Immunisation inequalities

Data and information sources

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Introduction

In February 2021, Public Health England (PHE) published a health equity audit of the national immunisation programme, a national immunisation inequalities strategy, and a local action plan template.

The health equity audit found that the national immunisation programme had achieved high vaccine coverage in the population as a whole, but also found a complex picture of inequalities in vaccine coverage within some population groups. For example, inequalities in immunisation for a given group sometimes varied across different vaccination programmes, and the size of these inequalities varied from region to region.

As part of the health equity audit, a socio-ecological model was developed to help identify and address some of the complex factors behind inequalities in vaccine uptake. These factors included community, institutional, and policy factors, alongside health beliefs and knowledge of individuals and families.

In response to the audit, PHE worked with stakeholders to develop a national immunisation inequalities strategy and a local action plan template. The local action plan template was designed to be used by local teams to identify actions that can be taken to reduce health inequalities and was based on the World Health Organization (WHO) Guide to Tailoring Immunization Programmes. This document has been produced to complement the inequalities strategy and the local action plan template so should be read alongside those documents.

This document aims to summarise data and information sources that are available to local teams who are working to reduce immunisation inequalities in their local area. It also contains case examples of how local NHS England Screening and Immunisation teams have used the data sources in this document to implement local action plans to reduce immunisation inequalities.

Data and information sources

General vaccine information

Table 1. PHE immunisation inequalities strategy

Dimension	Details
Source	[PHE immunisation inequalities strategy](#)
Geography	National and regional.
Description	Contains 3 documents: • health equity audit of the national immunisation programme • PHE immunisation inequalities strategy • local action plan template
Advantages	• national level strategy to tackle inequalities in vaccination • the local action plan template provides a structured format to create a local plan to tackle inequalities
Disadvantages	None.
Skill level required	None.
What this may be used for	Gaining a high level overview of immunisation inequalities at a national level, and tools to tackle inequalities at a local level.

Table 2. WHO Tailoring Immunization Programmes (TIP)

Dimension	Details
Source	[TIP: tailoring immunization programmes](#)
Geography	Not available.
Description	The TIP document supports countries to achieve high and equitable vaccine uptake with their population.
Advantages	Provides a structured approach to: • identify population groups with lower vaccine coverage • identify barriers to vaccination • design evidence based interventions to increase vaccine uptake
Disadvantages	None.
Skill level required	None.

Dimension	Details
What this may be used for	Providing detailed background information on designing and implementing an intervention to increase vaccine uptake.

Table 3. Vaccine update

Dimension	Details
Source	Vaccine update
Geography	Not available.
Description	Vaccine update is a regular newsletter describing the latest developments in vaccines, vaccination policies, and procedures.
Advantages	It features case studies describing how local teams have improved vaccination coverage or services in under-served populations.
Disadvantages	None.
Skill level required	None.
What this may be used for	Keeping up to date with the latest vaccine information. Learning from best practice from other regions.

Data on vaccine coverage and vaccine preventable diseases

Table 4. NHS Digital childhood vaccination coverage statistics

Dimension	Details
Source	NHS Immunisation Statistics
Geography	National, regional, and upper tier local authority.
Description	Annual data on childhood vaccination coverage assessed at 1, 2, and 5 years of age.
Advantages	- official, authoritative data source of childhood vaccine coverage data for children up to the age of 5 - provides data over many years, so able to measure trends across time - includes data on universal routine immunisations (including influenza) as well as selective immunisation programmes for example Hep B and BCG - includes children not registered with a GP

Dimension	Details
	• data can be displayed on an interactive Power BI dashboard
Disadvantages	• annual data is published in autumn for the previous financial year – data is therefore several months 'old' at the time of publication • data is available for 1, 2, and 5 year olds only, and not other childhood age groups • coverage is measured at a fixed time point after the vaccine is first scheduled for example MMR1 coverage is measured at 2 years of age • apart from geographical analysis, data on other inequality indicators, for example demography and deprivation, is not routinely included • geographical presentation of the data is most usually by local authority and NHS organisational geographies and does not necessarily provide the granularity needed for local assessments of coverage
Skill level required	Minimal: use of Microsoft Excel.
Should be used with	COVER quarterly data and ImmForm data.
What this may be used for	Providing an authoritative data source on childhood vaccines at the national, regional, and local authority levels.

