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West Midlands measles elimination work programme 2018 to 2019

Including measles needs assessment

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Published February 2020
PHE publications
gateway number: GW-1076

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Abbreviations

ARC – Applied Research Centre

BSH – Behavioural Science Hub

CCG – Clinical Commissioning Groups

CET – Centre Executive Team

CHIS – Child Health Information Services

GP – General Practitioner

HCPC – Health and Care Professions Council

HEI – Higher Education Institutions

HEE – Health Education England

IMD – Index of Multiple Deprivation

LA – Local authority

LSOA – Local Layer Super Output Area

MMR – Measles, mumps and rubella

MMR1 – 1st dose of measles, mumps and rubella vaccine

MMR2 – second dose of measles, mumps and rubella vaccine

MNA – Measles needs assessment

NHSE – NHS England

NHS I – NHS Improvement

NMC – Nursing and Midwifery Council

ONS – Office for National Statistics

PCN – Primary Care Network

PHE – Public Health England

SIT – Screening and Immunisation Team

STP – Sustainability and Transformation Partnership

WMMEB – West Midlands Measles Elimination Board

WHO – World Health Organization

Summary

This report has been produced by Public Health England (PHE) West Midlands Centre on behalf of the West Midlands Measles Elimination Board (WMMEB) and describes the findings of a regional measles needs assessment (MNA) and the work programme undertaken by the WMMEB and key partners. The WMMEB was established and MNA conducted following a significant outbreak of measles in the West Midlands (2017-2018) and in anticipation of the publication of the UK Measles and Rubella Elimination Strategy.

Contained within this report, the MNA presents a comprehensive overview of trends in Measles, Mumps and Rubella (MMR) vaccine coverage for children aged 1 to 18 years residing in the West Midlands as of December 2018 and quantifies the extent of undervaccination according to geographical and social-demographic characteristics. In addition, and based on a methodology developed by the World Health Organization (WHO), the report provides an estimate population susceptibility to measles in defined age groupings by local authority area.

The findings of the MNA indicate that that as of December 2018, 7.8% (n=99,162) of children aged 1 year to 18 years residing in the West Midlands have not received a single dose of the MMR. A further 7.1% (n=90,132), have not received 2 doses of MMR as per the national routine immunisation schedule.

The lowest levels of MMR coverage were consistently identified in older children and children from the most deprived areas. Furthermore, the level of measles susceptibility found particularly in children aged 5-18 years, is deemed likely to be sufficient to sustain disease transmission in the event of the introduction of an imported case(s).

Based on the findings of the MNA, the WMMEB hosted a regional multi-agency stakeholder workshop to facilitate discussions about reducing population susceptibility to measles across the West Midlands. In addition, the workshop enabled key partners to contribute to the development of plans for achieving and maintaining measles elimination at both a regional level and across each of the West Midlands Sustainability and Transformation Partnership (STP) footprints.

Each Screening and Immunisation Team (SIT) has produced a detailed regional wide action plan and it is expected that these will be complemented by localised plans for improving MMR vaccine coverage. A 'Community of Practice' will be developed to support local areas in achieving measles elimination and maintain vaccination coverage.

Background

Measles is a highly infectious, viral infection, which causes significant morbidity and mortality worldwide⁽¹⁾. Before the introduction of a measles vaccine in 1968 there were between 160,000 to 800,000 measles notifications and 100 deaths from measles in the UK each year⁽²⁾. In 2018, there were 971 confirmed cases of measles in England (82 of which in the West Midlands)⁽³⁾.

In unvaccinated individuals, measles presents as a prodromal illness characterised by a high fever, cough, conjunctivitis and coryza⁽⁴⁾. Koplik spots may appear inside the mouth and the characteristic measles rash usually presents on day 3 or 4 of the infection (lasting around 5 to 6 days before fading).

Complications of measles infection can include pneumonitis, secondary bacterial infection (for example acute otitis media and pneumonia) and encephalitis. Rates of complications and case-fatality ratios are both higher in children under one year of age and those who are malnourished or immunocompromised⁽⁵⁾.

Humans are the only known reservoir for measles and the virus is spread directly from person to person by nose and throat secretions⁽⁴⁾. On average the incubation period for measles is 10 days (range 7-18 days). The infectious period starts 4 days before and 4 days after the onset of the rash.

Vaccination remains the best protection against measles⁽²⁾. A safe and effective vaccine exists to prevent measles in susceptible persons – Measles, Mumps and Rubella (MMR) vaccine. The MMR vaccine was introduced into the UK's national immunisation programme in 1988 as a single dose, with a second dose introduced in 1996.

The first dose (MMR1) is currently offered at 13 months of age, and the second dose (MMR2) offered at 3 years and 4 months of age⁽⁵⁾. The efficacy of a single dose of measles-containing vaccine is around 90%⁽⁶⁾. A second dose of measles-containing vaccine protects those who do not respond to the first dose and boosts antibody levels in those who did respond.

High population MMR coverage and a low level of population susceptibility are required to interrupt endemic transmission of measles and prevent re-establishment following the introduction of imported cases⁽²⁾. Consequently, the WHO, recommends that member states aim to achieve MMR vaccine coverage (with 2 doses) of at least 95% of the population⁽⁷⁾.

In 2017-2018, only 87.8% of children aged 5 years in the UK had received both doses of MMR⁽²⁾. This was a decrease of 0.4% from 2016-2017 and the lowest level identified since 2011-2012. The inability to achieve and maintain the WHO recommended 95% coverage of 2 doses of MMR vaccine across the population impacts our ability to achieve and sustain measles elimination in England.

Since 2017, there has been a worrying pattern of increasingly large geographic clusters and outbreaks of measles being reported both globally and nationally^(3,8,9). Furthermore, significant outbreaks have been observed across England between 2017-2019, including within London, the South-East, South-West, West Midlands and Yorkshire and Humber⁽⁹⁾.

Figure 1 below, displays the number of laboratory confirmed cases in both the West Midlands and England between January 2011 and May 2019. In the West Midlands, the most recent outbreak of measles is evidenced by the peak in the number of cases between November 2017 and June 2018.

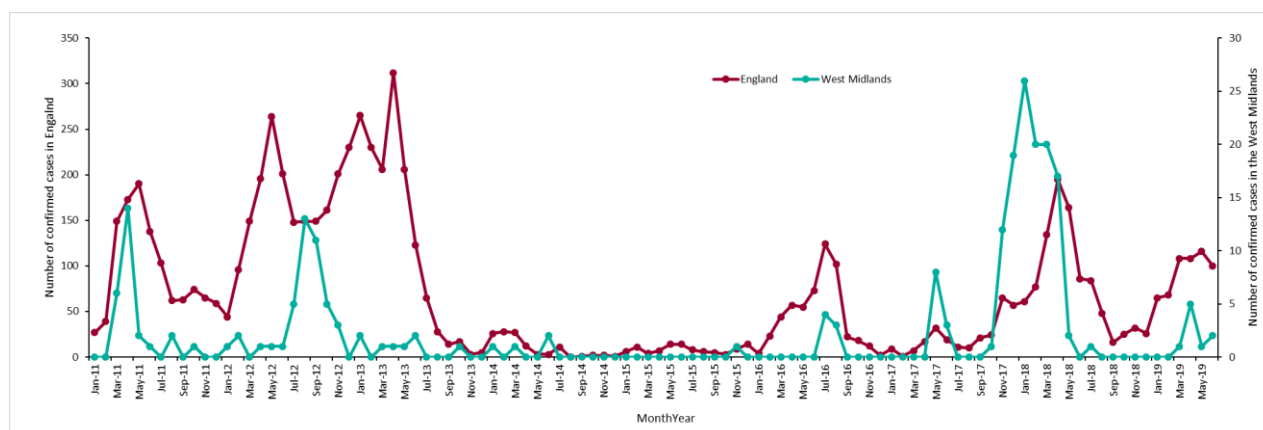


Figure 1: Laboratory confirmed cases of measles by month of onset of rash/symptoms reported, West Midlands and England: Jan 2011 – Apr 2019 (Source: PHE, 2019)

In addition to the morbidity and mortality burden associated with measles, the investigation, management and control of measles cases and outbreaks can be challenging, complex and resource intensive for organisations involved in the public health response. Consequently, eliminating measles remains an important international, national and regional priority.

Measles elimination

The WHO European Vaccine Action Plan 2015–2020⁽⁷⁾ states that measles elimination is core goal for all Member States. Measles elimination, is defined by WHO as ‘the absence of endemic transmission in a defined geographic area (e.g.

the UK) for a period of at least 12 months in the presence of a well-performing surveillance system’.

Achieving elimination does not mean that measles has been eradicated as cases and outbreaks of measles may periodically still occur within a population as a result of imported or import-related infections(10). However the achievement of measles elimination status reflects the disease is not currently endemic in the population.

On 26 September 2017, the WHO announced that the UK had succeeded in eliminating measles for the first time⁽¹¹⁾. Despite this, during 2018 there was a marked increase in the number of confirmed cases of measles and between 2017-2018, the same strain of measles virus was detected for more than 12 months. As a result, in August 2019 the WHO confirmed that the UK could no longer consider measles to be ‘eliminated’, as endemic transmission had been re-established.

To achieve and maintain measles elimination status, the ‘UK Measles and Rubella elimination strategy 2019’⁽²⁾, has committed to focusing on 4 core components which are:

- achieve and sustain $\geq 95\%$ coverage with 2 doses of MMR vaccine in the routine childhood programme (<5 years old)
- achieve $\geq 95\%$ coverage with 2 doses of MMR vaccine in older age cohorts through opportunistic and targeted catch-up (5-25 years old)
- strengthen measles and rubella surveillance through rigorous case investigation and testing $\geq 80\%$ of all suspected cases with an oral fluid test
- ensure easy access to high-quality, evidence-based information for health professionals and the public

Making the case for a regional approach

In 2018, PHE established a regional multi-agency group – the ‘West Midlands Measles Elimination Board (WMMEB)’, to agree a strategic direction for sustaining measles elimination in the West Midlands (see Appendix A for group membership).

Initially convened during the most recent measles outbreak in the West Midlands (2017-2018), the WMMEB subsequently focused on developing a regional approach to reduce the risk of future measles outbreaks and sustain measles elimination.

Measles Epidemiology – pre, peri and post 2017/18 outbreak

The most recent outbreak of measles in the West Midlands occurred between November 2017 and June 2018 and was originally linked to an imported case from an Eastern European country.

During the outbreak period, a total of 459 cases of measles were reported to the West Midlands Health Protection Team (and therefore recorded on HPZone). Of the 459 cases reported, 116 (25%) were locally confirmed PCR positive, 94 of which were also confirmed by the reference laboratory in Colindale.

An additional 21 likely and 95 unlikely cases were reported during the outbreak period and 227 cases were discarded (see table 1). During this period no deaths associated with measles infection identified.

Table 1: Cases of measles reported in the West Midlands by case category, 01 November 2017 to 04 June 2018 (Source: PHE Outbreak Report, 2018)

Case category	Number	%
Confirmed	116	25
Likely	21	5
Unlikely	95	41
Discarded	227	49
Total	459	100

Prior to this outbreak, the number of laboratory confirmed measles of cases in the West Midlands had generally followed the national trend (see figure 2). Since

January 2013, the highest quarterly count of laboratory confirmed cases reported in the West Midlands was 7 cases (Q2 - 2013).

