

Measles & Rubella Initiative Outbreak Response Fund: Standard operating procedures to apply for measles outbreak response support

Date: 31 January 2022

Purpose of this document: to provide guidance to national, regional and global health authorities applying for Measles and Rubella Initiative (M&RI) support for measles and rubella outbreak response.

Countries are encouraged to enquire with World Health Organization (WHO) and United Nations Children's Fund (UNICEF) Country and/or Regional Offices and M&RI (MRI-ORF@who.int) directly regarding requirements.

A. M&RI ORF background

The M&RI has provided funding since 2012 to support bundled vaccine and operational costs for measles outbreak response immunization (ORI), with Gavi supporting up to a total of US\$10 million per year for Gavi-eligible countries. Countries not eligible for Gavi support can use the same guidelines articulated in this document to apply for more limited non-Gavi funding sources. Decisions for support to non-Gavi eligible countries will be predicated on substantial financial commitment by the receiving country.

The purpose of measles ORI is to reduce measles morbidity and mortality and prevent further spread of the outbreak by interrupting measles virus transmission locally. WHO recommendations for measles outbreak response¹ include two phases of ORI:

- 1) initial rapid ORI in the affected areas that includes social mobilization and communication, and selectively targets unvaccinated and under-vaccinated children 6-59 months old (or older age groups, depending on the age distribution of cases); and
- 2) if phase 1 fails to stop the outbreak, subsequent ORI on a larger scale usually targeting children non-selectively, but based on outbreak epidemiology, immunity gaps and risk of virus transmission and spread.

Applications for ORF support should be prompt when the country determines that in-country resources are inadequate to contain an outbreak and should contain sufficient justification for the scope of the response.

B. Eligibility

All Gavi-eligible countries that have a laboratory-confirmed measles outbreak of public health importance *AND* cannot respond to the outbreak fast enough with in-country funding (e.g., domestic outbreak response funds or donor funding) are eligible to request ORF support for outbreak response.

The M&RI will also consider applications from non-Gavi eligible countries that have a laboratory-confirmed measles outbreak of public health importance *AND* cannot respond to the outbreak fast enough with in-country funding for technical assistance for outbreak investigations and immunization response based on availability of M&RI funding from non-Gavi sources.

¹ "Response to measles outbreaks in measles mortality reduction settings" available at http://whqlibdoc.who.int/hq/2009/WHO_IVB_09.03_eng.pdf

Preventive supplementary immunization activities are not supported through the ORF². ORF support will not be provided retroactively for completed immunization activities except under exceptional circumstances.

C. What activities can be supported

1. Outbreak response immunization (all countries)
2. Clinical case management (only for non-Gavi supported countries)
3. Rapid assessments of routine immunization services (all countries, mandatory for Gavi-supported countries)
4. After action reviews (all countries)
5. Root cause analyses (all countries)

1. Outbreak response immunization (all countries)

- Outbreak response immunisation support for bundled vaccine and/or operational costs for outbreak response immunization can be requested via the ORF as:
 - (i) bundled vaccine alone;
 - (ii) operational costs alone up to \$0.65 per child;
 - (iii) bundled vaccine AND operational costs up to \$0.65 per child.
- M&RI will consider on an exceptional basis funding other or additional approaches to outbreak response linked to timely and efficient use of vaccine, within the \$0.65 per child limit, to prevent further measles virus transmission and/or to reduce mortality. These requests would need adequate additional justification.
- M&RI will consider supplementing the \$0.65 per child operational costs on an exceptional basis for countries faced with fragility, emergencies, disasters or refugee situations, based on the Gavi list of fragile countries (as per Gavi's FER policy) and countries or settings within countries facing acute humanitarian emergencies.

2. Clinical case management (only for non-Gavi supported countries)

- Materials such as vitamin A and WHO Measles kits may also be considered within the \$0.65 per child operational costs (for all countries).
- See link to information on the [WHO Measles kits - https://www.who.int/emergencies/emergency-health-kits/measles-kit-2021](https://www.who.int/emergencies/emergency-health-kits/measles-kit-2021)
- For WHO offices, the kits are now part of the WHO catalogue and the order details can be found here - <https://intranet.who.int/tools/wcat/QuickSearch.aspx#>, using "measles kit" in the search field.

3. Rapid, targeted assessments of routine immunization services (all countries, mandatory for Gavi-supported countries)

- Rapid, targeted assessments of routine immunization in outbreak-affected areas must be conducted in all ORF supported outbreaks, as outlined in the WHO Measles outbreak guide, within the \$0.65 per child operational costs.

4. After action reviews (all countries)

- Simple approaches to After Action Reviews may also be considered within the \$0.65 per child operational costs as outlined in the WHO guide for After Action Reviews. See - [file:///C:/Users/rosewella/Downloads/WHO-WHE-CPI-2019.4-eng%20\(1\).pdf](file:///C:/Users/rosewella/Downloads/WHO-WHE-CPI-2019.4-eng%20(1).pdf).

5. Root cause analyses (all countries)

- Root cause analyses may also be considered either from within the \$0.65 per child operational costs in Gavi-eligible countries or from other non-Gavi sources (for all countries).

² Support to conduct preventive measles or measles-rubella SIAs is available to Gavi eligible countries (https://www.gavi.org/sites/default/files/support/Vaccine_FundingGuidelines.pdf)

For Gavi-supported countries, all the activities in sections 1, 3 and 5 above should be included within the operational cost budget.

D. ORF application, implementation and reporting processes

The **key steps of the ORF process** are described below and summarised in Figure 1:

Step 1. Countries signal intent to develop application to the WHO and/or UNICEF country office or via the WHO measles partner platform (<https://partnersplatform.who.int/en/measles/home>). If using the platform, click on “Request outbreak response support from the M&RI outbreak response fund” on the home page and follow the prompts.

- Ministry of Health (MoH) officials are responsible for signalling the outbreak to WHO and UNICEF counterparts (country offices or regional offices as appropriate), for planning a response to the outbreak, and for developing the outbreak response application.
- WHO and UNICEF country office staff are responsible for reviewing and providing feedback on the ORF application and accompanying documents and communicating with M&RI counterparts at regional and global level.
- The WHO and UNICEF Regional Offices (and Inter-country support teams [ISTs]) will review and provide feedback to the country if any revisions are needed, and forward these to the M&RI Outbreak Response Working Group (OBWG) via the WHO HQ and UNICEF HQ once endorsed.
- **Please note that WHO and UNICEF Country office and regional office endorsements are required for submission.** As such, countries are encouraged to work with their WHO and UNICEF counterparts in preparing and submitting applications and supporting documents for ORF to expedite WHO and UNICEF endorsement. Other relevant partners should also be encouraged to participate.

