Cholera testing in MSF programs

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Outline

- MSF cholera activities
- RDT history of use
- Considerations for use of RDT
- Challenges
- Beyond RDT, microbiology lab capacity?

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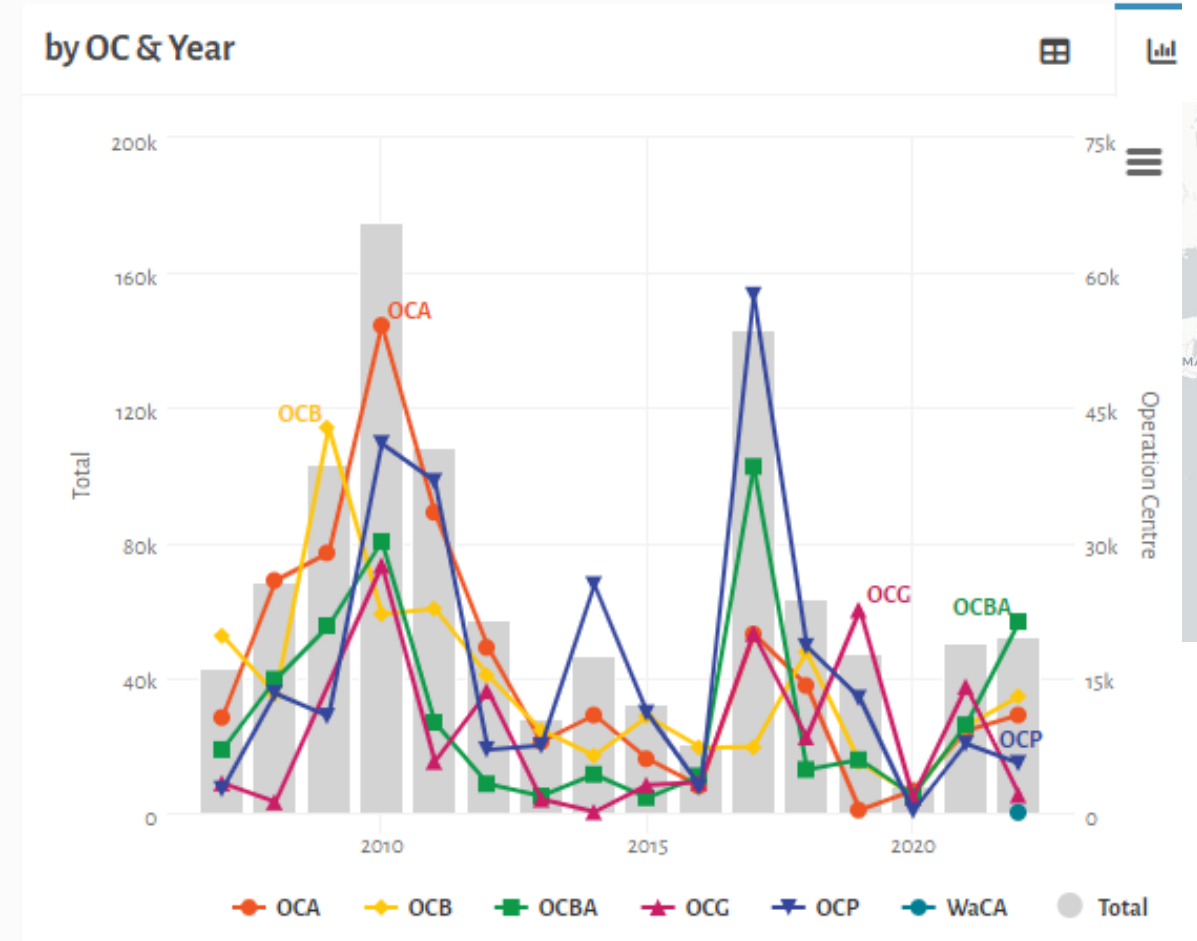
MSF involvement in cholera management

2007-2022 data



2022 data (52k cases)

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History of use of cholera RDTs in MSF

- 2008(?)-14: Crystal VC
  - '08 study in DRC*: Sensitivity 92%, Specificity 85%
  - 2011 change in order of test lines and antibodies w/o appropriate validation procedures
  - 2012 Warning false positives, mostly 0139 line but not only
  - Continued utilization but highlighted request for lab confirmation
- 2014: SMART for short time (never used?)
- 2014/15 - now: NO cholera RDT in catalogue
- Sep/Oct 2017 reintroduction of cholera RDT (SD Bioline) at MSF section level (no intersectional validation)

** Page A-L, Alberti KP, Mondonge V, Rauzier J, Quilici M-L, et al. (2012) Evaluation of a Rapid Test for the Diagnosis of Cholera in the Absence of a Gold Standard. PLoS ONE 7(5): e37360. doi:10.1371/journal.pone.0037360*