Since this peak and up until the most recent outbreak in 2017-2018, measles activity has been low in the West Midlands with no cases reported in 2014, one case in 2015 and 3 cases in 2016.

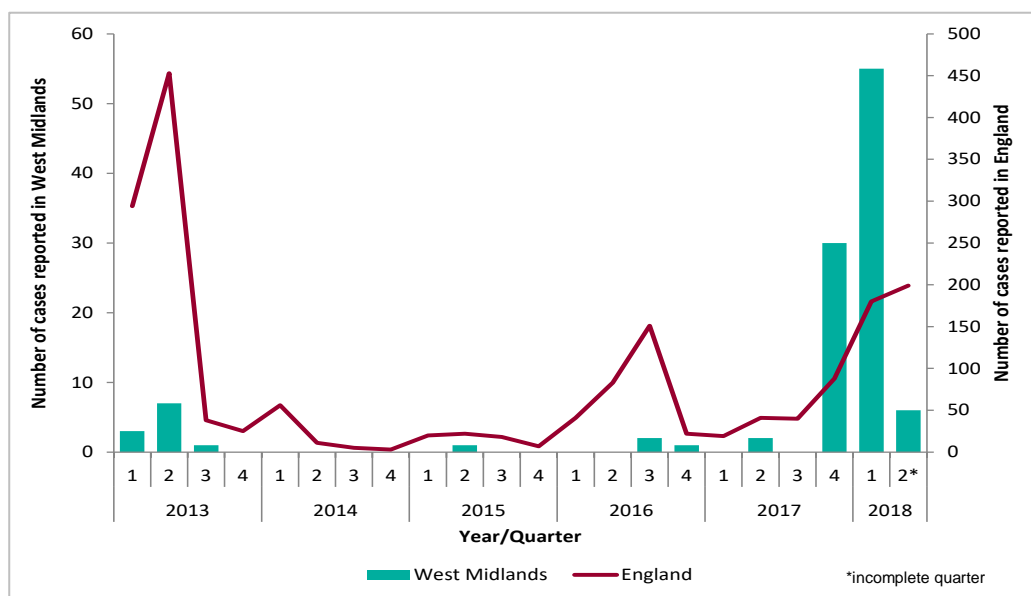


Figure 2: Temporal distribution of laboratory confirmed measles cases reported in the West Midlands and England between 01 January 2013 and 04 June 2018 (Source: PHE outbreak report, 2018⁽¹²⁾)

As presented in figure 3, in respect to the 2017-2018 outbreak, 47% of laboratory confirmed cases (55/116) were female. The majority of confirmed, likely and unlikely cases (168/232; 72%) were children aged 0-15 years. Children aged 0 to 4 years represented 40% (46/116) of laboratory confirmed cases and 50% (115/232) of all cases. The median age of all cases was 5 years; that of confirmed cases was 13 years.



Figure 3: Cases of measles reported in the West Midlands by age and sex, 01 November to 04 June 2018 (Source: PHE Outbreak report, 2018⁽¹²⁾)

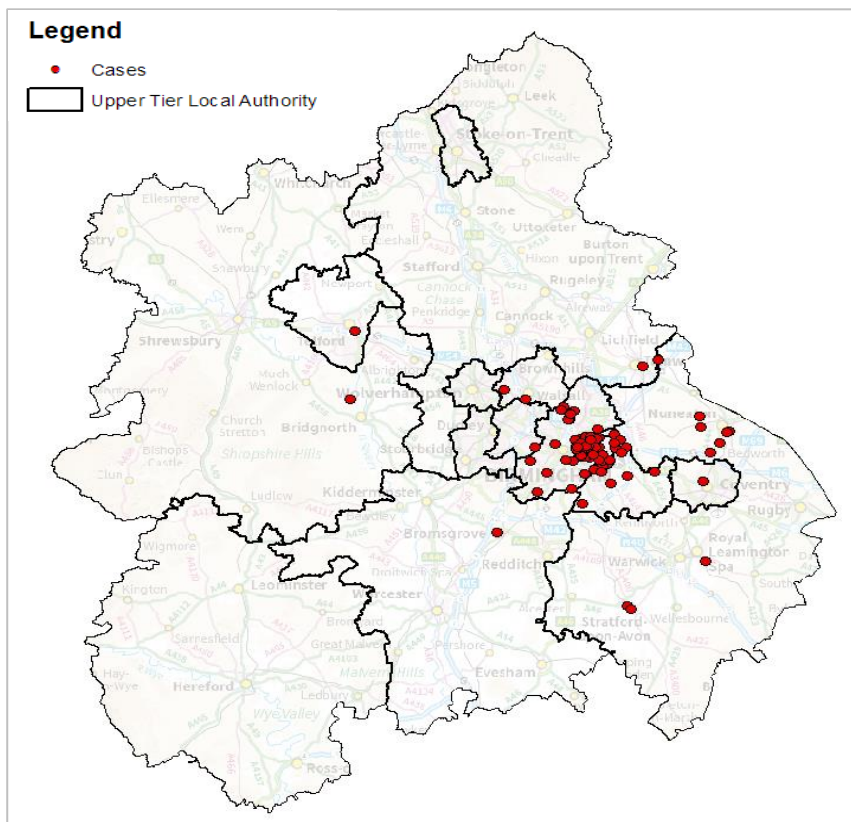
The reported MMR vaccination status of confirmed cases during the outbreak are reported in table 2. The data indicates that 31% of confirmed cases had no known history of MMR vaccination, 18% were too young for vaccination and 24% have an unknown MMR history. Eight per cent were partially vaccinated (reflecting those who according to age should have received 2 MMR vaccinations).

Table 2: Reported MMR vaccination status of confirmed cases between 16 November 2017 and 04 June 2018

Vaccination category	Number	%
Not vaccinated	36	31
Too young	21	18
Partially vaccinated	9	8
Fully vaccinated	22	19
Not known	28	24
Total	116	100

The majority of the 116 confirmed cases were known to reside in Birmingham (65%, n=75), Solihull (16%, n=18) and Warwickshire (13%, n=15). Figure 4,

presents the geographical distribution of confirmed cases reported in the West Midlands during the most recent outbreak.



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Figure 4: Geographical distribution of confirmed cases reported in West Midlands between 01 November 2017 and 04 June 2018 (Source: PHE outbreak report, 2018⁽¹²⁾)

Following the conclusion of the outbreak in June 2018 and up until June 2019, there have been 9 confirmed cases of measles within the West Midlands.

Regional MMR coverage

As measles cases continue to occur and as MMR coverage across the West Midlands remains below the recommended threshold, the region faces the continued threat of measles outbreaks occurring and cases becoming widespread.

As of 2017-2018, West Midlands MMR coverage failed to meet the WHO target of 95% of the population having received 2 doses. Furthermore, and as displayed in figure 5, regional coverage of MMR1 (at 24 months and then at 5 years of age) and MMR2 (at 5 years of age) declined between 2016-2017 and 2017-2018.

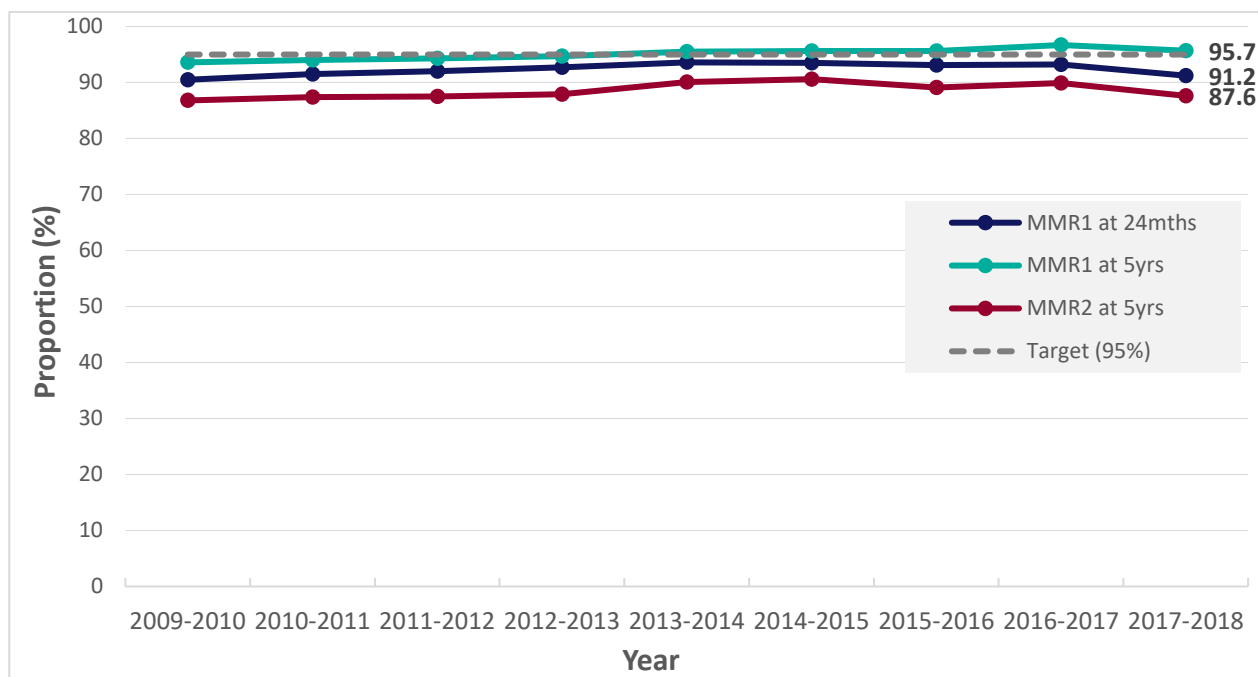


Figure 5: Coverage for one dose (MMR1) and 2 doses (MMR2) between 2009-2010 to 2017-2018 in the West Midlands (Source: NHS Digital⁽¹³⁾)

WMMEB – Key issues

Following the recent outbreak (2017-2018) and during subsequent discussions by the WMMEB, significant concerns were raised about declining MMR coverage across the region since 2016-2017.

Furthermore, issues highlighted at a national level, were also considered and reviewed by the WMMEB, given their possible impact on currently observed MMR coverage, the focus of measles control plans and our ability to narrow existing health inequalities These were:

- a fall in MMR vaccine uptake, resulting from the Wakefield scandal in the late 1990's and early 2000's, which has led to a nationally evidenced increase in susceptibility in older children(2) – therefore, immunity levels in children born between 1998 to 2004 are typically below what is required for interrupting measles transmission
- variation exists in current and recent MMR coverage across local authorities in the West Midlands – in addition, and based on national evidence(1,2), pockets of under-vaccination and large pools of susceptible people in some areas are deemed to exist within each local authority across the UK
- there are inequalities in the uptake of the MMR vaccine across the UK e.g. by deprivation and ethnicity(1) – consequently, the burden of measles has and going forward is expected to disproportionately affect certain communities

Based on the issues identified and in anticipation of the publication of the national strategy, in December 2018, the WMMEB and PHE CET confirmed that developing a regional strategic approach for measles elimination is a critical priority.

To inform the approach and ensure future action addresses both the insufficient and unequal MMR coverage, the WMMEB identified that a regional level measles needs assessment (MNA) was required.