Table 5. Cover of vaccination evaluated rapidly (COVER) programme: latest quarterly data by UKHSA

Dimension	Details
Source	COVER statistics
Geography	National, Office for national statistics (ONS) government office region, NHS local team, NHS region, upper tier local authority and GP level (experimental data).
Description	Quarterly data on childhood vaccination coverage for children who reach 1, 2 and 5 years of age in that quarter.
Advantages	• the official, authoritative data source of childhood vaccine coverage data for children up to the age of 5 • provides data over many years, so able to measure trends across time • includes data on universal routine immunisations as well as selective immunisation programmes for example Hep B or BCG • includes children not registered with a GP

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Dimension	Details
	- data is published every quarter, therefore providing timelier data than the annual report – data is published 3 months after the end of the quarter - data is available at GP level since 2019 to 2020
Disadvantages	- data is only available for 1, 2, and 5 year olds, and not other childhood age groups - coverage is measured at a fixed time point after the vaccine is first scheduled for example MMR1 coverage is measured at 2 years of age - apart from geographical analysis, data on other inequality indicators, for example demography and deprivation, is not routinely included - data is from a point in time and we know individuals continue to be vaccinated after the collection
Skill level required	Minimal: use of Microsoft Excel.
Should be used with	NHS Digital childhood vaccination coverage statistics and, ImmForm data.
What this may be used for	Providing authoritative data source on childhood vaccines from national, down to local authority and GP level

Table 6. UKHSA vaccine coverage reports

Dimension	Details
Source	Vaccine Update
Geography	Depends on the immunisation programme report.
Description	Regular reports on vaccine coverage for many programmes including seasonal flu, shingles, HPV, prenatal pertussis, and PPV.
Advantages	- regular reports on vaccine coverage for a number of vaccine programmes - data is validated by UKHSA before publication - for some programmes, data is published monthly (seasonal flu), quarterly (shingles, prenatal pertussis), or annually (HPV and other adolescent vaccines)
Disadvantages	each collection has its strengths and weaknesses depending on the methodology used. These are detailed in each report

Dimension	Details
	• Apart from geographical analysis, data on other inequality indicators such as demography and deprivation are not routinely included
	• geographical presentation of the data is most usually by local authority and NHS organisational geographies and does not necessarily provide the granularity needed for local assessments of coverage
	• data is from a point in time and we know individuals continue to be vaccinated after the collection, particularly relevant for adolescent programme
Skill level required	Minimal: use of Microsoft Excel for associated data tables.
Should be used with	NHS Digital childhood vaccination coverage statistics, COVER quarterly data and, ImmForm data.
What this may be used for	Source of validated coverage data for adolescent vaccines, PPV, prenatal pertussis, and shingles vaccines.

Table 7. ImmForm data

Dimension	Details
Source	ImmForm Portal
Geography	National, NHS commissioning region, sustainability transformation plan (STP), clinical commissioning group (CCG), GP level.
Description	Vaccination data for a number of vaccination programmes including an adolescent collection (HPV / MenACWY / Td/IPV), early childhood baseline, influenza, MMR, PPV, prenatal pertussis, and shingles. Data for automated collections are extracted directly from GP records and may be extracted monthly, quarterly, or annually depending on the specific collection.
Advantages	• 'Early childhood baseline' collection provides data on vaccine uptake for certain childhood vaccines (Hexavalent or MMR or DTap/IPV) before COVER data is collected
	• annual MenACWY collection provides data on individuals aged 14 to 25 who are vaccinated according to GP records
	• annual MMR collection provides data on individuals aged 2 to 18 who are vaccinated according to GP records
Disadvantages	• the accuracy of the data is dependent on correct coding in individual GP records

Dimension	Details
	• some collections are only updated annually for example the adolescent collection • usage requires log in to access the site which is restricted to authorised individuals only • data is validated by UKHSA and may be subject to change following validation
Skill level required	Minimal: use of web browser.
Should be used with	NHS digital childhood vaccination coverage statistics, COVER quarterly data, or UKHSA vaccine coverage reports.
What this may be used for	Shows vaccine coverage down to GP level for childhood and non-childhood vaccines. Provides childhood coverage data earlier than COVER data to enable performance management at an individual GP practice level.

