**Measles and Rubella Risk Assessment Final Report — {#Value ref\_country\_name#}**

**Measles** **and Rubella Risk Assessment Profile — {#Value ref\_country\_name#}**

**{#Value rep\_label\_date\_completed#}**

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# Background:

The Pan American Health Organization (PAHO) Measles and Rubella Programmatic Risk Assessment tool identifies areas not meeting measles and rubella programmatic targets for the implementation of the corrective measures. Therefore, the results from this tool will guide and strengthen measles and rubella sustainability activities and reduce the risk of virus spread following an importation. This tool assesses programmatic risk as the sum of indicator scores in five categories: 1) population immunity; 2) surveillance quality; 3) program performance; 4) threat assessment; and 5) rapid response.

Each {#Value rep\_label\_admin2\_name#} in a country is assigned to a programmatic risk category of low, medium, high, or very high risk based on the overall risk score. Scoring for each indicator was developed based on expert consensus. The range of possible scores goes from 0 to 100 risk points following the table below:

**Table 1: Risk Scoring Assigned at the Municipality Level**

|  |  |
| --- | --- |
| **Risk categories** | **Total risk points** |
| Low risk | Less than 26 points |
| Medium risk | Between 26 and 50 points |
| High risk  | Between 51-75 points |
| Very high risk  | Between 76-100 points  |

**Risk categories**

* Population immunity: Assesses measles susceptibility using administrative vaccination coverage data for the first and second doses of the measles-mumps-rubella containing vaccine (MMR1 and MMR2 respectively) and coverage achieved during follow-up campaigns. This indicator also includes the proportion of suspected measles and rubella cases with unknown vaccination status or who were not vaccinated. (Total possible points = {#Value ref\_Max\_RP\_PI#})
* Surveillance quality: Evaluates the ability of a {#Value rep\_label\_admin2\_name#} to detect and confirm cases rapidly and accurately. These indicators include the annual measles and rubella suspected reporting rate by 100,000 population; the proportion of suspected measles and rubella cases with adequate investigation (investigation within 48 hours of notification and inclusion of eight of 11 core variables); the proportion of cases with adequate specimen collection in <30 days of rash onset and the proportion of blood specimens received in laboratory in <5 days. (Total possible points = {#Value ref\_Max\_RP\_SQ#})
* Program performance: Assesses specific aspects of routine immunization services, including indicators for trends in MMR1 and MMR2 coverage, dropout rates from MMR1 to MMR2 and from the first dose of pentavalent vaccine (diphtheria, tetanus and pertussis, vaccine ([DTP], Hepatitis B and *Haemophilus* influenzae to MMR1 based on administrative vaccination coverage data. (Total possible points = {#Value ref\_Max\_RP\_PDP#})
* Threat assessment: Accounts for factors that might influence the risk for measles and rubella virus exposure and transmission in the population. The indicators include reported measles cases among specific age groups, population density and presence of vulnerable groups. (Total possible points = {#Value ref\_Max\_RP\_TA#})
* Rapid Response: Accounts for the presence of a rapid response to imported measles and rubella cases. The indicators are measured at the subnational level and include the presence of a trained team for rapid response and the proportion of hospitals trained to do triage and isolation of highly suspicious measles and rubella cases. (Total possible points = {#Value ref\_Max\_RP\_RR#})

The tool can be used periodically by national immunization program managers, surveillance, and laboratory areas to monitor implementation of measles and rubella sustainability strategies within a country. The tool requires readily available and routinely collected data from the immunization and surveillance programs. Results are shown in table and map formats, with {#Value rep\_label\_admin2\_name\_plural#} color-coded by risk category. In addition, {#Value rep\_label\_admin2\_name#} risk scores can be displayed by each indicator category, highlighting the programmatic weaknesses that are driving the overall risk score.

## Section 1: Overall Measles/Rubella Risk Profile

Of the {#Value ref\_num\_admin2#} {#Value rep\_label\_admin2\_name\_plural#} in {#Value ref\_country\_name#}, {#Value rep\_label\_num\_admin2\_VHR#} ({#Value TEXT(rep\_label\_pct\_admin2\_VHR,"0.0%")#}) were categorized as very high risk, {#Value rep\_label\_num\_admin2\_HR#} ({#Value TEXT(rep\_label\_pct\_admin2\_HR,"0.0%")#}) were categorized as high risk, {#Value rep\_label\_num\_admin2\_MR#} ({#Value TEXT(rep\_label\_pct\_admin2\_MR,"0.0%")#}) were categorized as medium risk, and {#Value rep\_label\_num\_admin2\_LR#} ({#Value TEXT(rep\_label\_pct\_admin2\_LR,"0.0%")#}) were categorized as low risk (Table 1 and Figure 1).