Measles needs assessment (MNA)

Aims and objectives

Aim

To inform the development of a West Midlands measles elimination strategy and action plan and support the prioritisation/targeting of regional immunisation interventions:

“Conduct a needs assessment, which comprehensively determines and describes MMR vaccine coverage and estimates population susceptibility to measles within the West Midlands.”

Objectives

The objectives are to:

- analyse Child Health Information Services (CHIS) data to describe trends and any geographic/socio-demographic variations in MR coverage across the West Midlands
- utilising the WHO measles programmatic risk assessment tool and CHIS data, identify susceptible populations within the West Midlands and define by geographic/socio-demographic variables
- use segmentation software (i.e. Mosaic/Acorn) to identify population characteristics associated with low vaccination uptake
- based on resultant findings and in conjunction with national guidance, make recommendations to the WMMEB for targeting and prioritising interventions within the West Midlands
- disseminate the final report and associated recommendations to key stakeholders who have a vested interest and/or contribute to the work of the WMMEB

Methods

Population setting

We defined our eligible population as ‘persons aged between 13 months (referred to in this report as 1 year) and 18 years, residing in the West Midlands as at 10/12/2018’.

This decision was based on findings from a literature search, data availability and feedback from the WMMEB.

The MNA included eligible persons resident in all 14 upper-tier local authorities in the West Midlands region (England) which are:

- Birmingham
- Coventry
- Dudley
- Herefordshire
- Sandwell
- Shropshire
- Solihull
- Staffordshire
- Stoke-on-Trent
- Telford and Wrekin
- Walsall
- Warwickshire
- Wolverhampton
- Worcestershire

Data sources

We obtained data on MMR vaccine coverage for the eligible population from the regional Child Health Information Service (CHIS). CHIS operate an IT system called the ‘Child Health Information Service System (CHISS), that is used to schedule, record and monitor public health programmes (including childhood vaccinations) for children and young people.

CHIS providers across the UK, hold a unique and active care record for each child born in a defined geographical area. Each individual record includes information about the child’s vaccination status i.e. whether and when vaccination was accessed.

The regional CHIS provided the following dataset for the needs assessment:

- a single CSV file, containing a pseudo-anonymised line listing relating to persons born between 1 January 2000 and 31 December 2017, residing in the West Midlands at the point of the data extraction (10/10/2018)

The database contained record level data on the variables:

- unique identifier
- year and month of birth
- sex
- full postcode (Classified as personal data)
- ethnicity (Classified as sensitive data)
- school year
- mother's year and month of birth
- MMR status with associated year/month of vaccination (i.e. MMR1 and MMR2)

Data governance

The formal request to access the CHIS data set was considered and approved by both the CHIS provider's service lead and Data Protection Officer. Accessing information classified as personal (i.e. full postcode) and sensitive (i.e. ethnicity), was deemed justifiable and appropriate on the basis that:

- data on full postcode would provide the highest granularity of geographical analysis, thereby enabling measles susceptibility in the West Midlands to be estimated with greater precision
- data on age, gender and ethnicity would provide important information to enable us to describe any variation in measles susceptibility in the West Midlands that is mediated by socio-economic differences

In addition to the MNA 'Project Initiation Document', the request also included a detailed description of how the required data set would be physically accessed, handled, stored and shared. In summary the data set was:

- obtained (in a single CSV file) from the relevant CHIS provider via secure encrypted email (NHSmial)
- stored on a secure drive (password protected)
- accessed only by the project lead and a Scientist at the Field Service (PHE), who were responsible for the data analysis
- permanently deleted upon completion of the data analysis

Data governance procedures reflected relevant PHE policies for information governance and data protection.

Data analysis

Upon receipt of the single CSV file and associated line listing, the data set was imported into STATA (statistical software package), where a systematic and robust process of data checking and cleaning was undertaken.

Firstly, data was checked to ensure each individual record listed in the data set met the following inclusion and exclusion criteria:

Inclusions

- children aged 13 months to 18 years (referred to as 1-18 years in this report) – to note, 13 months reflects the age in which a child should receive their first dose of MMR as part of national routine immunisation schedule
- recorded as residing in one of the 14 local authorities in the West Midlands and therefore inclusive of the following CHIS codes – ‘Born/resident in district’, ‘Movement in’ and ‘Transfer in birth’
- vaccinated with any of the following: measles, mumps and rubella (MMR), measles and rubella (MR) and measles (M) – for reporting purposes, the abbreviation ‘MMR’ is used to reflect evidence of any measles vaccination.

Exclusions

- if born on or after 1/11/2017 (i.e. are aged less than 13 months of age thereby allowing time to have first dose)
- non-West Midlands residents
- deceased
- duplicate vaccinations (i.e. identified as having same person unique ID and same vaccination date) and more than 2 vaccinations (i.e. those identified as having >2 vaccinations were recorded as having 2)

Within STATA, additional fields were created to capture and calculate the age group of children and maternal age group at delivery. A second ethnicity field was created using the Office for National Statistics (ONS) ethnic group categories⁽¹⁴⁾. Entries without an ethnicity recorded, or entries that did not meet the ONS ethnic group categories were included in the ‘other or unknown’ group.

The individual postcodes for each entry were linked to Lower Layer Super Output Areas (LSOAs), the Index of Multiple Deprivation 2015 (IMD) and ‘Mosaic’ group. Mosaic segmentation is a consumer classification system designed by Experian for

market research and profiling purposes⁽¹⁵⁾. The system classifies residential postcodes according to key census and lifestyle characteristics, enabling targeted marketing and campaigns to populations who share similar social profiles. Following data checking and cleaning, the process of data analysis was undertaken in 2 distinct parts:

- 1) Measles vaccination coverage
- 2) Population susceptibility to measles

Part one – Measles vaccination coverage

The first part of data analysis focused on calculating measles vaccination coverage for the region i.e. the number and proportion of individuals in the data set who had received 0, 1 or 2 doses of a measles vaccination (MMR).

To calculate proportions, the entirety of the data set was chosen as the denominator for analysis. Comparisons with the regional population ONS mid-year estimates (2017)⁽¹⁶⁾ were undertaken to confirm the completeness of the data set and therefore the appropriateness of the choice of denominator¹.

Numbers and proportions were subsequently calculated for the West Midlands overall and then according to the following variables:

- by age / birth cohort (1-year cohort groups)
- by sex
- by ethnicity
- by IMD 2015 decile
- by local authority
- by LSOA*
- by mother's age group at delivery
- mosaic segmentation

*Measles vaccine coverage was calculated according to LSOA and subsequently displayed in maps, at both a regional level and for each individual local authority area.

Part 2 – Population susceptibility to measles

Research indicates that to assess the ability of a country or region to achieve and maintain measles elimination at any point in time, one needs to look at susceptibility levels (or conversely immunity levels) across age groups⁽¹⁷⁾. These

¹ Crude calculation estimated that the CHIS data set captures 98.7% of 2017 ONS mid-year population estimate for 1-18 year olds

levels are affected by historical routine vaccination coverage, vaccination campaigns, historical outbreaks and corresponding levels of natural immunity.

Based on this, to achieve the ambition of measles elimination in the West Midlands, we will need to establish the current susceptibility profile in the region, set target levels of population susceptibility to measles, select an approach to reduce susceptibility below this target, and select an approach to maintain susceptibility below the target. One of the key indicators of the sustainability of a measles elimination programme is the residual level of susceptibility of a cohort after it has completed its scheduled vaccination opportunities. This measure of measles susceptibility can be estimated from vaccination coverage data.

In the 1990s the WHO European Region derived age-specific target immunity profiles, or the levels of immunity necessary in different age groups to achieve measles elimination⁽¹⁸⁾. These immunity targets are different from recommendations on vaccination coverage levels. In any country with a routine measles vaccination programme, gaps in immunity can exist despite high routine MMR coverage if coverage targets were not met in the past, or because of population mixing patterns and migration⁽¹⁷⁾. As referenced in the UK Measles and Rubella Elimination Strategy⁽²⁾, these age-specific immunity targets were recently updated by Funk and colleagues⁽¹⁹⁾ and derived from transmission models based on new data on age-specific social mixing patterns from studies conducted in Europe and Asia⁽¹⁹⁾.

The key message from this research was that 95% immunity (\leq 5% population susceptibility) needs to be achieved for each cohort at the time of school entry to guarantee elimination. The level of immunity found in the 5 to 9 year olds was found to be the strongest predictor of future measles case load in the population. The authors recommend that higher levels of immunity in 5-to-9 year olds are required while maintaining similarly high levels in older age groups to interrupt transmission.

The recommendation around target age-specific susceptibility profiles for measles elimination is based on research that indicates clear benefit from a strategy that aims to achieve a lower level of susceptibility (5%) in age groups with the highest measles transmission rates, namely primary, secondary school children and young adults, while having scope to accommodate higher levels of susceptibility in preschool (15%) children where transmission rates are not as high due to different social mixing patterns (see Table 3).

The importance of immunity levels in 5 to 9 year olds presents both a challenge and an opportunity: levels as high as 95% in this age group can only be maintained through a structured programme that aims to achieve and maintain high levels of 2-

dose immunisation prior to school entry. This message has also been reflected in the UK Measles and Rubella Measles Strategy⁽²⁾.

Table 3 – Population susceptibility thresholds for measles

Age category	Susceptibility threshold (%)
1-4 years	15
5-9 years	5
10 years and over	5

Immunity targets are distinct from recommended vaccination coverage levels, as gaps in immunity can exist despite current or recently high vaccine coverage. For example, if previous coverage targets were not achieved or because of population migration.

To estimate population susceptibility to measles within the West Midlands, we used a formula previously published based on WHO thresholds⁽¹⁷⁾:

$$\text{Susceptibility} = (\text{Proportion with no MMR} \times 100\%) + (\text{Proportion with MMR1 only} \times 7\%) + (\text{Proportion with MMR2} \times 3\%)^2$$

The final data set was divided into the 3 distinct age categories (see table 3) and the WHO formulas was subsequently applied to each stratified data set. The calculated susceptibility figures for each age category were then assessed against the thresholds displayed in table.

To note, this calculation does not attempt to account for naturally acquired immunity, it is most useful in cohorts with high vaccine coverage. It will significantly overestimate the proportion susceptible in cohorts with low vaccine coverage and a high exposure to natural infection. The latter was not the situation in the West Midlands, so it was appropriate to use this formula.

Local authority level analysis

This MNA presents the findings at a regional level i.e. for the West Midlands. However, the 2-part process and associated methods for data analysis, were

² MMR1 – Vaccination with first dose of measles containing vaccine. MMR2 - Vaccination with second dose of measles containing. MMR2 therefore reflects that first and second doses have been administered.

subsequently replicated for each of the 14 local authority areas in the region. The PHE CET deemed quantifying the extent of MMR coverage and susceptibility to measles at a sub-regional level, was an important step for informing the overall work programme for measles elimination.