Step 2. Countries submit application to the ORF through the WHO/UNICEF RO

- The ORF application should include the following documents:
 - a) An official letter
 - This is a cover letter of request for ORF that must include a written commitment from the MOH that government will provide the human resources required for planning and implementing the vaccination activity, including sufficient staff working at health facilities and outreach sites in the targeted areas. In situations where there is no acting government, WHO and UNICEF may provide a letter in consultation with the relevant local authorities.
 - b) M&RI outbreak response funding request form (Annex 1) – See example provided.

Step 3. OBWG review and MT decision on ORF requests

- Once the ORF request is submitted by the country through the WHO/UNICEF RO, the request is reviewed by the M&RI Outbreak Response Working Group (OBWG).
- The OBWG will review, analyse and discuss the merits of the proposed interventions and budget and may request additional information or analysis from the country before deciding to fully fund, partially fund, or not fund at all. Countries may need to supplement M&RI ORF with other funding sources.
- Once the ORF application is finalised (i.e. no further clarifications are required), a smaller subgroup of partner agencies (UNICEF, WHO, American Red Cross, United Nations Foundation, US CDC) will then recommend full, partial, or no funding to the M&RI Management Team (MT). Recommendations to the MT by the OBWG subgroup, as well as MT decisions, will be based on consensus among participants to fully fund, partially fund, not fund, or request additional information and clarification from the country. The

secretariat of the OBWG will communicate decisions with regional and country counterparts.

- ORF application review, decision and feedback will be accomplished as soon as possible and no later than four working days following receipt at the OBWG secretariat of the final application (i.e. once no further clarifications are request).

OBWG ORF application review criteria:

1. Does the proposal clearly justify the public health need supported by the epidemiological evidence to the outbreak?¹
2. Are the interventions proposed targeted to the appropriate age-groups and geographical areas based on the epidemiology?
3. Has consideration been given whether or not to revaccinate the same target population within a short interval (e.g., 12 months) in upcoming preventive campaigns?
4. Has the country provided sufficient information on how the ORI activity will be monitored, including rapid convenience monitoring?
5. Is there provision for conducting root cause analysis and using this to link to routine immunisation strengthening investments to prevent future outbreaks?
6. Are there adequate resources for outbreak response provided by the government?

The above evaluation criteria are guiding principles to ensure decisions to accept/reject proposal are based on best available data. Given the fast-moving nature of outbreaks and the need for quick response, not all criteria need to be necessarily met, but acceptance is more likely when the above are considered. Funding for interventions is limited and proposals will be more favourably considered when the overall resources requested from M&RI is catalytic in nature and the interventions proposed are targeted and prevent future outbreaks.

Step 4. Countries implement ORI and RCA

- As per the WHO measles outbreak guide.

Step 5. Countries conduct rapid, targeted assessments of routine immunisation and after action reviews

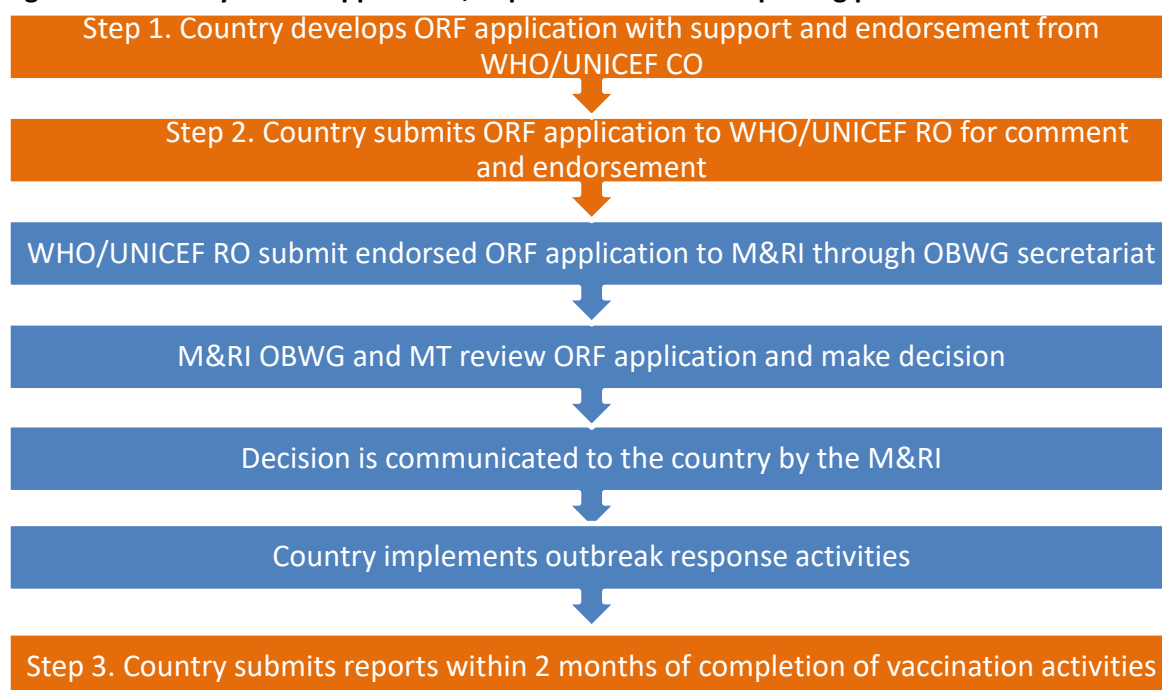
- As per the WHO measles outbreak and WHO after action review guides.

Step 6. Countries submit reports and present the findings to the M&RI OBWG.

- Reports must be submitted within 2 months of completion of vaccination activities (see Annex 2), and must include:
 - a) the outbreak response activities and outcomes;
 - b) expenditures of any awarded funds; and
 - c) the rapid assessment of routine immunization (or root-cause analysis) and recovery plan, including clear linkages to routine immunisation strengthening investments (e.g. HSS), how missed children and missed communities will be enrolled in routine immunisation, and how the outbreaks will inform the planning of differentiated strategies for future campaigns.

M&RI can provide technical assistance with outbreak related investigations, planning, monitoring, coverage surveys and root cause analyses.

Figure 1: Summary of ORF application, implementation and reporting process



F. Monitoring and evaluation

- The M&RI will monitor and evaluate the ORF processes and outcomes on an annual basis and refine the SOPs to maximize effective, efficient and timely deployment of bundled vaccine and funds. Partners and national counterparts also are encouraged to provide feedback to the M&RI regarding ORF processes and decisions.
- In accordance with Immunization Agenda 2030 guidance and the Measles Outbreaks Strategic Response Plan 2021-2023, M&RI will monitor timeliness of outbreak response immunization as well as M&RI response to ORF requests using the following indicators:
 1. Countries submit measles outbreak response applications within 14 days of the start of an outbreak.
 2. M&RI processes measles outbreak response applications and transfers funds within 7 days.
 3. ORI commences within 2 weeks of countries receiving all relevant support (technical, financial or vaccines and devices).
 4. Countries conduct rapid assessment of routine immunization services (or RCA) within 2 months of ORI completion.
 5. Countries complete recovery plans within 2 months of routine immunization services (or RCA).