Table 8. Fingertips tool - Health Protection Profile: Immunisation and childhood vaccine preventable diseases

Dimension	Details
Source	Fingertips Health Protection Profiles
Geography	Upper tier local authority, lower tier local authority, UKHSA centre level data.
Description	Part of the Office for Health and Disparities (OHID) Fingertips tool. The health protection profile contains indicators on immunisation and childhood vaccine preventable diseases.
Advantages	• this tool brings together information from multiple different published resources and displays data in one place • it allows local teams to benchmark against other areas in the same region or England at a glance using the RAG rating • the inequalities tab displays available data segmented by population decile of Index of Multiple Deprivation (IMD) 2015
Disadvantages	• contains information on selected vaccines only so does not contain information on all vaccines • data is included are annual only and are added to the profiles some months after the original data are published • data is presented at local authority and regional levels but not at lower level geographies or disaggregated by inequalities indicators such as deprivation and ethnicity

Dimension	Details
Skill level required	None. Requires some practice to become familiar with the multiple ways in which data can be displayed.
Should be used with	NHS digital childhood vaccination coverage statistics or COVER quarterly data.
What this may be used for	Brings together published data on some of the most useful indicators on vaccines and vaccine preventable diseases from multiple sources into one place.

Table 9. UKHSA reports on the incidence of vaccine preventable diseases

Dimension	Details
Source	Research and statistics on vaccine preventable diseases
Geography	National and Government Office Region.
Description	Surveillance reports describe the incidence of vaccine preventable diseases.
Advantages	produced regularly using standardised methodology which enables monitoring of epidemiological trends at a national level
Disadvantages	does not always describe the incidence of disease at a local level
Skill level required	None.
Should be used with	Local data on vaccine coverage. OHID Fingertips tool to see disease incidence at the local level.
What this may be used for	To understand the epidemiology of vaccine preventable diseases at a national level.

General health data

Table 10. Office for Health Improvement and Disparities (OHID) Fingertips tool

Dimension	Details
Source	OHID Fingertips Tool (general)
Geography	Upper tier local authority, lower tier local authority, UKHSA centre level data.
Description	Fingertips is a web-based platform that provides access to a rich source of indicators, including coverage of immunisation programmes in the Health Protection Profile described above, across a range of health and wellbeing topics. Immunisation data included are derived from the COVER and ImmForm collections described above, and from 2021 to

Dimension	Details
	2022 data on a subset of immunisations is included from the QOF collection.
Advantages	• multiple public health profiles provide information on everything from antimicrobial resistance to obesity to the wider determinants of health for the population of interest • allows benchmarking to local and national comparators
Disadvantages	• data is included are annual only and are added to the profiles some months after the original data are published • data is presented at local authority and regional levels but not at lower level geographies or disaggregated by inequalities indicators such as deprivation and ethnicity
Skill level required	Minimal. Requires some practice to become familiar with the multiple ways in which data can be displayed.
Should be used with	The Fingertips Health Protection Profile (described above) gives vaccine specific information.
What this may be used for	Gaining health information on a variety of health indicators for the population of interest.

Table 11. OHID Fingertips tool: National General Practice Profiles

Dimension	Details
Source	OHID fingertips tool (General Practice Data)
Geography	Individual practice profiles, and summary profiles for CCGs.
Description	The tool presents a range of practice-level indicators drawn from the latest available data, including local demography, Quality and Outcomes Framework domains, cancer services, child health, antibiotic prescribing and patient satisfaction. From 2021 to 2022 vaccination statistics for Shingles, DTaP and MMR are included by GP practice.
Advantages	• this tool gives general health information about the population registered with a GP practice • allows comparison to other GP practices in the CCG and nationally
Disadvantages	Vaccination coverage statistics (with the exceptions above) are not included and would require data linkage from other sources for analysis. Demographic data by GP practice is limited; IMD and ethnicity are based on Lower Super Output Area population weighted figures from that area. Ethnic groups used for disaggregation of ethnicity are broad and do not correspond with ONS ethnicity categories.