**Table 1a: Risk Profile – Number of {#Value rep\_label\_admin2\_name\_plural#} by {#Value rep\_label\_admin1\_name#}**

{#Table table\_report\_risk\_profile\_country#}

**Figure 1a: Measles/Rubella Risk Assessment, {#Value ref\_country\_name#}, {#Value ref\_assessment\_years#}**

{#Shape shp\_Map\_OVERALL\_RISK#}

{#Shape shp\_Legend\_OVERALL\_RISK#}

**Table 1b: Risk Scores for Very High Risk {#Value rep\_label\_admin2\_name\_plural#}**

{#Table table\_report\_VHR#}

**Figure 1b: Map of Risk Scores for Very High Risk {#Value rep\_label\_admin2\_name\_plural#}**

{#Shape shp\_Map\_VHR#}

{#Shape shp\_Legend\_VHR#}

**Figure 1c: Map of Risk Scores for High Risk {#Value rep\_label\_admin2\_name\_plural#}**

{#Shape shp\_Map\_HR#}

{#Shape shp\_Legend\_HR#}

## Section 2: Population Immunity

{#Table table\_report\_population\_immunity\_country#}

 **Figure 2a: Risk Assessment for Immunity Profile**

{#Shape shp\_Map\_PI#}

{#Shape shp\_Legend\_PI#}

**Figure 2b: Coverage of Measles and Rubella Follow-up Campaign**

{#Shape shp\_Map\_FOLLOW\_UP\_COVERAGE#}

{#Shape shp\_Legend\_FOLLOW\_UP\_COVERAGE#}

**Figure 2c: MMR1 Coverage for {#Value ref\_first\_data\_year#}**

{#Shape shp\_Map\_MMR1\_YEAR\_1#}

{#Shape shp\_Legend\_MMR1\_YEAR\_1#}

**Figure 2d: MMR1 Coverage for {#Value ref\_first\_data\_year+1#}**

{#Shape shp\_Map\_MMR1\_YEAR\_2#}

{#Shape shp\_Legend\_MMR1\_YEAR\_2#}

**Figure 2e: MMR1 Coverage for {#Value ref\_first\_data\_year+2#}**

{#Shape shp\_Map\_MMR1\_YEAR\_3#}

{#Shape shp\_Legend\_MMR1\_YEAR\_3#}

**Figure 2f: MMR1 Coverage for {#Value ref\_first\_data\_year+3#}**

{#Shape shp\_Map\_MMR1\_YEAR\_4#}

{#Shape shp\_Legend\_MMR1\_YEAR\_4#}

**Figure 2g: MMR1 Coverage for {#Value ref\_first\_data\_year+4#}**

{#Shape shp\_Map\_MMR1\_YEAR\_5#}

{#Shape shp\_Legend\_MMR1\_YEAR\_5#}

**Figure 2h: MMR2 Coverage for {#Value ref\_first\_data\_year#}**

{#Shape shp\_Map\_MMR2\_YEAR\_1#}

{#Shape shp\_Legend\_MMR2\_YEAR\_1#}

**Figure 2i: MMR2 Coverage for {#Value ref\_first\_data\_year+1#}**

{#Shape shp\_Map\_MMR2\_YEAR\_2#}

{#Shape shp\_Legend\_MMR2\_YEAR\_2#}

**Figure 2j: MMR2 Coverage for {#Value ref\_first\_data\_year+2#}**

{#Shape shp\_Map\_MMR2\_YEAR\_3#}

{#Shape shp\_Legend\_MMR2\_YEAR\_3#}

**Figure 2k: MMR2 Coverage for {#Value ref\_first\_data\_year+3#}**

{#Shape shp\_Map\_MMR2\_YEAR\_4#}

{#Shape shp\_Legend\_MMR2\_YEAR\_4#}

**Figure 2l: MMR2 Coverage for {#Value ref\_first\_data\_year+4#}**

{#Shape shp\_Map\_MMR2\_YEAR\_5#}

{#Shape shp\_Legend\_MMR2\_YEAR\_5#}

## Section 3: Surveillance Quality

{#Table table\_report\_surveillance\_quality\_country#}

 **Figure 3a: Risk Assessment for Surveillance Quality**

{#Shape shp\_Map\_SQ#}

{#Shape shp\_Legend\_SQ#}