Annex 1. M&RI Outbreak Response Fund Request Form to Access M&RI Support

The Measles and Rubella Initiative (M&RI) is a partnership of WHO, UNICEF, US CDC, UN Foundation and American Red Cross. The M&RI Outbreak Response Fund's purpose is to support rapid and effective response to measles outbreaks with funding for vaccines, injection equipment and operational costs. This is a formal request to access the M&RI outbreak response fund as outlined in the standard operating procedures.

Please submit a complete request in this format by e-mail to HQ-EPI WHO (MRI-ORF@who.int) through either the WHO or UNICEF country and regional offices

1) GENERAL INFORMATION

- a) Date of request: ____/____/____ (dd/mm/yyyy)
b) Country: _____
c) Name, e-mail and telephone number of contact person at
i) Ministry of Health: _____
ii) WHO: _____
iii) UNICEF: _____
iv) Other partner(s): _____

2) SUMMARY OF OUTBREAK INFORMATION

- a) Date of rash onset of first reported suspected case: ____/____/____ (dd/mm/yyyy)
b) Total number of suspected cases during outbreak: _____ (number)
c) Total number of suspected cases tested serologically: _____ (number)
d) Total number of laboratory-confirmed cases (include IgM equivocal): _____ (number)
e) Date of rash onset of first laboratory-confirmed case: ____/____/____ (dd/mm/yyyy)

3) SUMMARY OF THE RESPONSE PLAN

- a) Size of the target population: _____ (number)
b) Target age group: _____
c) Estimated cost for the requirement of vaccines and injection materials: USD _____
d) Estimated operational costs: USD _____
e) Estimated total cost: USD _____
f) ORF funds to WHO: USD _____
g) ORF funds to UNICEF: USD _____
h) ORF funds to other partners: USD _____
i) Will vaccination be done in one or multiple phases? _____
j) Planned start date of vaccination: ____/____/____ (dd/mm/yyyy)³
k) Planned end date of vaccination: ____/____/____ (dd/mm/yyyy)
l) Does the country request technical assistance to conduct a root cause analysis of the outbreak?
____ Yes ____ No
m) Number of measles kits requested: 1) severe ____ 2) non-severe measles ____

4) DESCRIPTION OF THE OUTBREAK

Briefly describe how the outbreak started and evolved, initial identification of the proximate and underlying (root) causes of the outbreak and reasons for its continuation until the present.

³ If done in phases, the start and end dates of each phase should be mentioned in a separate note.

5) EPIDEMIOLOGY

Tables and bar charts of cases by year of age are the most important “person” data to present to justify the proposed target age for ORI; case fatality ratios may help determine if case management is adequate; vaccination status and sex are important to better understand the proximate and root causes of the outbreak. The report should state clearly if any substantial differences in age distribution, vaccination status, sex or case fatality rates exist in any district and if so, provide the above data by district

Show data from all relevant surveillance systems (including from case-based and weekly or monthly aggregated reporting systems (e.g. IDSR, EWARS etc.)) separately to see cyclical and seasonal patterns at the national level, and in subsequent analyses in affected and non-affected districts to determine the exact location of current outbreaks. For example, if there are 1000 fever and rash cases in a district’s IDSR report, but if guidelines recommend only sending 10 specimens to the laboratory, then the IDSR data may be of greatest interest in an epidemic curve.

Notifications

National

Provide a table with the number of nationally reported suspected cases, by month, over the last 10 years.

Provide a table with the number of nationally reported confirmed cases by month, over the last 10 years.

Provide a table of measles mortality in affected and at-risk districts over the last 12 months (Optional).

Provide a histogram of monthly national data from case-based data with bars stacked by status (i.e. suspected and confirmed), over the last 10 years.

Provide a histogram of weekly suspected measles cases and deaths for the current outbreak, over the last 12 months.

Provide a table of the number of reported cases from case-based data (with final classification status of lab-confirmed, epi-linked, clinically compatible) during the past 10 years, by year and by age.

Provide a stacked bar charts of vaccination status by age (not age group) and sex for cases (lab confirmed, epi-linked and clinically compatible cases) reported in the last 12 months.

Provide annual national notification rates (per million population) of laboratory-confirmed, epi-linked and compatible cases, including annualised rates for the current year over the last 10 years.

Sub-national

Provide separate histograms with stacked bars (suspected and confirmed cases over 10 years) for each sub-national location that is considered to be currently outbreak-affected: – (i.e., district or province, as relevant) with a table below each sub-national histogram showing number tested, number and % positive for measles and rubella by month in a recent period, as well as date last confirmed cases of measles and rubella.

Provide annual sub-national notification rates (per million population) of laboratory-confirmed, epi-linked and compatible cases, including annualised rates for the current year over the last 10 years.

6) IMMUNIZATION

Routine immunization

Latest WUENIC at national level:

- MCV1: [Insert WUENIC estimate]
- MCV2: [Insert WUENIC estimate]

| Outbreak affected status | District name | Admin coverage % (MCV1) | Admin coverage % (MCV2) | Dropout (Penta 1 - MCV1) % |
|--------------------------|---------------|-------------------------|-------------------------|----------------------------|
| Currently affected | | | | |
| | | | | |
| | | | | |
| At risk (e.g. bordering) | | | | |
| | | | | |
| | | | | |

Preventive campaigns (Last 10 years)

Recent national SIAs:

| | | |
|-------------------------------|------------------|--------------------------------|
| [Insert vaccine, Month, Year] | Coverage: __ (%) | Basis: _____ (admin or survey) |
| [Insert vaccine, Month, Year] | Coverage: __ (%) | Basis: _____ (admin or survey) |
| [Insert vaccine, Month, Year] | Coverage: __ (%) | Basis: _____ (admin or survey) |

Outbreak response immunization (Current outbreak)

Describe any immunization activities conducted previously in response to the outbreak, including target number by age group, number vaccinated and impact.

Planned preventive campaigns

Integration – Describe any planned preventive immunization campaigns or activities for other antigens and opportunities for integration.

Duplication – Describe any planned preventive immunization campaigns against measles (e.g. measles catch-up campaign – dates and locations), whether or not the target population overlaps with the ORI and provide justification if this population will be targeted twice.

7) SURVEILLANCE ASSESSMENT

Surveillance quality indicators at national and/or first subnational level should be included in all applications.

8) RISK ASSESSMENT

Make a brief statement of measles risk and the potential for spread of the outbreak that includes, at a minimum, estimates of population immunity nationally and in the affected and surrounding districts or areas, by birth cohort/year of age, relying on past administrative and survey data of

routine and supplementary immunization activities. Highlight the presence/proximity of at-risk populations (IDPs, refugees, migrants etc.).