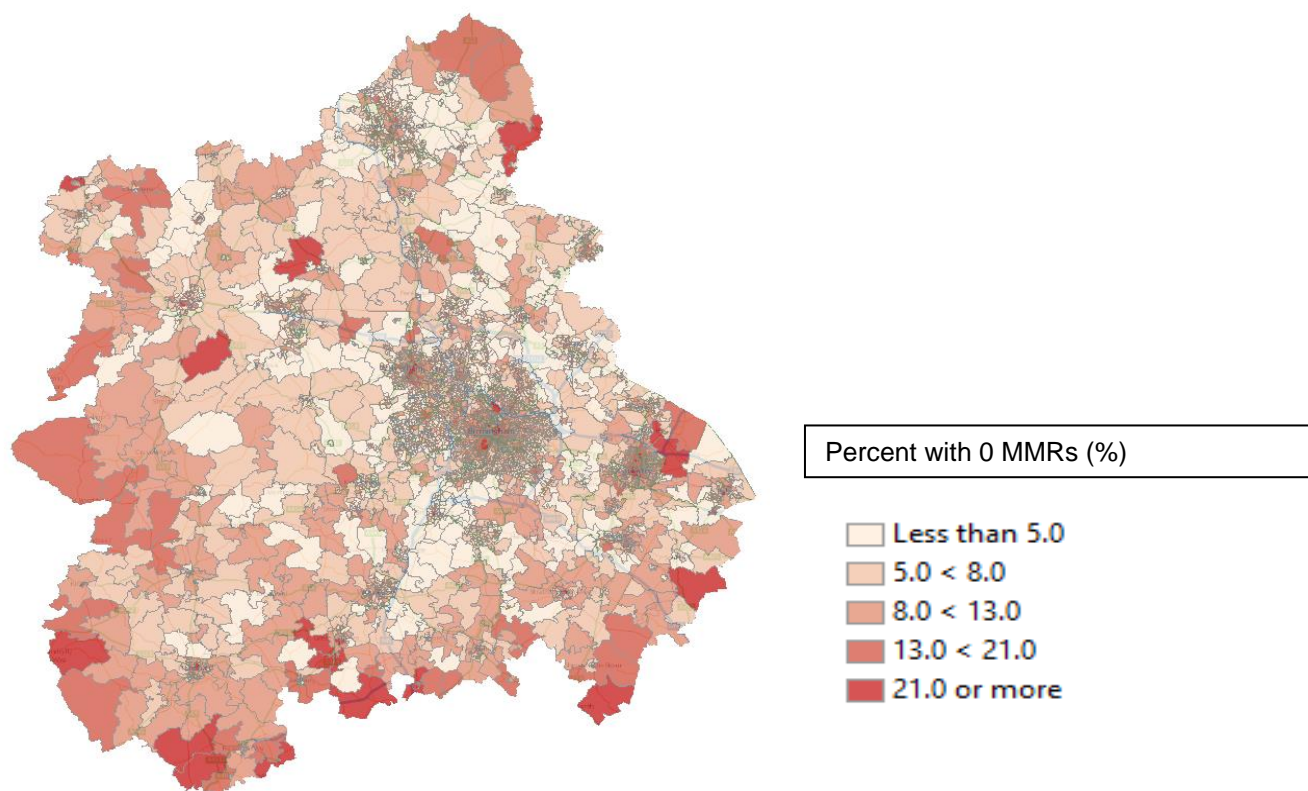
As discussed later in this report, each local authority was provided with their respective findings, as part of a regional multi-agency workshop hosted by the WMMEB in July 2019.

Results

Following the systematic and robust process of data cleaning and quality checking, a total of 1,269,868 individual records from the CHIS data set were analysed. As displayed in table 4, the findings indicate that as of December 2018, 7.8% (n=99,162) of children aged 1 year to 18 years residing in the West Midlands have not received a single dose of MMR as per the national routine immunisation schedule(5). A further 7.1% (n=90,132), have not received a second dose of MMR as per the national routine immunisation schedule.

Table 4 – MMR vaccination status of children aged 1 to 18 years as of December 2018, West Midlands

Number of doses	Number	%
0 doses	99,162	7.8
1 dose (as per national routine immunisation schedule)	147,057	11.6
1 dose (i.e. undervaccinated)	90,132	7.1
2 doses	933,517	73.5
Total	1,269,868	100



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Figure 6: MMR coverage for children aged 1-18 by West Midlands LSOA as of December 2018

Part 1 results – Measles vaccination coverage

Figure 6, presents MMR vaccination status according to sex. The proportion of males and females receiving either 0, 1 or 2 doses of MMR was broadly similar. For example, 7.9% (n=50,574) of males and 7.8% (n= 48,565) of females had not received a single dose of MMR at the point of data collection.

Based on their age at the point of data collection, 62% of children who had received 1 dose of MMR were not old enough to have received a second dose (scheduled at 3 years and 4 months). This is reflected in figure 7, where the proportion of those who had received 1 dose was higher in children born between 2014-2017 compared to those born between 2000-2013.

Despite this, as of December 2018, 8.6% (n=23,569) of children born between 2014-2017, had not received a single dose of MMR, despite being eligible for receiving their first dose (at 13 months of age).

Reflecting the age distribution more broadly and as presented in figure 7, the proportion of children who had not received a single dose of MMR was found to be higher in older birth cohorts. For example, 4.3% of children born in 2013 (n=3,242) had not received a single dose of MMR, compared to 11.5% (n=7,454) in children born in 2002.

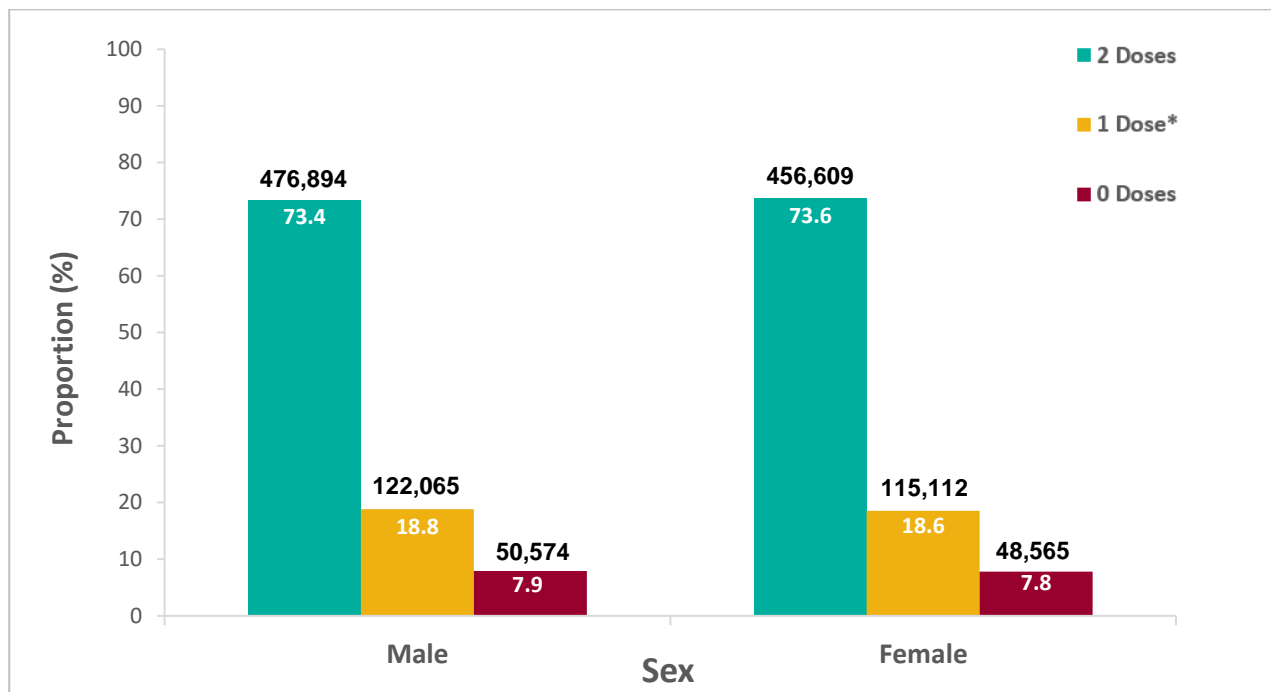


Figure 7 – MMR vaccination status by sex for children aged 1 to 18 years as of December 2018, West Midlands*

*62% of children with 1 dose are not yet old enough to receive second dose

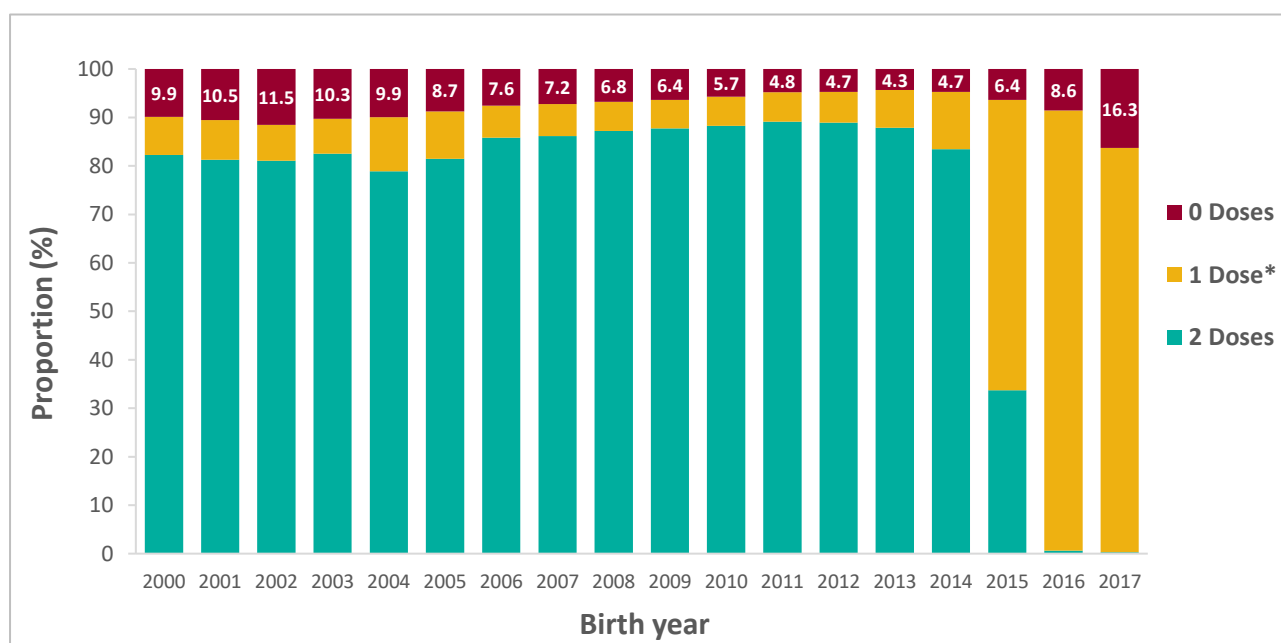


Figure 8 – MMR vaccination status by birth year for children aged 1 to 18 years as of December 2018, West Midlands

*62% of children with 1 dose are not yet old enough to receive second dose

As demonstrated by the findings showing in figure 8 below, MMR vaccination status varied according to school year. The proportion of children who had not received either 1 dose or 2 doses, was higher in later school years particularly those within secondary school education (years 7 and above).