Dimension	Details
Skill level required	Minimal. Requires some practice to become familiar with the multiple ways in which data can be displayed.
Should be used with	The Fingertips Health Protection Profile (described above) gives vaccine specific information, although at local authority level only.
What this may be used for	Gaining information on population level characteristics for the population registered with a particular GP practice.

Geographical mapping tools

Table 12. Strategic Health Asset Planning and Evaluation (SHAPE)

Dimension	Details
Source	Shape Atlas
Geography	Flexible geographies. These include STP, CCG, LA, ward, and LSOA, depending on the indicator viewed.
Description	SHAPE links national data sets on clinical analysis, public health, primary care, and demographic data with information on healthcare estates' performance and facility location.
Advantages	- geographical mapping tool upon which multiple layers and indicators can be embedded - numerous indicators which include deprivation, ethnicity, disease prevalence, air quality, COVID-19 vaccination, and travel time analysis
Disadvantages	None.
Skill level required	May require some self-directed training to use full functionality.
Should be used with	OHID Local Health Tool.
What this may be used for	Geographical mapping tool which can display multiple indicators for a population of interest.

Table 13. OHID Local Health tool

Dimension	Details
Source	OHID Local Health
Geography	MSOAs and electoral wards, clinical commissioning groups, local authorities, and England.

Dimension	Details
Description	The Local Health tool allows users to map data and provides spine charts and reports for small areas. Users can also define their own geographies and add their own data.
Advantages	• geographical mapping tool upon which multiple indicators can be embedded • there are 72 indicators available including population characteristics (for example age, ethnicity, IMD) and health information (for example disease incidence, hospital admissions)
Disadvantages	Data is included, is annual only and is added as indicators some time after the time period for analysis (over one year).
Skill level required	May require some self-directed training to use full functionality.
Should be used with	SHAPE Atlas.
What this may be used for	Geographical mapping tool which can display multiple indicators for a population of interest.

Data on general population characteristics

The following resources may be helpful for obtaining general information on population characteristics. As these resources are not health specific, their specific advantages and disadvantages have not been listed. It is recommended that these resources are used alongside those listed above to gain a further understanding of the population of interest. Please note that this list is not exhaustive.

Table 14. ONS England and Wales census

Dimension	Details
Source	ONS Census Data
Geography	LSOA to national.
Description	The authoritative and most complete data source providing a detailed snapshot of population characteristics every 10 years. Provides data on health and other general population characteristics (for example, employment, housing, ethnicity) at local and national levels.

Table 15. Department for Communities and Local Government Index of Multiple Deprivation 2015

Dimension	Details
Source	English Indices of Deprivation 2015

Dimension	Details
	LSOA level data files: LSOA Level Index of Deprivation Data
Geography	Lower Super Output Area and national.
Description	The English indices of deprivation measure relative deprivation per LSOA. The index of multiple deprivation is the most widely used of these indices. These resources can be used to identify geographical areas of deprivation nationally and locally in a population of interest.

Table 16. Department of Work and Pensions (DWP) Stat-Xplore

Dimension	Details
Source	DWP Stat-Xplore
Geography	MSOA – national.
Description	A range of DWP benefits data including Universal Credit, Jobseekers' Allowance, Housing Benefit, Incapacity Benefit, and National Insurance number allocations to adult overseas nationals. Another data source that provides additional information to indicate markers of deprivation in a population of interest.