9) SUMMARY OF RESPONSE STRATEGIES & BUDGET

- Target: _____ [Insert number] children
- Age group(s): _____ - _____ [Insert ages] months
- ORI date (d/m/y): _____ to date (d/m/y): _____ [Insert dates]
- Locations: _____ [Insert number] districts
 - ORI
 - Fixed _____ [Insert number sites]
 - Outreach & Mobile _____ [Insert number sites]
- Cost (\$USD): _____ [Insert number]
- Vaccines and materials (\$USD): _____ [Insert number]
- Operations (\$USD): _____ [Insert number]

10) PLAN OF ACTION AND BUDGET

As attachments, please provide: 1) a plan of action and 2) line-item budget with unit costs.

1. The plan of action should describe the planned outbreak response activities, including at a minimum the following sub-headings:
 - dates of the outbreak response;
 - vaccine and logistics needs and transport;
 - human resource requirement;;
 - training, social mobilization and communication activities and dates;
 - supervision and monitoring (including rapid convenience monitoring or rapid coverage assessments);
 - AEFI management and waste disposal;
 - how COVID related infection prevention and control measures will be addressed and budgeted;
 - post campaign evaluation of the outbreak response, if planned;⁴ and
 - plans for a root cause analysis of the outbreak, if not already conducted, that address potential reasons for immunity gaps, deficiencies in surveillance performance (including in laboratory capacities), and delays on and/or ineffective outbreak preparedness and response, based on recommendations in the WHO measles outbreak guide.
2. The line item budget with unit costs should cover all of the above activities. A template is available for countries to use.

⁴ Countries are not encouraged to use the limited operational support funds to conduct a post-campaign coverage survey (PCCS); rather, these funds should be used for rapid convenience monitoring/rapid coverage assessments that would potentially be followed by mopping up activities. A PCCS is indicated for very large-scale ORI activities.

Sample completed application

Annex 1. M&RI Outbreak Response Fund Request Form to Access M&RI Support

The Measles and Rubella Initiative (M&RI) is a partnership of WHO, UNICEF, US CDC, UN Foundation and American Red Cross. The M&RI Outbreak Response Fund's purpose is to support rapid and effective response to measles outbreaks with funding for vaccines, injection equipment and operational costs. This is a formal request to access the M&RI outbreak response fund as outlined in the standard operating procedures.

Please submit a complete request in this format by e-mail to HQ-EPI WHO (MRI-ORF@who.int) through either the WHO or UNICEF country and regional offices

How to use the below template: three font colors are used in this template: 1) Blue font indicates instructions for developing the plan, 2) red font provides examples of the content and expected length of text, and 3) black font guides what should appear as sections and data collection points crucial to the SRP approval.

1) GENERAL INFORMATION

- a) Date of request: 15 July 2021
- b) Country: Switzerland
- c) Name, e-mail and telephone number of contact person at
 - i) Ministry of Health: Maria Johns, MJ@MOH.com, +6666666666
 - ii) WHO: Hubert Henry, henryh@who.who, +5555555555
 - iii) UNICEF: David Grace, graced@unicef.unicef, +4444444444

2) SUMMARY OF OUTBREAK INFORMATION

- a) Date of rash onset of first reported suspected case: 15/06/2021
- b) Total number of suspected cases during outbreak: 100
- c) Total number of suspected cases tested serologically: 10
- d) Total number of laboratory-confirmed cases (include IgM equivocal): 8
- e) Date of rash onset of first laboratory-confirmed case: 20/06/2021

3) SUMMARY OF RESPONSE PLAN

- a) Size of the target population: 1,000,000 across 6 districts
- b) Target age group: 6 months to 7 years
- c) Estimated cost for the requirement of vaccines and injection materials: USD 610,000
- d) Estimated operational costs: USD 650,000
- e) Estimated total cost: USD 1,460,000
- f) ORF funds to WHO: USD 650,000
- g) ORF funds to UNICEF: USD 810,000
- h) ORF funds to other partners: USD 0
- i) Will vaccination be done in one or multiple phases? One phase
- j) Planned start date of vaccination: 20 August 2021
- k) Planned end date of vaccination: 27 August 2021
- l) Does the country request technical assistance to conduct a root cause analysis of the outbreak?
Yes – the country requests 1 expert in RCA to support planning and implementation (remote support)
- m) Number of measles kits requested: 1) severe (10 kits) 2) non-severe measles (20 kits)

4) DESCRIPTION OF THE OUTBREAK

Clinicians in Province X reported an outbreak of suspected measles to provincial health authorities on 12 January 2020. Investigations by the provincial rapid response team identified 400 cases of suspected measles in 22 health facilities of 4 Provinces (W, X, Y, Z) since 1 October 2019. Specimens were collected from 40 suspected measles cases, of which 25 were confirmed via serology (IgM) in the national measles reference laboratory. All confirmed cases were in children aged less than 7 years – all were unvaccinated (0 doses of measles containing vaccine). The outbreak continues to spread due to the low vaccination coverage in the affected age cohort.

5) EPIDEMIOLOGY

National

Suspected cases reported through IDSR, by month, over the last 10 years, country X

| Year | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 2012 | 22 | 21 | 1 | 25 | 22 | 42 | 56 | 26 | 1 | 26 | 2 | 42 |
| 2013 | 1 | 2 | 1 | 2 | 2 | 2 | 2 | 8 | 1 | 22 | 42 | 22 |
| 2014 | 22 | 21 | 22 | 25 | 22 | 7 | 56 | 78 | 1 | 16 | 22 | 2 |
| 2015 | 22 | 21 | 2 | 25 | 25 | 6 | 1 | 25 | 22 | 76 | 92 | 1 |
| 2016 | 12 | 26 | 24 | 26 | 1 | 5 | 1 | 25 | 25 | 22 | 21 | 1 |
| 2017 | 23 | 8 | 2 | 22 | 24 | 22 | 1 | 26 | 1 | 12 | 26 | 6 |
| 2018 | 2 | 78 | 42 | 16 | 38 | 2 | 1 | 22 | 21 | 1 | 8 | 1 |
| 2019 | 23 | 57 | 1 | 76 | 76 | 24 | 1 | 12 | 26 | 1 | 78 | 7 |
| 2020 | 22 | 4 | 2 | 47 | 22 | 2 | 1 | 23 | 8 | 1 | 57 | 1 |
| 2021 | 11 | 8 | 56 | 42 | 25 | 42 | 124 | 222 | 333 | | | |