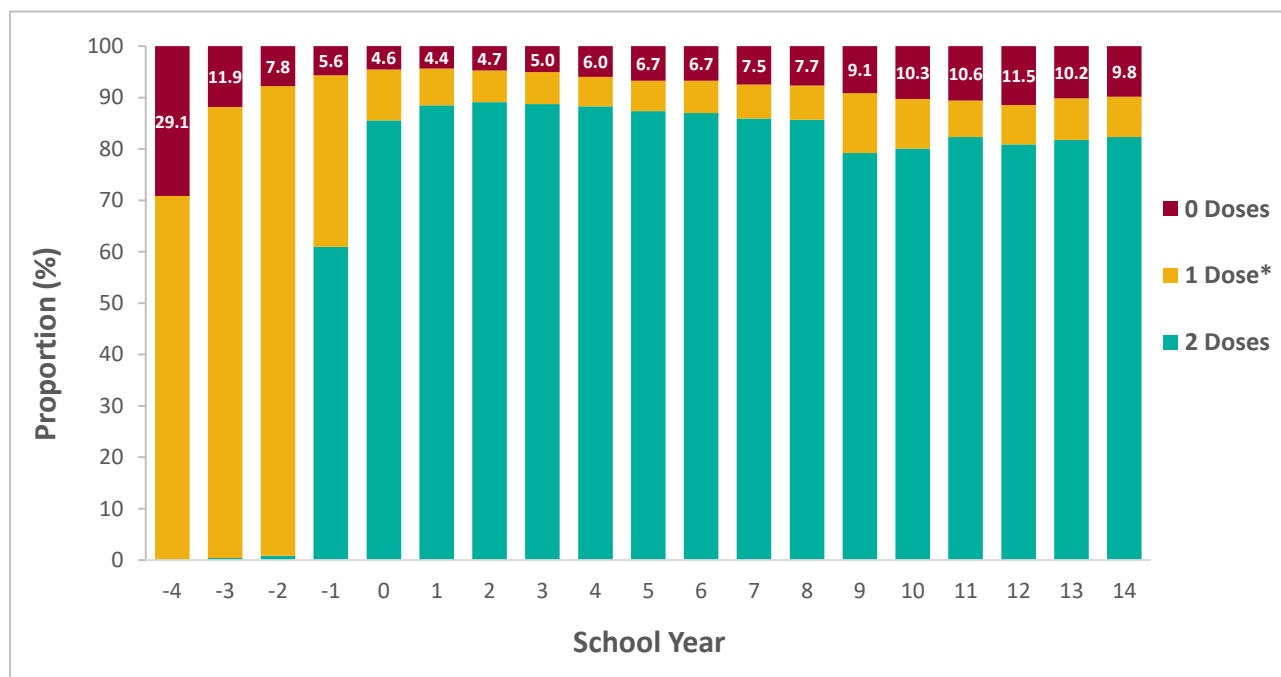


Figure 9 – MMR vaccination status by school year for children aged 1 to 18 years as of December 2018, West Midlands

*62% of children with 1 dose are not yet old enough to receive second dose

In total 17.6% (n=91,069) of children in school years 7 to 14 (i.e. children aged 11-18 years) had not received 2 doses of MMR, as per the routine immunisation schedule. This is compared to 12.2% (n=64,740) of children in school years 0 (reception year) to 6 (i.e. children aged 4-11 years).

As displayed in figure 9, a relationship existed between the proportion of children receiving 0, 1 or 2 doses of MMR and deprivation. A higher proportion of children (almost twice as much) were found to have not received a single dose of MMR in the most deprived decile (9.8% n=28,487) compared to the least deprived decile (5.5% n=4,268).

Figure 10 overleaf, displays MMR vaccination status according to ethnicity. The proportion of children who had received either 0, 1 or 2 doses of the MMR vaccine varied according to recorded ethnic group. As of December 2018, the lowest proportions of 0 doses of MMR were identified in children whose ethnicity was recorded as Indian (3.3%, n=1,663), Bangladeshi (3.5%, n=583), White British (3.5%, n=23,135) and Pakistani (3.6%, n=3,426).

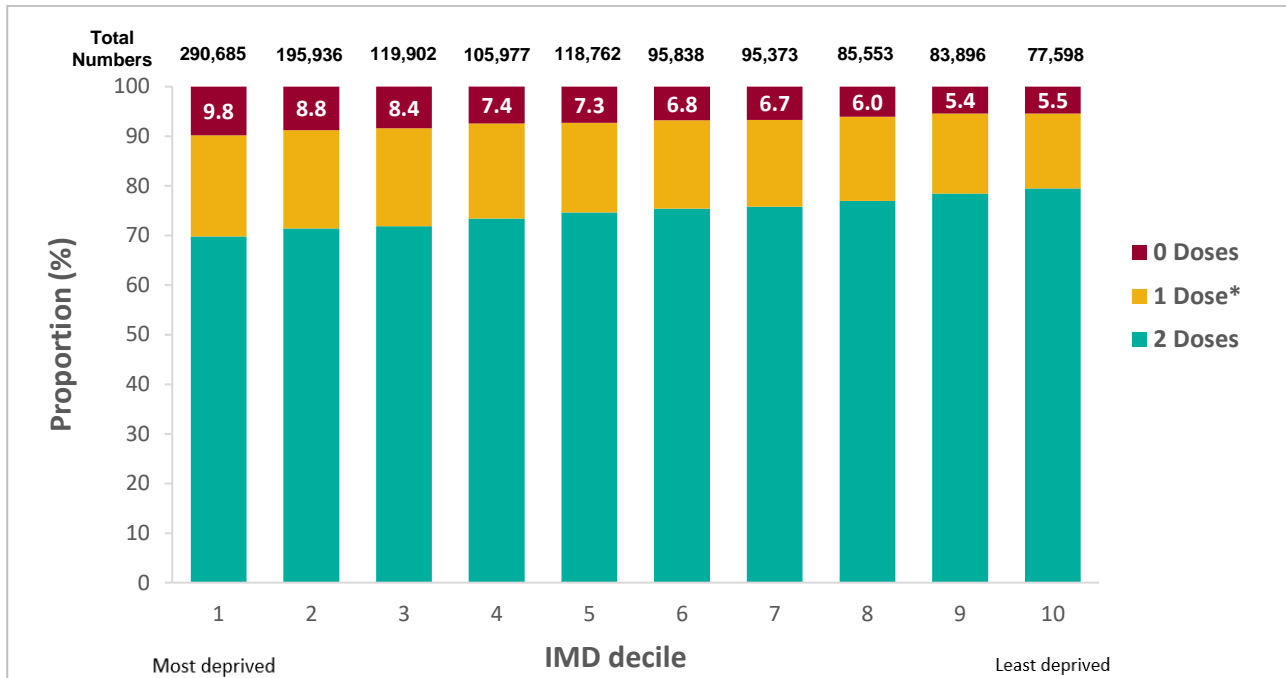


Figure 10 – MMR vaccination status by deprivation for children aged 1 to 18 years as of December 2018, West Midlands

*62% of children with 1 dose are not yet old enough to receive second dose

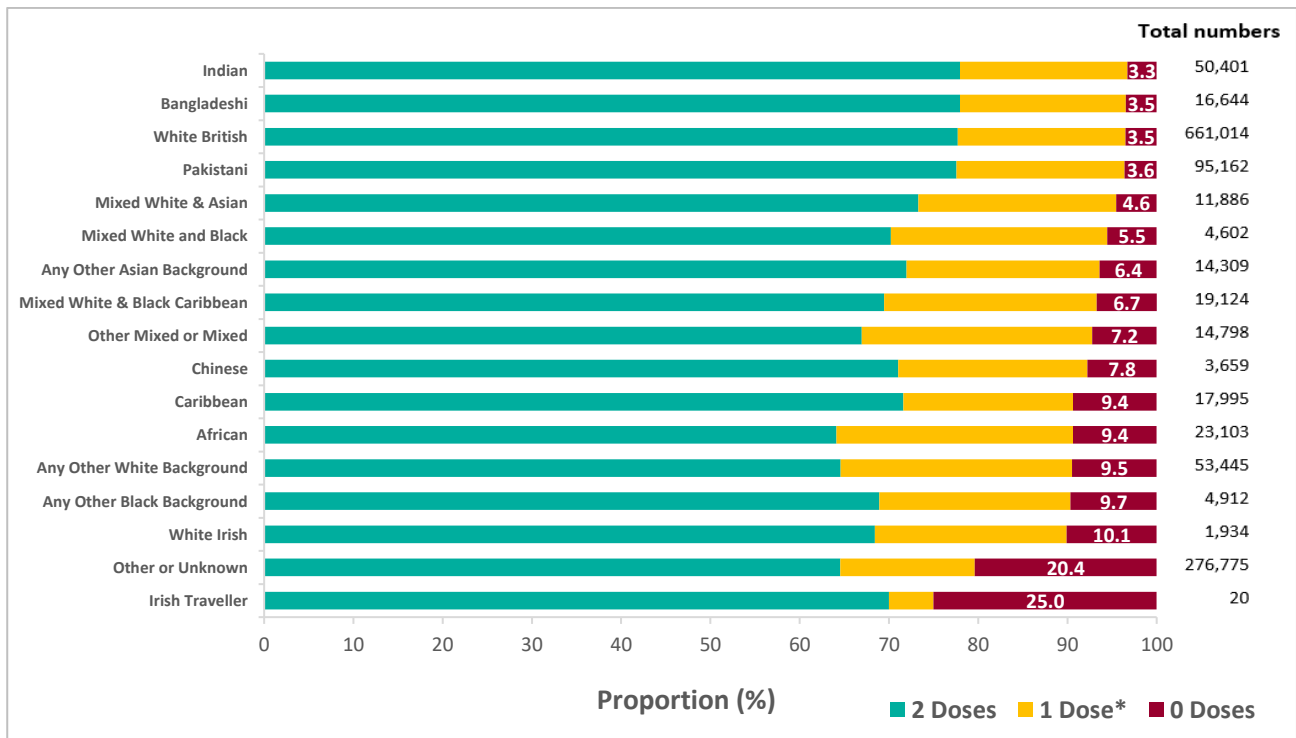


Figure 11 – MMR vaccination status by ethnicity for children aged 1 to 18 years as of December 2018, West Midlands

*62% of children with 1 dose are not yet old enough to receive second dose

The 'other or unknown' group in figure 10 reflects entries in CHIS where ethnicity was either not recorded or did not reflect the ONS ethnic group categories (14). For example, where a child's country of birth or nationality had been recorded.

Figure 11, displays MMR vaccination status according to maternal age at delivery. For children whose mother was 40-45 years of age at point of delivery, the proportion who had not received a single dose of MMR was 5.4% (n=1,680).

In contrast, a lower proportion was evident for children whose mother was 14-19 years of age at point of delivery (3.6% n = 2,375).

