GLOBAL TASK FORCE ON CHOLERA CONTROL

Identification of PAMIs for cholera control

Transcript of online course

MODULE 1

GTFCC method

Slide 1

Welcome to Module 1 of the GTFCC online course on the identification of PAMIs for cholera control.

Slide 2

In this module, we will walk you through the GTFCC method to identify PAMIs for cholera control.

Slide 3

After completing this module, you will be able to:

- Understand how the priority index is calculated;
- Understand how the priority index guides decision-making on PAMIs;
- Explain when and how additional PAMIs might be considered;
- Explain how the final list of PAMIs is determined at the stakeholder validation;
- Describe the next steps following the stakeholder validation.

Slide 4

The identification of PAMIs for cholera control is applicable in countries where in recent years there has been moderate to high cholera transmission. As a guiding principle, these are countries where more than 5% of the geographic units reported cholera over the past five years. In these countries, the identification of PAMIs aims to effectively guide the spatial targeting of an NCP to control cholera.

Other countries, which are countries where less than 5% of the geographic units reported cholera over the past five years, should instead identify PAMIs for cholera elimination in order to effectively guide the spatial targeting of an NCP to eliminate cholera. If this corresponds to your country's situation, we encourage you to go to the GTFCC online course on the identification of PAMIs for cholera elimination.

Cholera control is an intermediate objective, until cholera elimination becomes a realistic objective at reach.

Slide 5

In a nutshell, identifying PAMIs for cholera control is about identifying geographic units with the highest cholera burden.

There are two main phases to identify PAMIs for cholera control.

The first phase is driven by the data. At this phase, all geographic units of the country are scored according to a priority index. This index captures multiple dimensions of the cholera burden.

Calculating this index aims to guide objective decision-making in order to ensure that PAMIs for cholera control are indeed the geographic units which have the highest burden.

The second phase is the actual decision-making on PAMIs.

Decision-making on the list of PAMIs is achieved by consensus among country stakeholders representing various sectors, different levels, and multiple organizations.

These stakeholders decide together, by consensus, on a threshold for the priority index calculated at the first phase.

All geographic units with a priority index above the selected threshold are then PAMIs for cholera control.

Slide 6

Let's dive in the data driven phase leading to the calculation of the priority index.

Slide 7

The priority index is calculated for each geographic unit of a country using retrospective cholera surveillance data.

Space wise, the level of the geographic units considered for the calculation of the priority index is the geographic level at which multisectoral interventions against cholera will be implemented in the NCP.

The corresponding level is country specific. This means that each country determines the most appropriate geographic scale to coordinate the implementation of targeted multisectoral interventions against cholera. Most often, countries consider administrative level 2 or administrative level 3, however different geographic scales may also be considered.

Time wise, PAMI identification is based on retrospective surveillance data covering at a minimum the past 5 years. Longer PAMI analysis period may be considered if reliable surveillance data are readily available for a longer time period, up to 15 years.

Epidemiological data and data on cholera tests are needed to calculate the priority index.

Slide 8

Regarding epidemiological indicators, three dimensions are considered in the priority index:

- Cholera incidence, that is the number of suspected or confirmed cholera cases reported in each geographic unit over the PAMI analysis period.
- Cholera persistence, that is the percentage of weeks with suspected or confirmed cholera cases reported in each geographic unit over the PAMI analysis period.
- Cholera mortality, that is the number of cholera deaths reported in each geographic unit over the PAMI analysis period.

Slide 9

Each of these three epidemiological indicators will then be scored.

The scoring scale of each epidemiological indicator depends on the distribution parameters of the corresponding indicator in the country taking into account two distribution parameters: the median and the 80th percentile.

For each epidemiological indicator, the distribution parameters are determined taking into account the geographic units where cholera cases or cholera deaths were reported over the PAMI analysis period.

Slide 10

Let's illustrate this with an example.

Let's imagine a very small country where there are 20 geographic units in total.

In this country, cholera cases were reported in 10 geographic units over the PAMI analysis period. The cholera incidence rate in these geographic units is displayed in the table.

The distribution parameters are determined with the 10 geographic units where cases were reported, leaving aside the 10 geographic units without cases.

What is the median? In half of the geographic units, that is 5 geographic units, the incidence is below the median. Therefore, the median is 20.

What is the 80th percentile? In 80% of the geographic units, that is 8 geographic units, the incidence is below the 80th percentile. Therefore, the 80th percentile is 100.

Slide 11

The scoring scale of each epidemiological indicator is based on its median and 80th percentile.

In geographic units where no cholera cases or deaths were reported over the analysis period, the score is 0.

In geographic units where an epidemiological indicator is above zero but below the median, the score is 1.

In geographic units where an epidemiological indicator is equal to or above the median but below the 80th percentile, the score is 2.

Lastly, in geographic units where an epidemiological indicator is equal to or above the 80th percentile, the score is 3.

Slide 12

Let's illustrate this more practically, using the same fictive incidence distribution that we used as a previous example.