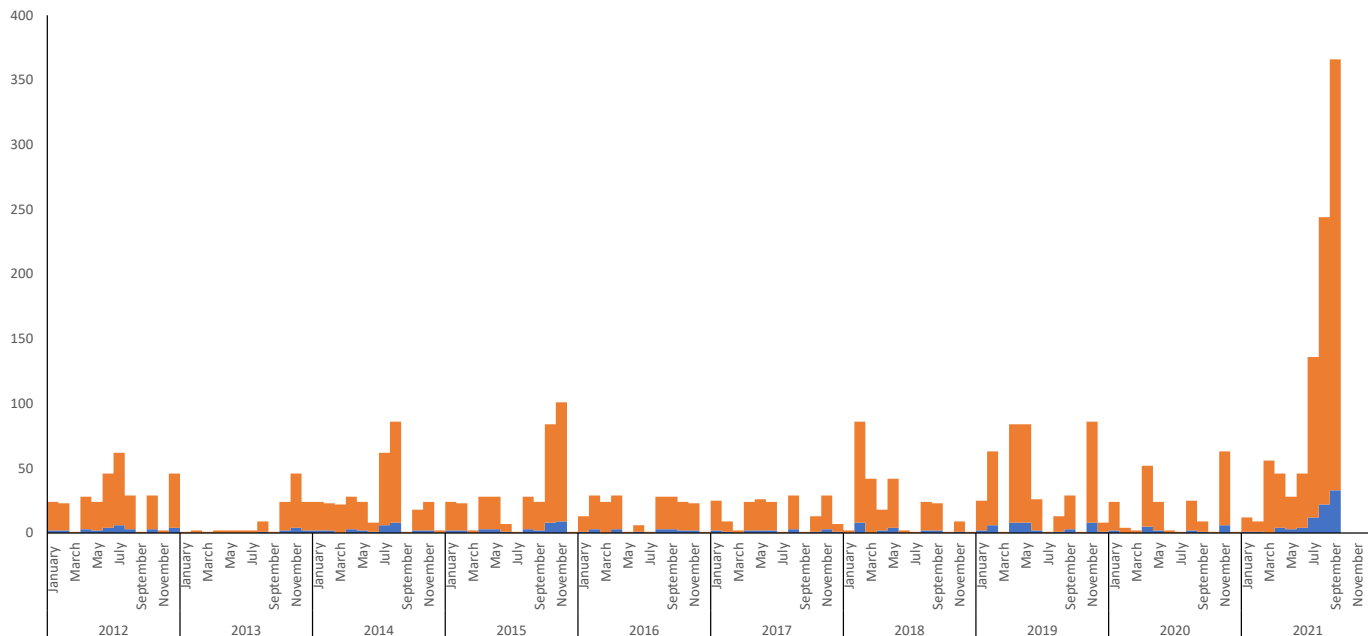
Confirmed cases reported through case-based surveillance, by month, over the last 10 years, country X

| Year | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 2012 | 2 | 2 | 0 | 3 | 2 | 4 | 6 | 3 | 0 | 3 | 0 | 4 |
| 2013 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 4 | 2 |
| 2014 | 2 | 2 | 0 | 3 | 2 | 1 | 6 | 8 | 0 | 2 | 2 | 0 |
| 2015 | 2 | 2 | 0 | 3 | 3 | 1 | 0 | 3 | 2 | 8 | 9 | 0 |
| 2016 | 1 | 3 | 0 | 3 | 0 | 1 | 0 | 3 | 3 | 2 | 2 | 0 |
| 2017 | 2 | 1 | 0 | 2 | 2 | 2 | 0 | 3 | 0 | 1 | 3 | 1 |
| 2018 | 0 | 8 | 0 | 2 | 4 | 0 | 0 | 2 | 2 | 0 | 1 | 0 |
| 2019 | 2 | 6 | 0 | 8 | 8 | 2 | 0 | 1 | 3 | 0 | 8 | 1 |
| 2020 | 2 | 0 | 0 | 5 | 2 | 0 | 0 | 2 | 1 | 0 | 6 | 0 |
| 2021 | 1 | 1 | 0 | 4 | 3 | 4 | 12 | 22 | 33 | | | |

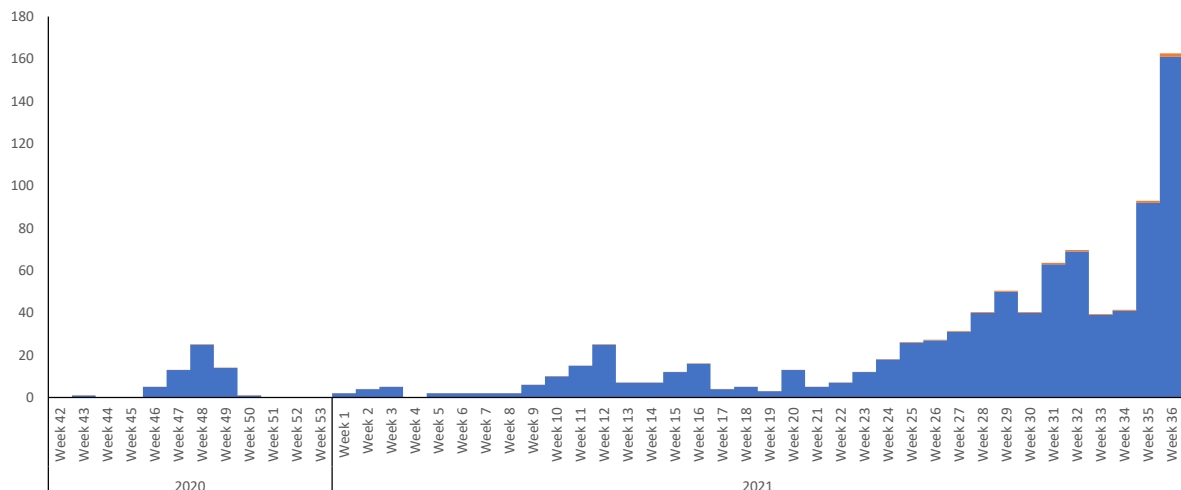
Measles mortality in affected districts, last 12 months

| | Suspected measles | Confirmed measles | Deaths | CFR |
|------------|-------------------|-------------------|--------|-----|
| District x | 376 | 41 | 4 | 1.1 |
| District y | 175 | 27 | 2 | 1.1 |
| District z | 306 | 12 | 4 | 1.3 |
| District a | 4 | 0 | 0 | 0 |
| District b | 1 | 0 | 0 | 0 |
| District c | 1 | 0 | 0 | 0 |