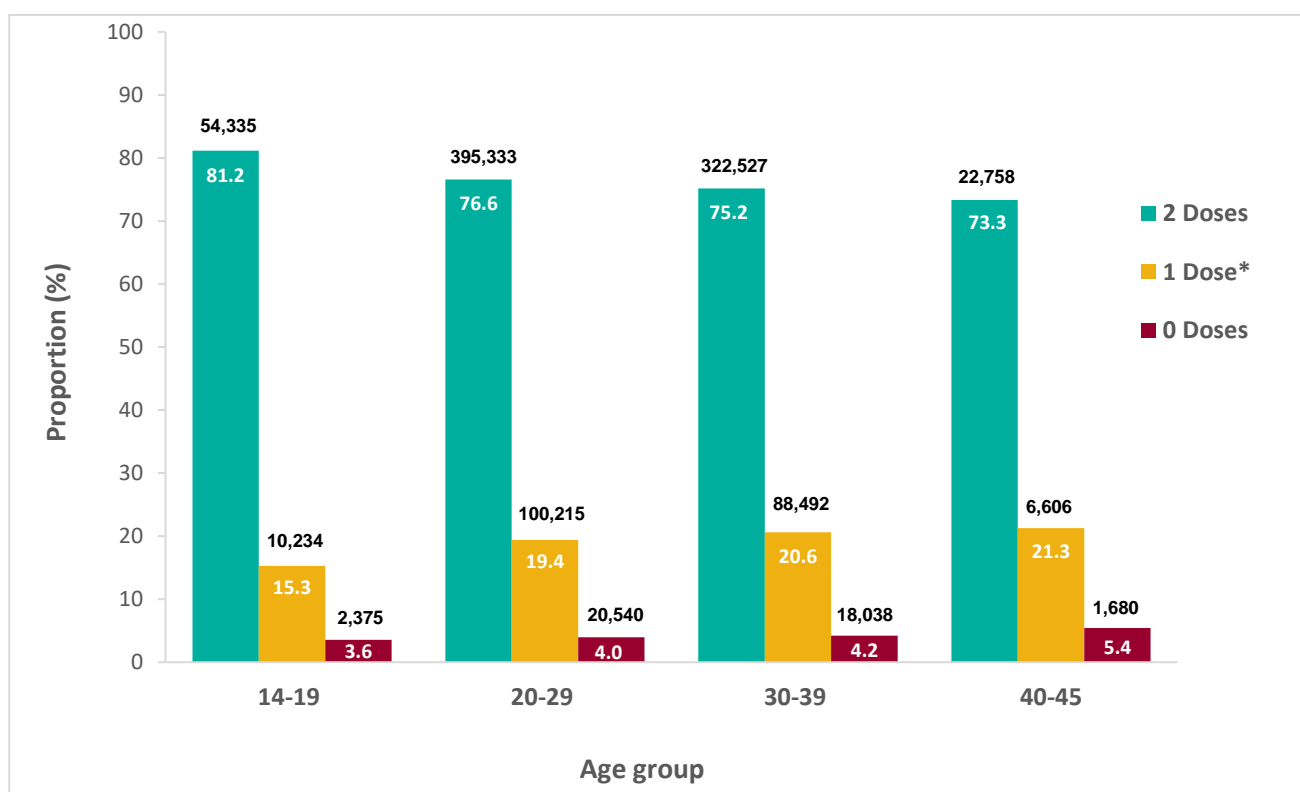


Figure 12 – MMR vaccination status by maternal age at delivery for children aged 1 to 18 years as of December 2018, West Midlands

*62% of children with 1 dose are not yet old enough to receive second dose

Based on Mosaic segmentation (ref) and as displayed in figure 12, the highest proportions of 0 doses of MMR were identified in children identified within the following Mosaic groups J (15.3%, n=1,527), I (10.7%, n=760), L (10.3%, n=4,130) and C (9.7%, n=79). The following provides a brief description of each of these respective groups (15):

- Group J – Transient Renters = Single people privately renting low cost homes for the short term

- Group I – Family Basics = Families with limited resources who have to budget to make ends meet
- Group L – Vintage Value = Elderly people reliant on support to meet financial or practical needs
- Group C – Country Living = Well-off owners in rural locations enjoying the benefits of country life

Mosaic Public Sector by Experian provides a full list of descriptions for each Mosaic group(15).



Figure 13 – MMR vaccination status by Mosaic group for children aged 1 to 18 years as of December 2018, West Midlands

*62% of children with 1 dose are not yet old enough to receive second dose

Part 2 results – Population susceptibility to measles

Figure 13, presents the population susceptibility to measles for the West Midlands according to 3 different age categories (1-4 years, 5-9 years and 10-18 years).

Calculations based on the WHO published formula⁽¹⁷⁾, indicate that regional population susceptibility to measles is 13.8% for those aged 1-4 years, this is lower than the updated guideline thresholds⁽¹⁸⁾ of 15%.

In contrast, at 8.3% for those aged 5-9 years and 12.1%, for those aged 10-18 years, regional population susceptibility is above the maximum guideline threshold of 5% and is therefore deemed likely to be sufficient to sustain disease transmission in the event of the introduction of an imported case(s).

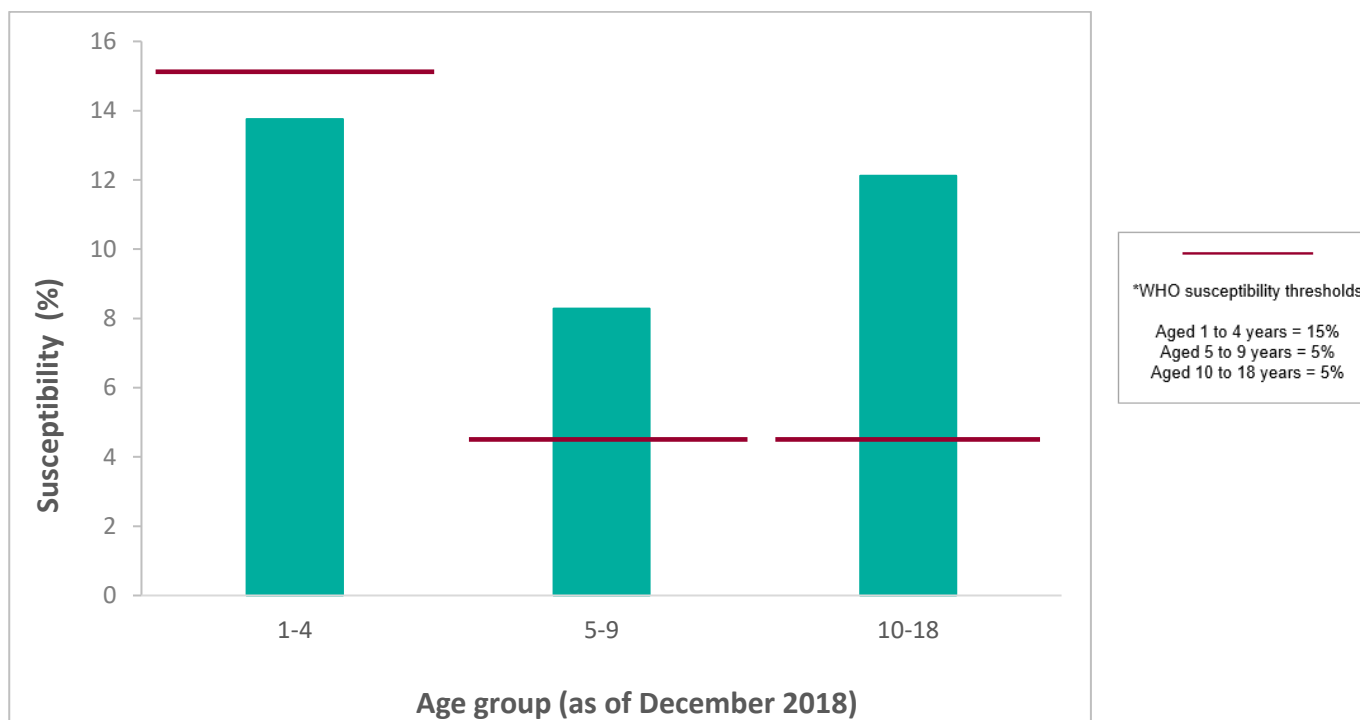


Figure 14 – Susceptibility (%) to measles*, for children aged 1 to 18 years as of December 2018, West Midlands

Population susceptibility to measles according to each age category varied at a local authority level (see table 5). All local authorities exceeded the WHO maximum guideline threshold of 5% for both 5-9 year olds and 10-18 year olds.

Furthermore, 2 local authorities (Birmingham and Coventry) exceeded the 15% threshold for their population of 1-4 year olds.

Table 5 – Susceptibility (%) to measles*, by local authority for children aged 1 to 18 years as of December 2018, West Midlands

Local Authority	Age group		
	1-4 years	5-9 years	10-18 years
Birmingham	17.0	9.8	12.8
Coventry	17.0	11.6	20.6
Dudley	10.4	5.7	8.3
Herefordshire	14.3	9.1	15.2
Sandwell	14.5	8.6	11.9

Shropshire	11.2	7.7	11.3
Solihull	12.8	6.9	8.5
Staffordshire	11.1	6.8	9.9
Stoke-on-Trent	12.3	6.9	11.0
Telford and Wrekin	12.5	7.9	9.9
Walsall	12.3	7.0	10.0
Warwickshire	12.3	7.8	12.7
Wolverhampton	14.7	10.9	16.2
Worcestershire	12.2	6.4	11.6

*WHO susceptibility thresholds - Aged 1 to 4 years = 15%, aged 5 to 9 years = 5%, aged 10 to 18 years 5%

MNA strengths and limitations

The data analysed, reflects a well-defined and large population (1,269,868 individual records), covering a substantial geographical area. In addition, as specifications for CHIS provision are standardised, the data reported can be compared to other regions across the country.

Accessing individual level records from this robust data source, allowed a granular analysis of vaccine uptake at both a regional and local level according to key variables of interest.

A further significant strength of this MNA, was the adoption of a systematic process of data cleaning, checking and analysis. This, as well as employing the WHO methodology for assessing measles susceptibility, strengthens the validity and usefulness of the findings reported.

Despite the size and robustness of the data source, it is not possible to determine the accuracy of the data obtained. As reported within the national strategy for measles elimination and highlighted by members of the WMMEB, issues related to the reliability of the CHIS data coding, extraction and validation processes are known to exist⁽²⁾. These issues are estimated to affect the accuracy of the data especially for older birth cohorts i.e. children aged 10-18 years.

It was not possible to estimate levels of underascertainment in CHIS across all local authority areas and therefore not appropriate to conduct sensitivity analyses for adjusting issues in data quality and accuracy.

This MNA has not attempted to quantify the extent of MMR coverage or susceptibility in those not registered with a GP (i.e. those not included in the CHIS data set). It is acknowledged that some communities who are less likely to register

with a GP, may also be less likely to be vaccinated e.g. Gypsy and Travellers. Therefore, the reported regional proportion of unvaccinated/undervaccinated children and resultant susceptibility within the West Midlands may be an underestimation.

Our inability to accurately identify these underserved or vulnerable groups in the CHIS data (or an appropriate denominator) precluded any estimation of coverage and susceptibility in these population sub-groups. In contrast, given the inability to identify the proportion of children who may already have acquired measles immunity (i.e. due to exposure whilst living in a higher incidence country), susceptibility may have been overestimated in the findings.

We did not undertake any further analyses to explore the potential factors and drivers behind the observed variation in population susceptibility. For example, by exploring differences in delivery or impact of local interventions or national MMR campaigns.

Even when considering the limitations listed, findings from the MNA indicate that measles susceptibility in the West Midlands is likely to be sufficient to sustain disease transmission especially in older birth cohorts and in geographical areas with lower coverage. Whilst under- or over-estimation of MMR coverage and population susceptibility may result in a misallocation of focus and scarce resources, any adverse impact is likely to be small and there will be some population gain accrued from increasing herd immunity.

MNA conclusions

The findings of this MNA indicate that across the West Midlands, there are nearly 190,000 children aged 1-18 years residing, who are either unvaccinated or undervaccinated. Furthermore, at both a regional and local level, inequalities are known to exist in both the extent and distribution of MMR coverage, related to age, deprivation, ethnicity and maternal age at delivery.