In ten geographic units, no cholera cases were reported. In these geographic units, the incidence score is zero.

We determined that in this country the median incidence is 20 and the 80th percentile incidence is 100.

Five geographic units have an incidence above 0 and below the median. These geographic units score one for incidence.

Three geographic units have an incidence above the median and below the 80th percentile. These geographic units score two for incidence.

Lastly, two geographic units have an incidence above the 80th percentile. These geographic units score three for incidence.

Slide 13

In addition to epidemiological indicators, when possible, an indicator on cholera tests is also considered in the priority index.

Whether it is possible to include an indicator on tests in the index depends on the representativeness of testing for cholera.

This corresponds to the comparability of testing in space and time, meaning across geographic units and throughout the analysis period.

Systematic testing for cholera is not yet routinely implemented in all countries, especially when considering retrospective periods. This may result in lack of representativeness in testing which would introduce biases in indicators on tests and biases in the priority index.

To determine if an indicator on cholera tests can be included in the priority index, the representativeness of testing should first be assessed.

Slide 14

An algorithm is used to categorize the representativeness of cholera testing in three levels.

This algorithm is based on the weekly testing coverage.

If in at least 80% of the geographic units, at least one suspected case was tested on at least 50% of the weeks with suspected cases, the representativeness is categorized as acceptable.

In that situation, the positivity rate is the indicator on cholera tests in the priority index.

If in at least 80% of the geographic units, at least one suspected case was tested on some of the weeks with suspected cases but in less than 50% of the weeks, the representativeness is categorized as suboptimal.

In that situation, the number of years with cases tested positive is the indicator on cholera tests in the priority index.

Lastly, if in less than 80% of the geographic units at least one suspected case was tested on some of the weeks with suspected cases, the representativeness is categorized as insufficient.

In that situation, there is no indicator on cholera tests in the priority index.

Slide 15

If the representativeness of cholera testing is assessed as acceptable and the positivity rate is therefore included in the priority index, the test positivity rate is scored on a three points scale.

The positivity rate is scored zero if it is equal to zero.

It is scored one if it is below 10%.

It is scored two if it is between 10 and 30%.

Lastly, it is scored three if it is above 30%.

If the representativeness of cholera testing is assessed as suboptimal and the number of years with cases tested positive is therefore included in the priority index, the number of years with cases tested positive is scored on a two points scale.

It is scored zero if no cases tested positive were reported.

It is scored one if cases tested positive were reported on one year.

Lastly, it is scored two if cases tested positive were reported on more than one year.

If the representativeness of cholera testing is assessed as insufficient, no indicator on cholera tests is included the priority index. In other words, there is no score on cholera tests in the priority index.

Slide 16

Once epidemiological indicators and if possible an indicator on cholera tests have been scored, the priority index can be calculated.

The priority index is simply the sum of the scores of all indicators.

To illustrate this with an example, if in a geographic unit, cholera incidence scored 3, persistence scored 2, mortality scored 2 and test positivity scored 1, the value of the priority index for this geographic unit is 8. That is the sum of the scores of all indicators.

Slide 17

We have now gone through all the steps for the calculation of the priority index.

However, you will not have to actually perform these calculations yourself. They are all automatized in a PAMI Excel tool.

You will learn more about this tool in the next modules of this course.

Slide 18

Before using the priority index to guide decision making on PAMIs, it is important to reflect critically about its reliability to determine whether in some geographic units, it may underestimate the cholera burden or the cholera risk.

For example, if in some geographic units there are surveillance gaps such as major underreporting, because the priority index is derived from surveillance data it may underestimate the cholera burden.

As another example, if in some geographic units, OCV was implemented without significant WASH improvements, the priority index may underestimate the cholera risk.

It is therefore essential to identify any specific geographic units where the priority index may lack reliability, for example, by reviewing surveillance performance indicators, records on OCV campaigns, and data on the WASH level.

Following this critical assessment, if it is determined that the priority index may lack reliability in specific geographic units, it is advisable to assess their vulnerability to cholera.

Slide 19

To assess the vulnerability to cholera of specific geographic units, the first step is to determine which vulnerability factors are associated with an increased cholera risk in the country specific context.

For example, this can be achieved with a literature review or with expert consultations. A GTFCC indicative list of generic vulnerability factors may also be considered.

Then, data sources should be identified to assess the presence or the absence of each vulnerability factor in each geographic unit that lacks reliability of the priority index.

Slide 20

This completes the PAMI data driven phase. We will now look into the decision-making phase.

Slide 21

Decision making on PAMIs should be achieved by consensus among multiple country stakeholders taking into account the priority index to make informed decisions.

To determine the list of PAMIs, stakeholders decide on a threshold for the priority index. In addition, if it was determined that in some geographic units, the priority index lacks reliability, stakeholders may also identify additional PAMIs based on their vulnerability to cholera.

You will learn more about how to organize and facilitate a PAMI stakeholder validation in Module 4 of this course.