Case studies

Case study 1. ImmForm data used to monitor pertussis vaccine uptake

As part of regular monitoring and review of data, it was recognised that uptake of the pertussis vaccine in North Kirklees was significantly lower than in neighbouring areas and the lowest across Yorkshire and the Humber. Data extracted from ImmForm showed:

Table C1. Vaccine uptake by area

CCG	June 2019	July 2019	August 2019	September 2019	October 2019	Total
Area A	81.8	77.3	79.1	75.7	75.5	77.9
Area B	82.2	75.9	69.4	78.4	76.7	75.9
North Kirklees	59.1	63.7	57.3	66.0	70.1	63.2
Area C	83.8	81.3	85.4	81.2	83.1	83.0

A small number of GP practices were contacted by the Screening and Immunisation Team including a practice that was achieving high uptake, to enable shared learning and to have an initial conversation on how to improve. A guide was also produced and shared directly with the low achieving practices and across the local area via the clinical commissioning group bulletin which included information on who should be offered the vaccine, and how information should be coded in GP systems. This is an excerpt of the information provided.

"Pregnant women should be offered a single 0.5 ml dose of dTaP/IPV vaccine which can be given from 16 weeks to protect baby from birth; however, for operational reasons, vaccination should be offered from around 20 weeks, on or after the foetal anomaly scan. This is to avoid any adverse outcome identified at the anomaly scan being wrongly attributed to the vaccine which could affect uptake. Please ensure **all** pregnant women are identified and coded and ensure accurate data collection on ImmForm. Practices should be certain that the records of all pregnant women in their practice have the following fields completed:

• expected and subsequently confirmed date of delivery

• date of 'offer of vaccine' and 'if accepted or refused'

• date of receipt of a pertussis containing vaccine at or after week 20 of pregnancy, regardless of the setting where the vaccine was administered

• where relevant, any record of a premature delivery occurring at less than 20 weeks gestational age

Developing a practice-wide approach to increasing uptake will provide a consistent message to patients. Practices that achieve high uptake have identified a practice champion who has oversight, reviews uptake, and provides regular updates in staff meetings. A champion can be responsible for:

- identifying your eligible patients

- flagging eligible patient records

- using the available resources to raise awareness of the Pertussis vaccine in the practice

- adding information to the screen in the waiting room and on the website

- ensuring appointments meet the needs of the patient, such as suitable times

Clinical members of staff can:

- review the content of the invitation letter considering the language and easy read options

- where necessary use consultations to discuss the benefits of being immunised

- liaise with midwives to discuss possible ways to improve and where there may be issues"

Unfortunately, a second subsequent review of the ImmForm data showed no significant improvement in North Kirklees and a decision was made to contact all practices who were achieving below 60% uptake with a call to action. Ten practices were identified, and supportive meetings were held between the practice and the Screening and Immunisation Team. As a result of the meetings, the following actions were agreed:

- each practice would assign a practice champion
- practices would liaise with midwives to ensure all eligible patients are recorded on the practice system
- practices would send an invitation via text and include a link to the patient information leaflet
- practices would look to send an invite out after 18 week appointment
- patients who decline would be followed up by a conversation with the GP

Uptake was reassessed several months later on ImmForm, which showed substantially improved uptake across the majority of the practices that took part.

Case study 2. COVER data used to monitor childhood immunisations in South Yorkshire and Bassetlaw

In 2019 in Doncaster, annual and quarterly COVER data were used to identify GP practices where uptake of childhood immunisations was poor and not hitting national targets. This coincided with a complaint from a parent, whose child's immunisations had been very delayed. An audit of these GP practices was conducted which revealed:

- high numbers of children were delayed in having primary vaccinations
- there was no standardised process for practice nurses to follow or who to contact to help support improvement work
- clinic lists were being sent via post which delayed information sharing
- there was no easy process to record the refusal of vaccinations
- the Child Health Information Service were not able to see child health records from certain GP practices in a timely manner

Discussions commenced between the CCG and the primary care network as to how the process could be improved between the child health information service and primary care. As a result, the following changes were achieved:

- a standard operating procedure (SOP) for appointments and scheduling was developed, which was rolled out beyond Doncaster to all localities across South Yorkshire and Bassetlaw
- an immunisation toolkit was developed to include a generic email for practices describing waiting lists and how to manage missing immunisations and waiting list numbers
- there is ongoing work to update the appointment letters that are sent to parents which include behavioural science 'nudges'

An evaluation of the SOP and toolkit is currently taking place. Future work will include changes to non-responder letters used in primary care to include behavioural nudges, and also a potential national change to vaccination wording used on appointment letters.

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