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Use of cholera RDTs in MSF (routine)

Use-case:

- Outbreak investigation
- Monitoring of outbreaks
- At end of outbreak (e.g. Yemen)

Users:

- Almost only non-lab staff – “emergency response units”, outreach teams, clinical officers, nurses
- At suspect site or cholera treatment centre
- Rarely in lab

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MSF « interim » guidance outbreak investigation (Dec-'17)

USE IN AN OUTBREAK INVESTIGATION:

1. Upon suspicion of a cholera outbreak perform 10 to 15 subsequent tests on suspected cholera cases per cholera treatment centre (CTC). **Testing should be conducted on samples from suspected cases older than 3 years old that have 3 or more loose or watery (non-bloody) stools in 24 hours.**

   Interpretation of results:

   - If at least 3 out of 10 tests are reactive (or 30%), a cholera intervention plan can be started. If all 10-15 tests are negative, then the outbreak is unlikely to be due to cholera, if testing criteria were correctly applied.
   - If between 1 to 3 out of 10 tests are reactive, this should give an alert of cholera. Send all samples for confirmation and re-evaluate the criteria for suspicion of cholera as well as other possible causes of diarrhea.

[GTFCC 2024]

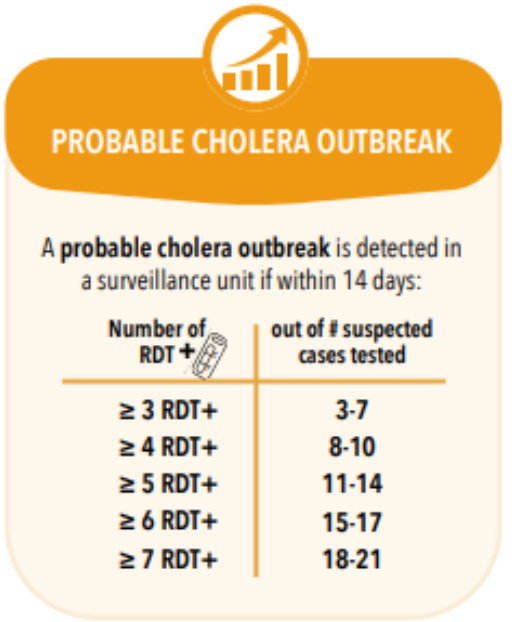

Figure 14. Definition: Probable cholera outbreak

MSF « interim » guidance monitoring (Dec-’17)

USE IN THE MONITORING OF CHOLERA OUTBREAK:

After confirmation of an outbreak, perform 5 rapid tests per week per CTC on suspected cases to confirm that the outbreak is still due to cholera. If the 5 tests are negative for 3 consecutive weeks, it is likely the outbreak is over.

Please note that numbers above are indicative and each cholera outbreak is different.

GTFCC 2024

PRESENCE OF A PROBABLE OR CONFIRMED OUTBREAK (COMMUNITY TRANSMISSION): Testing strategy for confirmation of cases and characterisation of strains	
Testing strategy for confirmation of cases if RDTs available	
RDT testing	Test the first 3 suspected cholera cases per day per health facility by RDT
Laboratory testing (culture or PCR)	Test 3 RDT+ per week per surveillance unit by culture and/or PCR

Challenges

- **Access to RDTs**
  - In MSF only an « EPREP » item, low nrs in stock, often not used sufficiently
  - Outside MSF / at MoH: until now very often not available
  - Lack of WHO-PQ RDT… acceptance of results by authorities (hopeful : GTFCC guidance and new TPP for WHO-PQ will help)

- **In routine:**
  - Use of recommend RDT nrs and interpretation of positives
  - Interpretation of 0139 line
  - Access to testing data is poor, not always clear if RDTs are used appropriately at start and during outbreak
  - MSF's own integration into (imperfect) MoH public health systems is often imperfect

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Challenges

- **Confirmation**
  - Access to labs in routine (logistics, quality) and
  - Politics of cholera (if not culture confirmed no acceptance to declare outbreak – accuracy of reporting?)
- **Differential diagnosis**
  - Lack of (appropriate) RDTs
  - Lack of referral lab capacity (microbiology)
- **Wrong use**
  - Not respecting case definition
  - Aiming for individual diagnosis

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Diagnostic capacity beyond RDTs in MSF?

- Slow increase in microbiology capacity in MSF
- Priority to blood culture and for surgical programs
- In mind to increase scope in high quality / established labs (few…) to include cholera, dyphteria, … not effective yet ➔ priority to establish better links/collaborate better with national and international level reference laboratories

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All in all

- Similar challenges as reported by others
- Positive about new GTFCC guidelines likely to help improving RDT implementation and use
  - Need to scale up (RDTs) and improve (systems)
  - Hoping for WHO-PQ RDTs
- Beyond RDT, mostly aiming integration in national systems

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Thank you

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