Slide 22

The priority index is critical to guide decision making on PAMIs. A priority index threshold is decided by consensus and all geographic units with a priority index value above this threshold are PAMIs.

To decide on an appropriate priority index threshold, stakeholders have to balance both the feasibility and the public health impact of the NCP.

If the priority index threshold is set low, many geographic units will be PAMIs. In that situation, the potential impact of the NCP may be high, however, its feasibility may be challenging.

On the other hand, if the priority index threshold is set high, few geographic units will be PAMIs. In that situation, the feasibility of the NCP may be high, however its impact may be low.

Overall, setting a threshold for the index is about finding the right balance between feasibility and impact.

Slide 23

Assessing the feasibility and the potential impact of the NCP relies on proxy.

The number and percentage of geographic units that are PAMIs and the population in PAMIs are proxy to assess the feasibility of the NCP.

The proportion of cholera cases and deaths in PAMIs are proxy to assess the potential impact of the NCP.

Slide 24

Optionally, a few geographic units with a priority index below the selected threshold may be considered as additional PAMIs if they meet two criteria: having a priority index lacking reliability and being highly vulnerable to cholera.

However, the number of additional PAMIs should remain limited. The feasibility of including additional PAMIs must be carefully assessed in order to ensure that the feasibility of the ncp is not jeopardized due to the inclusion of additional PAMIs.

Slide 25

Let’s summarize the decision-making process on PAMIs for cholera control.

All geographic units that have a priority index above the threshold selected by country stakeholders are PAMIs.

Optionally, a limited number of geographic units that have a priority index below the priority index threshold may also be added to the list of PAMIs if it is determined that their priority index lacks reliability and if they are assessed as highly vulnerable to cholera.

Other geographic units are not PAMIs.

Slide 26

Once country stakeholders have reached a consensus on the list of PAMIs, the next steps are to document PAMI identification and to go through an external review.

Slide 27

PAMI identification should be documented in a report to document the method used and the outcomes as well as the decisions made and their justification. This is essential to ensure the traceability of PAMI identification and for future reference.

To prepare a comprehensive report on PAMI identification, we encourage you to follow the GTFCC template report.

You will learn more about how to document PAMI identification in Module 5 of this course.

Slide 28

The GTFCC performs independent technical reviews of PAMI identification.

These reviews represent an opportunity for countries to receive independent technical feedback and practical advice and recommendations as needed to help optimize the spatial targeting of their ncp.

GTFCC PAMI reviews are offered to all countries and are mandatory for countries which plan to request OCV for preventive use or to request a GTFCC endorsement of their NCP.

You will learn more about GTFCC PAMI reviews in Module 5 of this course.

Slide 29

As we wrap up this module, here are the important points to remember.

As a guiding principle, the identification of PAMIs for cholera control is for countries where more than 5% of the geographic units reported cholera over the past 5 years.

The first phase of PAMI identification is to calculate a priority index which represents the cholera burden. This index captures cholera incidence, mortality and persistence. In addition, if the representativeness of cholera testing allows, cholera tests are also included in the index.

The second phase is to decide on the list of PAMIs taking into account the priority index. Country stakeholders agree by consensus on a priority index threshold balancing the feasibility and the potential impact of the NCP. All geographic units that have a priority index above the selected threshold are PAMIs for cholera control.

Optionally, a few additional geographic units may also be PAMIs despite having a priority index below the selected threshold if it is determined that their priority index lacks reliability and if they are highly vulnerable to cholera.

Slide 30

Before moving on to the next module, we encourage you to take a short quiz. There are three questions in this quiz.

Slide 31

Question 1. What does the "priority index" represent in the context of PAMIs for cholera control?

a) The economic impact attributed to cholera in a geographic unit.

b) The level of access to healthcare in a geographic unit.

c) The cholera burden in a geographic unit.

d) The clinical severity of a patient with suspected cholera and the corresponding priority level for treatment.

Slide 32

The correct answer is c. The priority index captures the cholera burden in a geographic unit.

Slide 33

Question 2. Which indicators are included in the calculation of the "priority index"?

a) Population size, access to healthcare, test accuracy, and recovery rate.

b) Incidence, persistence, mortality, and if possible an indicator on cholera tests.

c) Climate, sanitation, vaccination coverage, and test positivity.

d) Mortality, persistence, healthcare infrastructure, and population density.

Slide 34

The correct answer is b. Incidence, persistence, mortality, and if possible an indicator on cholera tests are included in the calculation of the priority index.

Slide 35

Question 3. This is the last question. What is the key objective of the stakeholder validation for PAMI identification?

a) Stakeholder review of the cholera preparedness and response plans.

b) Stakeholder validation of the allocation of resources across regions for cholera control.

c) Stakeholder decision on a threshold for the priority index.

d) Stakeholder validation of intervention plans for all cholera control pillars in PAMIs.

Slide 36

The correct answer is c. At the stakeholder validation, stakeholders decide on a priority index threshold.

Slide 37

We have now completed this module.