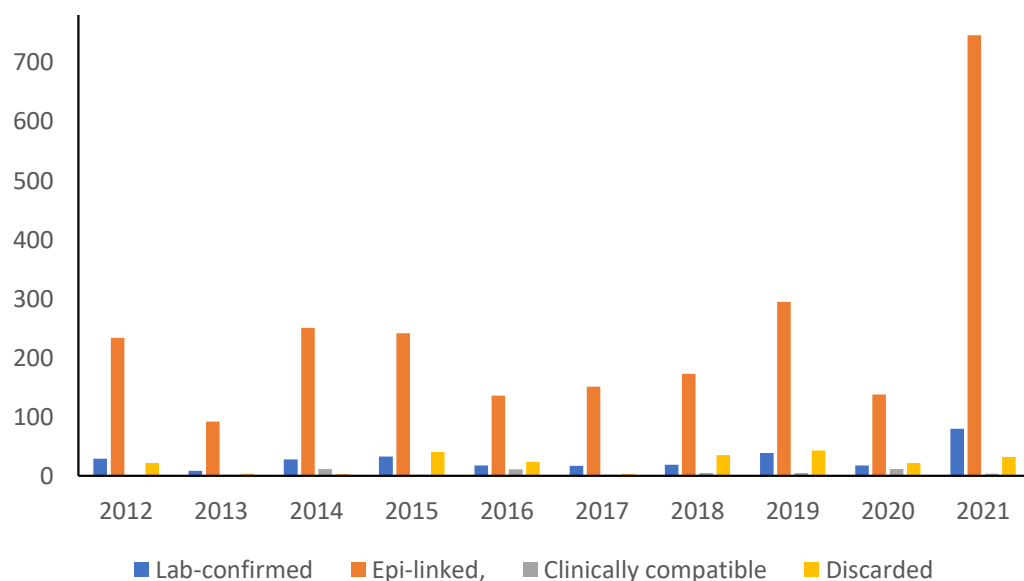
Epidemic curve of suspected and confirmed measles cases from case-based data, last 10 years, country X



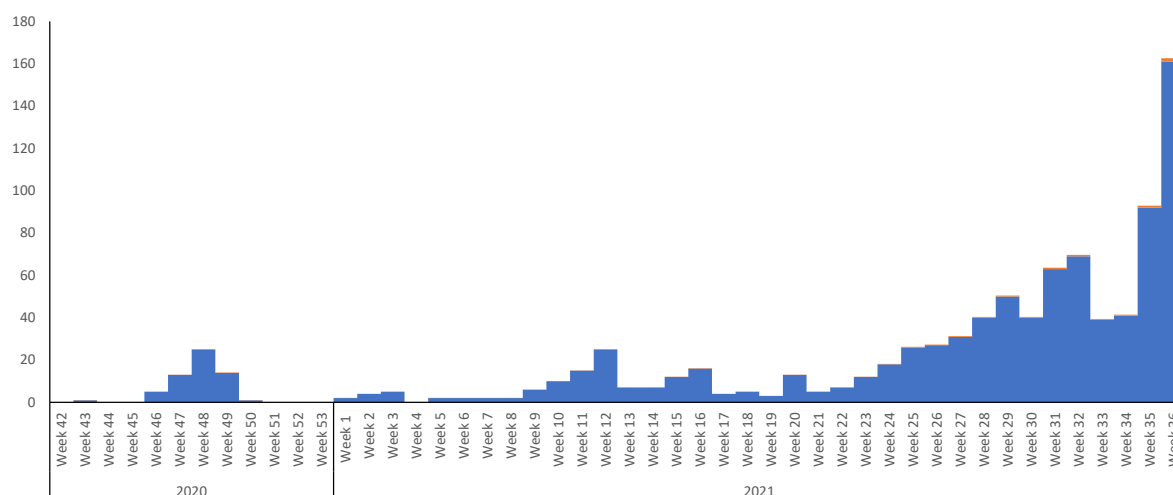
Epidemic curve of weekly suspected measles cases and deaths, over the last 12 months.



Measles cases by classification status, last 10 years, country x



Epidemic curve of weekly suspected measles cases and deaths, last 12 month



Measles cases (with final classification status of lab-confirmed, epi-linked, clinically compatible) reported through case-based surveillance during the past 10 years, by year and by age.

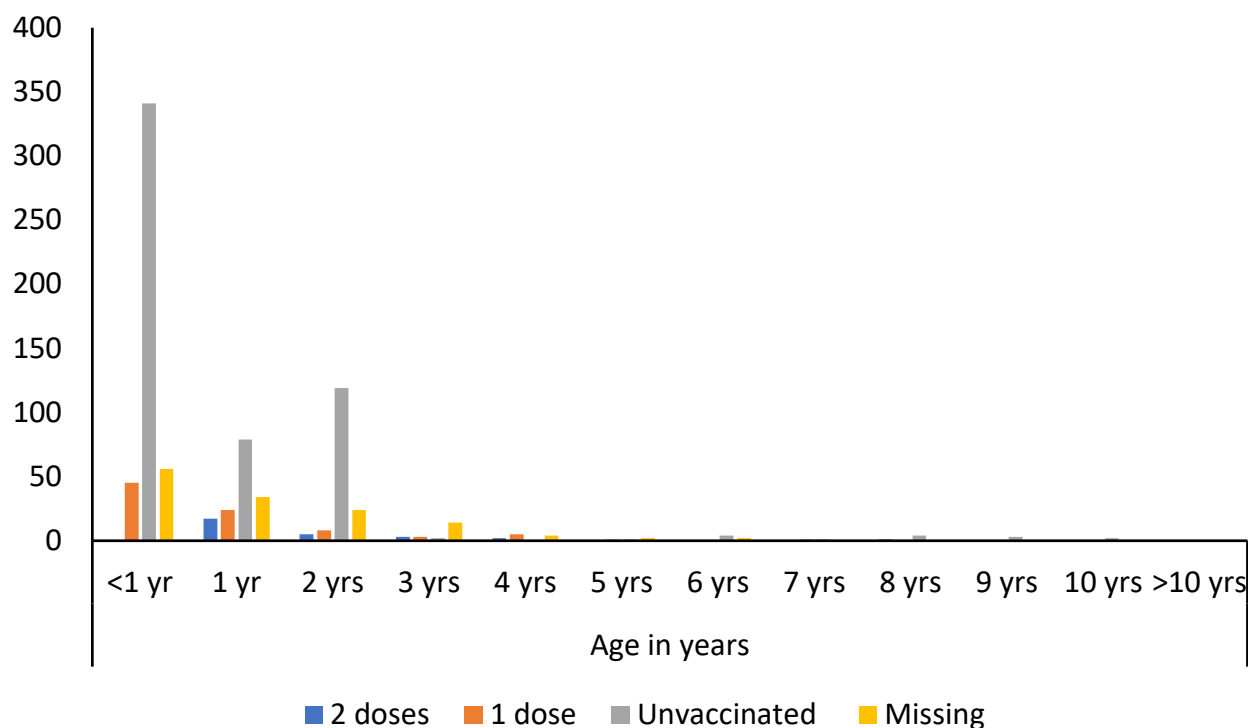
| Year | Age in years | | | | | | | | | | | |
|------|--------------|-----|-----|----|----|----|----|---|---|----|----|-----|
| | <1 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | >10 |
| 2012 | 55 | 66 | 22 | 42 | 22 | 11 | 5 | 3 | 6 | 11 | 3 | 18 |
| 2013 | 33 | 21 | 15 | 22 | 8 | 1 | 1 | 0 | 1 | 1 | 0 | 0 |
| 2014 | 54 | 105 | 24 | 21 | 22 | 15 | 3 | 6 | 7 | 4 | 2 | 28 |
| 2015 | 66 | 22 | 24 | 53 | 25 | 33 | 11 | 3 | 6 | 12 | 5 | 17 |
| 2016 | 64 | 21 | 14 | 13 | 16 | 2 | 4 | 4 | 6 | 2 | 2 | 17 |
| 2017 | 35 | 25 | 33 | 25 | 21 | 3 | 5 | 5 | 6 | 4 | 0 | 8 |
| 2018 | 65 | 24 | 23 | 15 | 21 | 24 | 13 | 1 | 3 | 3 | 3 | 2 |
| 2019 | 105 | 56 | 22 | 54 | 15 | 21 | 17 | 6 | 7 | 5 | 9 | 22 |
| 2020 | 85 | 21 | 11 | 5 | 6 | 4 | 2 | 5 | 6 | 2 | 6 | 15 |
| 2021 | 442 | 154 | 156 | 22 | 11 | 4 | 6 | 2 | 5 | 3 | 2 | 24 |