Based on these findings, the MNA has confirmed that across the region, there remains large pools of susceptible individuals where MMR coverage is substantially lower than the WHO target (95% of the population receiving 2 doses of MMR).

In the context of experiencing a recent measles outbreak (2017-2018), this confirmation is of significant concern for key organisations in the West Midlands who are contributing to the measles elimination agenda.

Developing a regional approach

The MNA regional level findings were presented to the WMMEB in April 2019. During this meeting the implications of the MNA findings were discussed. Breaching population susceptibility thresholds for children aged 5-18 years across the West Midlands (and for children aged 1-4 years in 2 local authorities) was a significant concern for WMMEB members, given the associated risk of future outbreaks occurring and endemic transmission becoming established.

As recommended in the UK Measles and Rubella Elimination Strategy⁽²⁾, the WMMEB agreed that future action to reduce population susceptibility to measles in the West Midlands, would require stakeholders to work collaboratively at both a regional and local level. Consequently, to start this process, the WMMEB hosted a multi-agency stakeholder workshop (July 2019), with the overarching focus on measles elimination within the West Midlands.

Multi-agency stakeholder workshop

Aim

Following the release of the UK Measles and Rubella Elimination Strategy and based on the regional MNA, host a multi-agency stakeholder workshop to:

“Discuss and develop regional approaches for achieving and maintaining measles elimination in the West Midlands”

Objectives

In order to achieve the aim, objectives were established which were to:

- present the findings and conclusions of the regional MNA
- provide local authorities with individual data sets, describing MMR vaccine coverage and population susceptibility to measles in their respective areas
- facilitate discussions about the local challenges and opportunities for increasing MMR vaccine coverage and reducing population susceptibility to measles
- enable partners to contribute to action planning at both a local authority and Sustainability and Transformation Partnership (STP) footprint
- connect with and share good practice with partners across the region who currently contribute to and support the measles elimination agenda

In total 45 colleagues attended the multi-agency stakeholder workshop. In addition to PHE, NHS England (NHSE)/NHS Improvement (NHSI), local authorities (LA) and clinical commissioning groups (CCG) covering each of the 6 Sustainability and Transformation Partnerships (STPs)³ in the West Midlands attended.

Workshop agenda

The multi-agency stakeholder workshop was opened with a series of key note presentations, providing information and wider context pertinent to measles elimination in the West Midlands:

Presentation topic	Delivered by
Welcome and opening address	Katie Spence, Deputy Director for Health Protection (PHE)
Summary of 2017/2018 regional measles outbreak	Dr Bharat Sibal, Consultant in Communicable Disease Control (PHE)
West Midlands MNA – Overview and findings	Emma Booth, Specialty Registrar in Public Health (Herefordshire Council)
Screening and Immunisation Team (SIT) – Proposed regional approach	Dr Ash Banerjee, Screening and Immunisation Lead (NHS England and NHS Improvement)
Dudley's approach to measles	Barry Jones, Head of Health Protection, Dudley Metropolitan Borough Council

Following the key presentations, workshop attendees were grouped according to the STP footprint their organisation belonged to. Each STP group, supported by a facilitator were then asked to reflect upon, discuss and provide answers to the following 3 key questions.

Based on the findings of the MNA and in relation to your STP and local authority area:

- What questions does the data raise?

³ Birmingham and Solihull, Coventry and Warwickshire, Black Country, Herefordshire and Worcestershire, Shropshire and Telford and Wrekin, Staffordshire and Stoke-on-Trent

- What are the priorities?
- What are the challenges and opportunities?

A representative from each of the STP groups provided the wider workshop with highlights of their table's discussion and an overview of the responses to the above questions.

Themes arising from the responses shared

Questions raised by the data were:

- in general, accessing the MNA data at a local authority level was deemed useful for underpinning future action
- concerns were raised about the quality, validity and reliability of the CHIS data set and how this could be audited and improved
- issues related to data accuracy for areas bordering other regions (or countries) were highlighted i.e. linkage between CHIS providers in England and Wales
- requests for additional data and mapping at a local authority/CCG level were made. In particular the ability to access CCG and GP practice level data.

The priorities were:

- greater focus on improving the MMR vaccine coverage in secondary school aged children, children from more deprived backgrounds and children from specific Black, Asian and Minority Ethnic Groups
- placing emphasis on the importance of linking with other work areas such as Population Health Management Programme
- undertaking some insight work (i.e. with older birth cohorts), to better understand vaccine hesitancy, design/deliver vaccination interventions and potentially to target young people directly
- developing improved local leadership and governance for vaccination programmes

The challenges were:

- accuracy and availability of data
- limited capacity and resources across the system e.g. to meet the needs of under-served and transient communities
- disjointed responsibility for delivering on this agenda
- lack of consistent training opportunities related to vaccination and immunisations for primary care workforce
- curriculum for Health Visitors does not routinely cover topics of vaccination and immunisations

- barriers exist for some communities who are unable or reluctant to access and engage with support (e.g. physical or cultural barriers)

The opportunities were:

- establishment of Primary Care Networks (PCNs), provides important opportunity to engage with GP practices on this agenda (especially by using practice-level data in this context)
- asset-based community development – engaging with local communities and the voluntary/community sector to focus on building on community strengths and assets
- strengthening links with community groups and liaison officers who are linked with various under-served communities
- support the role of Health Visitors, given they are deemed essential in ensuring vaccine-hesitancy is addressed
- carefully targeted local communications plans to GP surgeries and other health and community settings in support of vaccination campaigns

High-level action plans

In addition to providing responses to the questions posed, STP groups were asked to start the process of identifying high-level actions for reducing population susceptibility to measles (see table 6).

Following the multi-agency stakeholder workshop, the WMMEB asked the 2 Screening and Immunisation Teams (SIT) covering the geographical footprint of the West Midlands were asked by the WMMEB to produce an action plan for improving MMR coverage in the region (see tables 7 and 8).

The expectation being each of these action plans should reflect the UK Measles and Rubella Elimination Strategy, the MNA findings and the extensive discussions undertaken at the multi-agency stakeholder workshop.

Next steps and recommendations

It is envisaged by the WMMEB, that the SIT action plans, in addition to future action planning at a STP/LA level, will provide a strategic and robust approach to achieving and maintaining measles elimination status in the West Midlands.

WMMEB recommendations

Improve data quality and GP reporting onto the CHIS system. SITs to continue to encourage sign-up to the automatic data extraction.

PHE Field Services together with SITs to repeat the data analysis in late 2020 to measure potential improvements.

PHE WM to develop a Community of Practice Network for Sharepoint to facilitate sharing of good practice, continued discussion and identification of solutions to issues.

Improve primary care professionals' training on immunisation with a focus on health visitors and school nurses.

Local areas (LA/CCG/SIT/STP) to continue to develop system-wide action plans and robust multi-agency governance that align with the National Elimination Plan recommendations taking account the local data. Oversight to be provided via the WM ADPH.

Table 6 – STP action plans for measles elimination

STP	What	Who
Black country	Targeted communications through social media	STP, CCG, LA
	Clarify CHIS data and access GP practice-level data	CHIS, STP
	Local Immunisation co-ordinator role	CCGs, LA, STP
	Support practices to improve performance	CCG, LA
	Link with universities and colleges to support immunisation of new students	CCG, LA
	Ensure immunisation prominent within Health Visitor and other Healthcare Professional curriculum	Higher Education Institutions (HEIs), Health Education England (HEE), Nursing and Midwifery Council (NMC), Health and Care Professionals Council (HCPC)
	School-aged immunisation service – include MMR in the school leaver booster	LA, NHSE, PHE
Birmingham and Solihull	Provide practice-level data to CCG governance	CCG, LA, SIT
	Follow up practices that appear poorly performing and offer support	SIT, CCG, LA
	Publicise practice level league tables to enable comparison	CCG, SIT
	Discuss with Primary Care Clinical Lead about incentivising practices	CCG
	Explore opportunities for system-wide partners to raise awareness, promote, signpost	All
	Link with Midlands and East Behavioural Science Hub (BSH) and link with West Midlands Applied Research Centre (WMARC) to explore different approaches	WMARC, PHE, LA PH, SIT, BSH
	Engage better with community leaders and use health champions	LA
	Consider mandating vaccination	National
	Engage voluntary and community sector to support	LA
Embed vaccination messages in all Children's Services	LA	
	Support the delivery of national interventions/programmes/campaigns	LA, CCGs, GPs
	Launch a focused piece of work to improve MMR coverage (within a short, defined time period)	LA, CCGs

Herefordshire and Worcestershire	Develop a localised measles elimination action plan	LA lead – involve CCG, SIT, PHE, GPs
Coventry and Warwickshire	Promote access to practice-level immunisation data	SIT
	Develop local immunisation governance group by bringing together existing groups	LA, CCG
	Engagement with the public and stakeholders, and vaccination campaign	LA lead
	Work with underperforming GP practices	CCG lead
	Data validation	CHIS/NHS E I lead
	Promotion of new GP incentive schemes	CCG lead
Staffordshire and Stoke-on-Trent	GP Performance management data reported back to the CCG regularly	SIT
	Respond to the training needs assessment	SIT and LAs
	Identify groups who are not actively engaging and identify best communication channels	Children and young people's department, LA PH
	Improve access to GP i.e. availability of clinics and times for accessing clinics	GP federation, PCNs, North Staffs Alliance Board – opportunity to discuss with GPs/CCGs
Shropshire and Telford and Wrekin	Only Shropshire present at workshop – detailed action plan submitted separately. This is available from Shropshire Council Public Health Team or North Midlands Screening and Immunisation Team	As detailed in local action plan

Table 7 – Action plan - Screening and Immunisation Team (West Midlands)

Herefordshire, Worcestershire, Coventry, Warwickshire, Birmingham, Solihull and Black Country

Authors: Diane Beale, Ash Banerjee (July 2019)

Strengthen the routine GP immunisation programme

Promote MMR catch up for 10 – 11 year olds in General Practice

Information about this addition to the 2019/20 GP contract will be included in July 2019 edition of the West Midlands Immunisation Newsletter. The Newsletter is distributed to all GP practices, LAs, CCGs and SAIS (School Age Immunisation Services) in the West Midlands.

Exploring ways to monitor activity (children identified and offered MMR) and outcomes (children subsequently given MMR)

- **Practice level immunisation performance dashboard**

We will produce and share a dashboard with Practices, CCGs and LA's to determine where additional support is required and promote peer competition. 2018/19 annual practice level data has just been published at <https://www.england.nhs.uk/statistics/statistical-work-areas/child-immunisation/>

- **Practice nurse training survey**

This survey has been completed. The survey results will be shared with CCG's who will be asked about their local arrangements for training provision, protected time for training events and competency checks. Immunisation best practice training guidance is being developed.

- **Work with CHIS to support GP practices to eliminate waiting lists**

A revised waiting list report has been agreed with CHIS which will show trends in waiting list queues. This will inform the production of a QLIST elimination plan.

- **Encourage sign-up of CHIS auto-extraction to improve data ascertainment and quality**

- **PHE Immunisation postcards**

Request made for CHIS to send all 5 -11 year olds incompletely immunised with MMR starting primary and secondary school in September 2019 a postcard encouraging them to receive all recommended vaccinations before they commence their new school.