**Figure 3b: Annual Rate of Suspected Measles and Rubella Cases per 100,000 population[[1]](#footnote-1)**

{#Shape shp\_Map\_SMARCR#}

{#Shape shp\_Legend\_SMARCR#}

**Figure 3c: Percentage of Suspected Cases with Adequate Investigation**

{#Shape shp\_Map\_PCT\_CASES\_ADEQ\_INVEST#}

{#Shape shp\_Legend\_PCT\_CASES\_ADEQ\_INVEST#}

**Figure 3d: Percentage of Cases with Adequate Specimen Collection**

{#Shape shp\_Map\_SQ\_ADQ\_COL#}

{#Shape shp\_Legend\_SQ\_ADQ\_COL#}

**Figure 3e: Percentage of Blood Specimens Sent to the Laboratory in <= 5 Days**

{#Shape shp\_Map\_SQ\_BLOOD\_REC\_LAB#}

{#Shape shp\_Legend\_SQ\_BLOOD\_REC\_LAB#}

## Section 4: Program Delivery Performance

{#Table table\_report\_program\_delivery\_performance\_country#}

 **Figure 4a: Risk Assessment for Program Delivery Performance**

{#Shape shp\_Map\_PDP#}

{#Shape shp\_Legend\_PDP#}

**Figure 4b: MMR1 Trend**

{#Shape shp\_Map\_PP\_MMR1\_TREND#}

{#Shape shp\_Legend\_PP\_MMR1\_TREND#}

**Figure 4c: MMR2 Trend**

{#Shape shp\_Map\_PP\_MMR2\_TREND#}

{#Shape shp\_Legend\_PP\_MMR2\_TREND #}

**Figure 4d: Drop-out Rate between MMR1- MMR2**

{#Shape shp\_Map\_DROPOUT\_MMR1\_MMR2#}

{#Shape shp\_Legend\_DROPOUT\_MMR1\_MMR2#}

**Figure 4e: Drop-out Rate between Penta1- MMR1**

{#Shape shp\_Map\_DROPOUT\_DTP1\_MMR1#}

{#Shape shp\_Legend\_DROPOUT\_DTP1\_MMR1#}

## Section 5: Threat Assessment

{#Table table\_threat\_assessment\_country#}

 **Figure 5a: Risk Assessment for Threat Assessment**

{#Shape shp\_Map\_TA#}

{#Shape shp\_Legend\_TA#}

**Figure 5b: Confirmed Measles and / or Rubella Cases in the Past Year**

{#Shape shp\_Map\_MEASLES\_CASES#}

{#Shape shp\_Legend\_MEASLES\_CASES#}

**Figure 5c: Population Density**

{#Shape shp\_Map\_TA\_POP\_DENSITY#}

{#Shape shp\_Legend\_TA\_POP\_DENSITY#}

**Figure 5d: Presence of Vulnerable Population**

{#Shape shp\_Map\_TA\_VUL\_GROUPS#}

{#Shape shp\_Legend\_TA\_VUL\_GROUPS#}

## Section 6: Rapid Response to Imported Cases

{#Table table\_rapid\_response\_country#}

 **Figure 6a: Risk Assessment for Rapid Response to Imported Cases**

{#Shape shp\_Map\_RR#}

{#Shape shp\_Legend\_RR#}

**Figure 6b: Presence of a Trained Rapid Response Team**

{#Shape shp\_Map\_RR\_TEAM#}

{#Shape shp\_Legend\_RR\_TEAM#}

**Figure 6c: Percentage of Hospitals Trained in Triage and Isolation**

{#Shape shp\_Map\_RR\_HOSPITAL#}

{#Shape shp\_Legend\_RR\_HOSPITAL#}

# Appendix: Global Variables

{#Table tbl\_step1\_global\_ref\_data#}

{#Table tbl\_step1\_calc\_fields#}

{#Table tbl\_step1\_geo\_data#}

1. When a municipality has less than 100,000 habitants and has reported at least 1 suspected case during the most recent year, the tool will assign 0 risk points. If the municipality was epidemiologically silent (did not report any cases), the tool will assign maximum risk score (8 points). [↑](#footnote-ref-1)