Measles notification rate per million population (laboratory-confirmed, epi-linked and compatible cases), including annualised rates for the current year over the last 10 years.

| | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021* |
|---------------------------------------|------|------|------|------|------|------|------|------|------|-------|
| Notification rate /million population | 22 | 8.4 | 23.3 | 21.8 | 12.7 | 12.8 | 14.6 | 24.6 | 11.9 | 92.3 |

*annualized

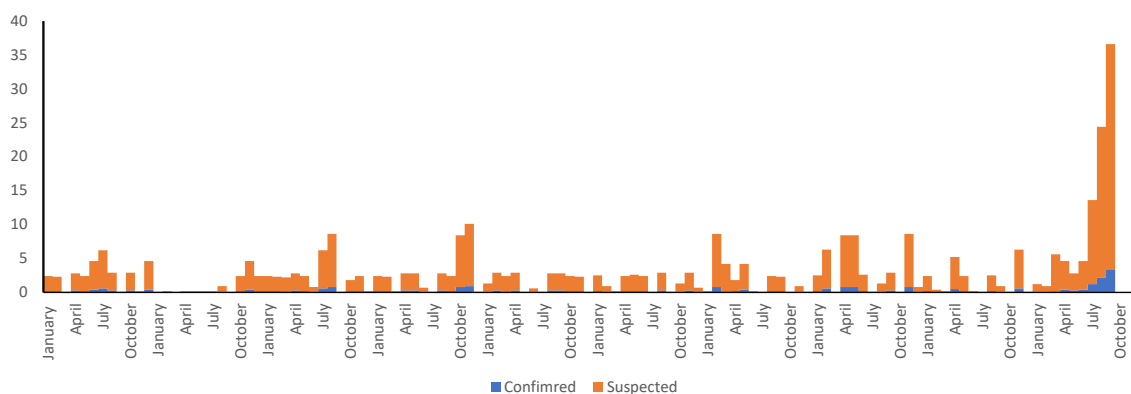
Measles cases (lab confirmed, epi-linked and clinically compatible cases) reported in the last 12 months, by vaccination status and age



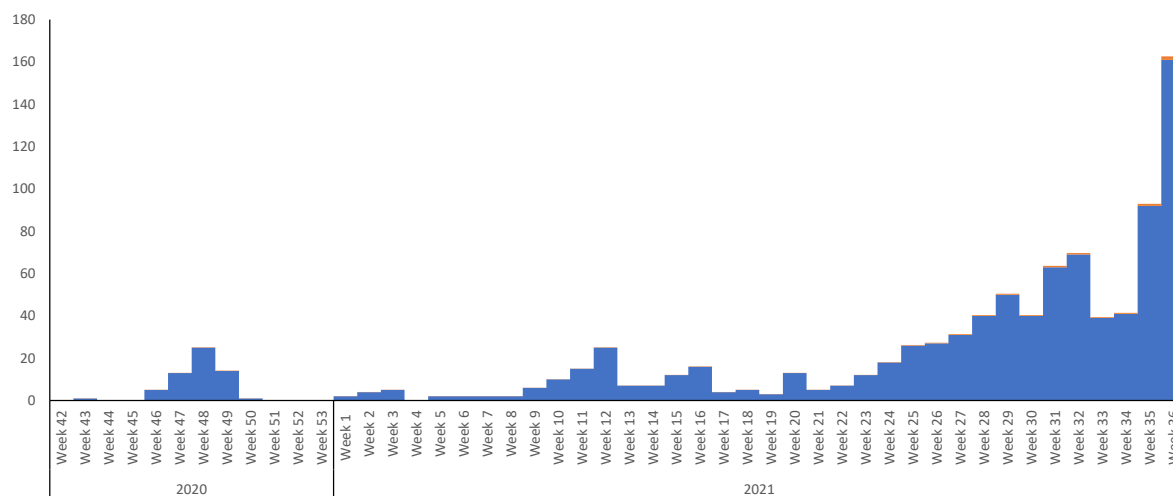
Sub-national

Outbreak district x.

Epidemic curve of suspected and confirmed measles cases, last 10 years, country X



Epidemic curve of weekly suspected measles cases and deaths, last 12 month



Measles and rubella laboratory test results, last 12 months

| | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
|-------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Tested | 2 | 4 | 3 | 3 | 2 | 4 | 3 | 2 | 2 | 3 | 4 | 3 |
| Measles +ve | n | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 3 |
| | % | 0 | 25 | 0 | 0 | 0 | 0 | 0 | 0 | 33 | 50 | 100 |
| Rubella +ve | n | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 |
| | % | 50 | 25 | 0 | 0 | 0 | 33 | 0 | 0 | 33 | 0 | 0 |

Date of last confirmed measles case: 14 September 2021

Date of last confirmed rubella case: 14 July 2021

Measles notification rate per million population (laboratory-confirmed, epi-linked and compatible cases), including annualised rates for the current year over the last 10 years.

| | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021* |
|---------------------------------------|-------|------|-------|-------|------|------|------|-------|------|-------|
| Notification rate /million population | 114.4 | 42.8 | 117.6 | 127.2 | 75.6 | 69.2 | 92.8 | 152.8 | 76 | 345.2 |

*annualized

Repeat for each district for which funding is requested

6) IMMUNIZATION

Routine immunization

Latest WUENIC at national level:

- MCV1: 74%
- MCV2: 35%

| | District name | Admin coverage % (MCV1) | Admin coverage % (MCV2) | Dropout (Penta 1 - MCV1) % |
|--------------------------|---------------|-------------------------|-------------------------|----------------------------|
| Currently affected | X | 67 | 20 | 25 |
| | Y | 76 | 45 | 16 |
| | Z | 70 | 66 | 15 |
| At risk (e.g. bordering) | A | 45 | 66 | 35 |
| | B | 80 | 65 | 21 |
| | C | 82 | 56 | 18 |

Preventive campaigns (Last 10 years)

Dates of recent national SIAs

| | |
|-------------------|--------------------------------|
| M, November 2012 | Coverage: 84% (PCCS) |
| MR, February 2016 | Coverage: 104 (Administrative) |
| MR, December 2019 | Coverage: 92% (PCCS) |

Outbreak response immunization (Current outbreak)

Between 15 October and 30 November 2020, Provincial health authorities conducted non-selective vaccination of 53, 543 children aged <5 years through fixed post and outreach services.