- **Overarching GP engagement strategy in production**

School Aged Immunisation Service (SAIS)

- **SAIS Workshops**

Two workshops have been held with SAIS providers where the offer of MMR at the same time as Td/IPV, Men ACWY and HPV to Year 8/9 children has been discussed.

- **Pilot project**

We will offer a pilot project to our current SAIS providers to deliver MMR to under vaccinated children in Years 8 or 9 commencing in September 2019. CHIS will be supported to validate data and prepare vaccination lists for the SAIS teams.

- **SAIS re-procurement**

The SAIS will be re-procured for 2020/21 academic year. We are currently reviewing the service specification with a view to adding in the offer of MMR and outreach work alongside other vaccines given in years 8 and 9.

Under vaccinated communities

- Include provision in 2020/21 SAIS procurement
- Work with LAs to identify groups and engagement opportunities

Systems approach

- **Role of Primary Care Networks**

It is hoped that the emergence of PCN's will provide a route for improved performance management, communications and new commissioning arrangements for MMR.

- **Worked with HV training universities to encourage HV immunisation training**

Lack of Immunisation education for Health Visitors during and after their training was identified. Immunisation sessions have been delivered at the 2 Universities that train HV's in the West Midlands, with a view to this becoming an annual event.

Health needs assessment

- Review health needs assessment and consider piloting other options (e.g.: local catch-ups, bringing forward MMR2) or more intense implementation of universal approach in most susceptible areas

Table 8 – Action plan - Screening and Immunisation Team (Midlands North)

Areas covered: Staffordshire, Stoke-on-Trent, Shropshire, Telford and Wrekin

Authors - Emma Adamson, Paul Kalinda (July 2019)

Strengthen the routine GP immunisation programme

Promote MMR catch up for 10 – 11-year olds in General Practice

Information about this addition to the 2019/20 GP contract has been shared with all stakeholders (LA, CCG, SAIS, GP's) along with details of how to claim.

Exploring ways to monitor activity (children identified and offered MMR) and outcomes (children subsequently given MMR)

- **Practice level immunisation performance dashboard**

We will produce and share a dashboard with Practices, CCGs and LA's to determine where additional support is required and promote peer competition. 2018/19 annual practice level data has just been published at <https://www.england.nhs.uk/statistics/statistical-work-areas/child-immunisation/>

- **Childhood Immunisation Training Needs Analysis**

This survey was disseminated to all practice nurses, health visitors and school nurses. The survey results will be shared with CCG's and LA's who will be asked about their local arrangements for training provision, protected time for training events and competency checks.

- **SIT to provide 'Train the Trainer' immunisation update.**

In response the training needs analysis SIT to provide a one off 'Train the Trainer' immunisation update to PN's, 0-19 teams and midwives as a bridging tool until training provision has been established.

- **Work with CHIS and CCG's to support GP practices to eliminate waiting lists**

A revised waiting list report has been agreed with CHIS which will show trends in waiting list queues. The lists will be shared with CCG's with a supporting document to facilitate reducing immunisation waits.

- **Encourage sign-up of CHIS auto-extraction to improve data ascertainment and quality**

NHS Acute Trust Services

- **Maternity services** – MMR check as part of antenatal care. Workshop has been held with maternity providers to discuss pathways and processes that would support the strategy.

Health Care Workers

- Immunisation status of health care workers – occupational health

Local Authority Services

- Health promotion activities and signposting-MMR promotion materials to be used in all community settings (Food banks, children’s centres, Libraries, Schools)
- Policy changes/review in line with measles strategy
- 0-19 services-Including MMR reminders in all correspondence with parents
- Health visiting-Making every contact count. Immunisation training need highlighted with LA.

School Aged Immunisation Service (SAIS)

- SAIS NHSE due to scope out SIAS re. MMR delivery capacity requirements and proposed plan.
- SAIS including MMR reminders in all correspondence, sign posting to the GP.

Under vaccinated communities

- Inequalities logs created for both providers to capture gaps/opportunities to increase uptake in under vaccinated communities.
- SAIS working in partnership with 0-19 ‘hard to reach’ practitioners to engage travelling/homeless/Home-schooled clients.
- Work with LAs to identify groups and engagement opportunities

Systems approach

- **Role of Primary Care Networks**
It is hoped that the emergence of PCN’s will provide a route for improved performance management, communications and new commissioning arrangements for MMR.

References

1. Public Health England. Making measles history together: A resource for local government. 2018. Available from: <https://www.gov.uk/government/publications/measles-resources-for-local-government> [Accessed 05/06/2019]
2. Public Health England. UK Measles and Rubella Elimination Strategy. 2019. Available from: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/769970/UK_measles_and_rubella_elimination_strategy.pdf [Accessed 03/04/2019]
3. Public Health England. Measles cases in England: January to December 2018. 2019. Available from: <https://www.gov.uk/government/publications/measles-mumps-and-rubella-laboratory-confirmed-cases-in-england-2018/measles-cases-in-england-january-to-december-2018>. [Accessed 17/07/2019]
4. Hawker J, Begg N, Blair I, Reintjes R, Weinberg J, Ekdahl K. Communicable Disease Control and Health Protection Handbook. 3rd ed. Chichester: John Wiley & Sons Ltd, 2012
5. Public Health England. Complete routine immunisation schedule. 2019. Available from: <https://www.gov.uk/government/publications/the-complete-routine-immunisation-schedule> [Accessed 17/05/2019]
6. Measles: The Green Book, chapter 1. 2013. Available from: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/147968/Green-Book-Chapter-21-v2_0.pdf [Accessed 22/05/2019]
7. World Health Organization. European Vaccine Action Plan 2015-2020. 2014. Available from: http://www.euro.who.int/__data/assets/pdf_file/0007/255679/WHO_EVAP_UK_v30_WEBx.pdf [Accessed 29/04/2019]
8. World Health Organization. New measles surveillance data for 2019. 2019. Available from: <https://www.who.int/immunization/newsroom/measles-data-2019/en/> [Accessed 24/07/2019]
9. Public Health England. Measles outbreaks across England. 2018. Available: <https://www.gov.uk/government/news/measles-outbreaks-across-england> [Accessed 03/02/2019]
10. Public Health England. Measles has been eliminated in the UK – so why do we still see cases and outbreaks? 2018. Available from: <https://publichealthmatters.blog.gov.uk/2018/01/22/measles-has-been-eliminated-in-the-uk-so-why-do-we-still-see-cases-and-outbreaks/>
11. Public Health England. UK measles and rubella elimination indicators and status Measles and rubella elimination. 2018. Available from: <https://www.gov.uk/government/publications/measles-and-rubella-elimination-uk/uk-measles-and-rubella-elimination> [Accessed 07/05/2019]
12. Foulkes, Suleman, Anderson, Fletcher, Okhai, Teagle, Edeghere. Confidential Outbreak Report: An Outbreak of measles in the West Midlands, 1 November 2017 to 04th June 2018 (Draft). Public Health England, 2018.
13. NHS Digital. Childhood Vaccination Coverage Statistics. Available from: <https://digital.nhs.uk/data-and-information/publications/statistical/nhs-immunisation-statistics> [Accessed 18/07/2019]
14. Office for National Statistics. Ethnic group, national identity and religion. Available from: <https://www.ons.gov.uk/methodology/classificationsandstandards/measuringequality/ethnicgroupnationalidentityandreligion> [Accessed 12/06/2019]
15. Mosaic Public Sector. 2019. Available from: <https://www.experian.co.uk/assets/marketing-services/brochures/mosaic-ps-brochure.pdf> [Accessed 22/05/2019]
16. Office for National Statistics. Population estimates for the UK, England and Wales, Scotland and Northern Ireland: mid-2017. 2018. Available from: <https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationestimates/bulletins/annualmidyearpopulationestimates/mid2017> [Accessed 07/06/2019]
17. Gay N.J. The Theory of Measles Elimination: Implications for the Design of Elimination Strategies. *The Journal of Infectious Diseases* 2004;189(Suppl 1):S27–35
18. Ramsay M. A strategic framework for the elimination of measles in the european region. 1997. Available from: <http://www.who.int/iris/handle/10665/108278> [Accessed 04/02/2019]
19. Funk S, Knapp, JK, Lebo E, Reef SE, Dabbagh AJ, Kretsinger K et al. Target immunity levels for achieving and maintaining measles elimination. *bioRxiv preprint first posted online Oct. 13, 2017*. Available from **doi**: <https://doi.org/10.1101/201574>

Appendices

Appendix A: West Midlands Measles Elimination Board membership

Emma Adamson	Screening and Immunisation Co-Ordinator (PHE/NHS E/I)
Chris Baggot	Public Health Service Manager (Birmingham City Council)
Helen Bagnall	Epidemiological Scientist (PHE)
Dr Ash Banerjee	Screening and Immunisation Lead (PHE/NHS E/I)
Diane Beale	Screening and Immunisation Co-Ordinator (PHE/NHS E/I)
Emma Booth	Specialty Registrar in Public Health (Herefordshire Council)
Mary Carr	Head of Primary Care Contracting & Commissioning (Birmingham and Solihull CCG)
Jane Craig	Programme Manager (Coventry City Council Public Health)
Dr Obaghe Edeghere	Consultant Epidemiologist (PHE)
Ann Fleming	Regional Communications Manager (PHE)
Yvonne Green	Screening and Immunisation Manager (PHE/NHS E/I)
Nadia Inglis	Consultant in Public Health (Coventry City Council/Warwickshire County Council)
Soili Larkin (Chair)	Consultant in Public Health (PHE)
Michele Lawrence	Consultant Nurse (PHE)
Kathy Lyons	Commissioning Manager (Sandwell and West Birmingham CCG)
Sangeeta Leahy	Consultant in Public Health (Solihull Metropolitan Borough Council)
Cam Morgan	Senior Communications Officer (PHE)
Dr Bharat Sibal	Consultant in Communicable Disease Control (PHE)
Katie Spence	Deputy Director of Health Protection (PHE)

Appendix B: West Midlands Measles Elimination Board Terms of Reference (v.3 – Sept 2018)

Purpose

The aim of the board is to agree a plan for measles elimination in the West Midlands that aligns with the PHE national plan.

The Board will:

- Agree a plan and recommendation for achieving measles elimination in the West Midlands
- Ensure strategic links are made between national PHE National Immunisations team, PHE WM, Local Authority Public health, CCGs, CHIS and the NHS including the QSGs.
- Provide a forum for discussion and debate

Outputs

- West Midlands wide MMR needs assessment
- Develop and sign off the recommendations supporting measles elimination across the West Midlands that encompasses routine programme, any catch-up campaigns and vulnerable communities
- Provide a regular report to the Centre Executive and the management Teams as well as ADPH

Core membership

- Chair: Soili Larkin, Consultant in Healthcare Public Health
- Deputy Director sponsor: Katie Spence, Deputy Director Health Protection
- Lead Health Protection Consultant: Bharat Sibal
- Health Protection Nurse Consultant: Michele Lawrence
- Screening and Immunisation Teams: West Midlands and North Midlands
- Local Authority Public Health team representatives
- CCG representatives
- NHS E Direct Commissioning
- PHE Field Service
- PHE Communications

Other members invited as necessary, based on suggestions of the group members, ADPH, PHE CET.

Secretariat support

- Provided by Healthcare Public Health team

Reporting

- The group will report to the WM Centre Executive Team

Frequency of meetings

- Group to meet bi-monthly