk8n13tsauzn1691>



Leaflets and poster

Hard copy of the posters and leaflets are available free of charge from the **DL Orderline**

www.orderline.dh.gov.uk/ecom_dh/public/saleproducts.jsf



The MMR for all leaflet is available to download in Somali, Polish and Romanian:

Public Health England blog

You may find PHE's blog on 'Why we still see measles outbreaks in the UK' useful, please feel free to link to:

<https://publichealthmatters.blog.gov.uk/2018/01/22/measles-has-been-eliminated-in-the-uk-so-why-do-we-still-see-cases-and-outbreaks/>

www.gov.uk/government/publications/think-measles-patient-leaflet-for-young-people

www.gov.uk/government/publications/think-measles-poster-for-young-people

www.gov.uk/government/publications/mmr-for-all-general-leaflet

Useful links

MMR advice and information is available on the NHS Choices website

www.nhs.uk/conditions/vaccinations/mmr-vaccine/

Back to primary or secondary school MMR reminder postcards and posters available to order free of charge:

www.gov.uk/government/publications/immunisations-resources-for-schools

PHE guidance on assessing and addressing ethnic inequalities in health

www.gov.uk/government/publications/health-inequalities-reducing-ethnic-inequalities

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- www.euro.who.int/_data/assets/pdf_file/0020/253730/64wd15e_EVAP_140459.pdf
- www.nice.org.uk/guidance/ph21 <https://www.nice.org.uk/guidance/ph21/resources/immunisations-reducing-differences-in-uptake-in-under-19s-pdf-1996231968709>
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