Planned preventive campaigns

Integration – There are no upcoming campaigns for us to integrate measles ORI.

Duplication –The same target population will be targeted for measles-rubella (MR) vaccination in 6 month's time when MR vaccine is introduced (but risk of spread is estimated too high to wait for SIA?).

7) SURVEILLANCE ASSESSMENT

| National surveillance performance indicators | Target | 2021 |
|--|------------------------|------|
| Percentage of surveillance units reporting to the next highest level on time, even in the absence of cases | ≥ 80% | 82% |
| Annual reporting rate of discarded measles and rubella cases | ≥ 2/100 000 population | 2.3 |

| | | |
|---|-------|------|
| Percentage of suspected measles and rubella cases that have had: 1) an adequate investigation; and 2) initiated within 48 hours of notification | ≥ 80% | 85% |
| Percentage of suspected cases with adequate specimens for detecting acute measles and rubella infection collected and tested, excluding epidemiologically linked cases from the denominator | ≥ 80% | 90 |
| Percentage of laboratory-confirmed outbreaks with samples adequate for detecting measles virus collected and tested in an accredited laboratory | ≥ 80% | 100% |
| Percentage of specimens received at the laboratory within 5 days of collection | ≥ 80% | 92% |
| Percentage of IgM results reported to public health authorities by the laboratory within 4 days of specimen receipt | ≥ 80% | 76% |
| Percentage of confirmed cases for which source of transmission is classified as endemic, imported or importation related | ≥ 80% | 83% |

8) RISK ASSESSMENT

Based on the WHO measles outbreak guide, we triangulated routine immunization and SIA coverage data, Penta 1 -MCV1 drop-out rates, as well as contextual factors like migration into and out of the affected and surrounding areas. Risk was highest in those aged 0-7 years.

The risk of further spread of this measles outbreak is high due to:

- the unusually high number of laboratory-confirmed cases reported in affected districts and high attack rates (range: 286 per 1,000,000 to 345.2 per 1,000,000)
- low population immunity in affected areas (MCV 1 range 67-76%, MCV2 20-66%) and in at risk areas (MCV 1 range 45-82%, MCV2 56-66%).
- the last national SIA achieved high coverage (PCCS 92%), but was in December 2019
- relatively high drop-out rates in affected areas (15-25%) and at-risk areas (15-35%),
- important flux of population between affected and at-risk areas, and
- initial control measures implemented in affected areas have been unable to stop measles transmission

We did not use the WHO measles programmatic risk assessment tool, due to the small number of areas.

9) SUMMARY OF RESPONSE STRATEGIES AND BUDGET

- Target: 1,875,000 children
- Age group(s): 6 months to 7 years
- ORI dates: 5-12 November 2021
- Locations: 6 districts
 - ORI
 - Fixed 40 sites
 - Outreach & Mobile 123 sites

Case management & Infection prevention and control

Case management will be an important part of the outbreak response, with audits conducted to ensure case management standard operating procedures and tools are available in clinical sites along with key medical supplies. Vaccination teams will adhere to WHO recommended infection, prevention and control measures, including in the structure and organization of the teams, the approaches to be used and personal protective equipment that will be provided. Adherence to COVID precautions will be monitored throughout the campaign. The budget outlines key aspects of this additional cost and funding sources, using national reference data on costings.

Monitoring & evaluation

Rapid convenience monitoring will be used to identify areas where ORI implementation was sub-optimal to conduct mop-up activities. A post-campaign coverage surveillance will be conducted to estimate the vaccination coverage achieved during the ORI. The country will coordinate with partners to conduct a simple after-action review to understand success and challenges of the response and how measles outbreak preparedness systems can be improved.

System strengthening

The country will use global best practices to investigate the underlying causes of low vaccination rates within two months of the ORI. The findings will be consolidated with information on the zero-dose communities identified through the ORI to guide recovery planning efforts. A recovery plan will be developed within two months of the investigation into the underlying causes of the outbreak.

10) PLAN OF ACTION AND BUDGET

Structured according to country preferences.

Annex 2. Measles and Rubella Initiative Outbreak Response Fund Report Form

Please submit a complete report in this format by e-mail to HQ-EPI WHO (MRI-ORF@who.int) through either the WHO or UNICEF country and regional offices⁵ within 2 months of completion of the vaccination activity.

The Measles and Rubella Initiative (M&RI) is a partnership of WHO, UNICEF, US CDC, UN Foundation and American Red Cross. The M&RI Outbreak Response Fund's purpose is to support rapid and effective response to measles outbreaks with funding for vaccines, injection equipment and operational costs. This form is for the report on the use of M&RI outbreak response funds as outlined in the standard operating procedure.

1) General information

- a) Country: _____ (name of country)
- b) Date of request: ____/____/____ (dd/mm/yyyy)
- c) Date of receipt of funds from M&RI: ____/____/____ (dd/mm/yyyy)
- d) Date of outbreak response: From ____/____/____ (dd/mm/yyyy)
- e) To ____/____/____ (dd/mm/yyyy)
- f) Reporting agency: Ministry of Health / WHO CO / UNICEF CO (circle whichever applies)
- g) Name, e-mail and telephone number of contact person at reporting agency:

2) Outbreak report

- a) The number of people targeted and the number and percentage vaccinated, by age group (e.g., 6-11m, 1-4y, 5-9y, 10-14y, 15-19y, etc.), by district and province (or village, if a small response).
- b) The number of persons targeted, and the number and percentage reached by additional interventions (e.g., vitamin A).
- c) RCM results.
- d) Post campaign coverage survey results, if conducted.
- e) Impact of the response with respect to cases and deaths over time (e.g., an updated epidemic curve stacked by classification status and indicating the dates of outbreak response).

3) Statement of expenditures

Include a detailed breakdown of the expenses for each activity against the budgeted amount and funding source.

4) Root cause analysis and recovery plans

Findings from the root cause analysis and resulting budgeted plans – the analysis and budgeted plans should specifically address immunity gaps, surveillance performance, and outbreak preparedness and response. Countries must include how findings from these analyses will be used to leverage routine immunisation strengthening investments (e.g. HSS), how missed children and missed communities will be enrolled in routine immunisation, and how the outbreaks will inform the planning of differentiated strategies for future campaigns.
