Surveillance in humanitarian settings for a novel pathogen – COVID-19

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Objectives of this session

After this session you should be able to:

- Describe the steps of setting up surveillance for a novel pathogen in humanitarian contexts

- Describe challenges with setting up surveillance for a novel pathogen in humanitarian contexts

- Reflect and discuss challenges related to COVID-19 in humanitarian contexts

Médecins sans Frontières - background

- "Leger uten grenser"

- Funded in 1971

- NGO providing medical services in 20+ countries

- Neutral, impartial, independent

- No funding from states, 97% of funding from individual donors

- Specifically focusing on delivering healthcare in hard-to-reach areas

Rewind: January/February 2020

- Start of global spread of COVID-19

- Increased concern: what will happen if COVID-19 will arrive in humanitarian contexts
  - Fragile & already overwhelmed health systems
  - Vulnerable populations
  - Limited laboratory capacity
  - Limited human resources / trained health care workers
  - Limited financial resources
  - Overcrowded settings where COVID-19 could potentially spread like wildfire

COVID-19 in humanitarian contexts - thoughts

- Vulnerable populations
  - Underlying morbidities incl. malnutrition
  - Low vaccination coverage
  - Overcrowded settings with lacking water & sanitation
  - Age demographic (protective factor?)

- Deprioritization of routine health services
  - Decrease in health care consultations
    - Less disease?
    - Fear of health facilities
  - Stay at home instructions
  - ANC, TB and HIV treatment, routine immunization programs, NCD treatment, etc

Source picture: the Guardian

COVID-19 mitigation in humanitarian contexts - Shielding

- Dahab, M., van Zandvoort, K., Flasche, S. *et al.* COVID-19 control in low-income settings and displaced populations: what can realistically be done?. *Confl Health* **14,** 54 (2020).

1. Household-level shielding	Each household demarcates a room or shelter for high-risk members. If necessary, a carer from the household is isolated with them.
2. Street- or extended family-level shielding	Neighbouring households (e.g. 5–10) or members of an extended family within a defined geographic locale (neighbourhood, district) voluntarily 'house-swap' and group their high-risk members into dedicated houses / shelters.
3. Neighbourhood- or sector-level isolation	Sections of the settlement are put aside for groups of high-risk people (e.g. 50–100).

- MSF: qualitative community consultations on the feasibility and acceptability of shielding in humanitarian contexts – including Nigeria, Ethiopia, Sierra Leone

COVID-19 mitigation in humanitarian contexts

- Less than expected COVID-19 cases reported from humanitarian contexts in general, and contexts in which MSF works

- How is this possible?
  - COVID-19 did not spread in those contexts the way it was anticipated

- How could that be?
  - Quick action – previous experience with outbreak response
  - Strong community health systems
  - Favorable climate
  - Age demographics
  - What else?

COVID-19 mitigation in humanitarian contexts

- Or: COVID-19 went undetected and underreported

- How could that be?

- Fear of going to health facilities

- Fear of reporting respiratory symptoms/suspected COVID-19 to community-based surveillance workers

- Limited laboratory capacity

- Etc

- But: Excess mortality during the COVID-19 pandemic in Aden governorate, Yemen: a geospatial and statistical analysis. Besson, E., Norris, A. et al. (2020). Preprint: medRxiv 2020.10.27.20216366

Excess mortality during the COVID-19 pandemic in Aden governorate, Yemen: a geospatial and statistical analysis. Besson, E., Norris, A. et al. (2020). Preprint: medRxiv 2020.10.27.20216366

Sample of very high-resolution images from two cemeteries in Aden governorate, exemplifying the two typologies or burial pattern observed: (A) expansion into new 'blocks' (denoted by red outline) and (B) 'infilling' within existing burial area (denoted by red circles) Satellite imagery © Maxar Technologies

Rationale behind COVID-19 surveillance

- To monitor COVID-19 incidence at MSF project locations in a standardized manner

- To gather data to get a better understanding of how COVID-19 manifests in MSF project locations
  - Up until March/April 2020: mainly data from Europe, USA, China, Iran

- To gather data to get a better understanding of the clinical presentation of COVID-19 in MSF project locations
  - To potentially contribute to refinement of case definitions

- To guide public health interventions in MSF project locations

- To support Ministry of Health

Steps in setting up COVID-19 surveillance

1. Establish MSF case definition for COVID-19
   - Same as WHO case definition for COVID-19
   - But: MOH case definition prevails

2. Develop COVID-19 line list
   - Reaching agreement on variables to be included when monitoring a novel pathogen

3. Set up reporting structures
   - Integration with routine surveillance as much as possible
   - Extra burden of health service providers
   - Submission of data to MOH
   - Mandatory WHO reporting

Steps in setting up COVID-19 surveillance

4. Training and coaching of field-based staff
   - See quality assurance
   - Cascade training

5. Country-specific reporting
   - Weekly Sitreps and integration of data into medical reports

6. Public health actions based on COVID-19 surveillance data
   - Guide prepositioning of resources
   - Setting up/intensification of community engagement including community-based surveillance

7. Weekly submission of surveillance data to HQ
   - COVID-19 dashboard
   - COVID-19 global sitreps

Quality assurance
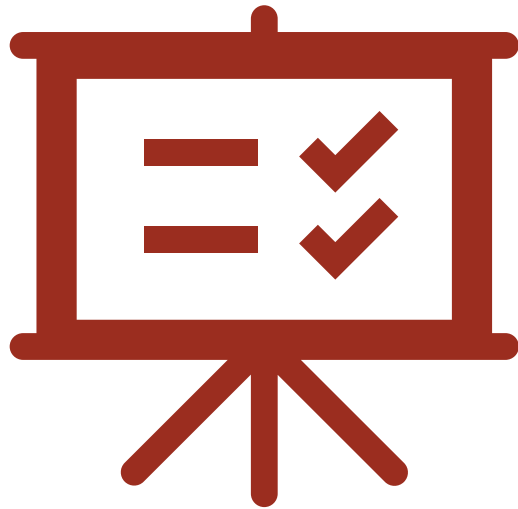
- Field testing of data collection tool prior to implementation

- Virtual training of field epidemiologists and data managers in different languages

- Refresher trainings

- Video tutorials

- Written SOPs with annotated case reporting forms in different languages

- Data validation built into the Excel line listing tool

- Weekly checks at HQ of data completeness

- 1-1 coaching calls with implementing field epidemiologists and data managers
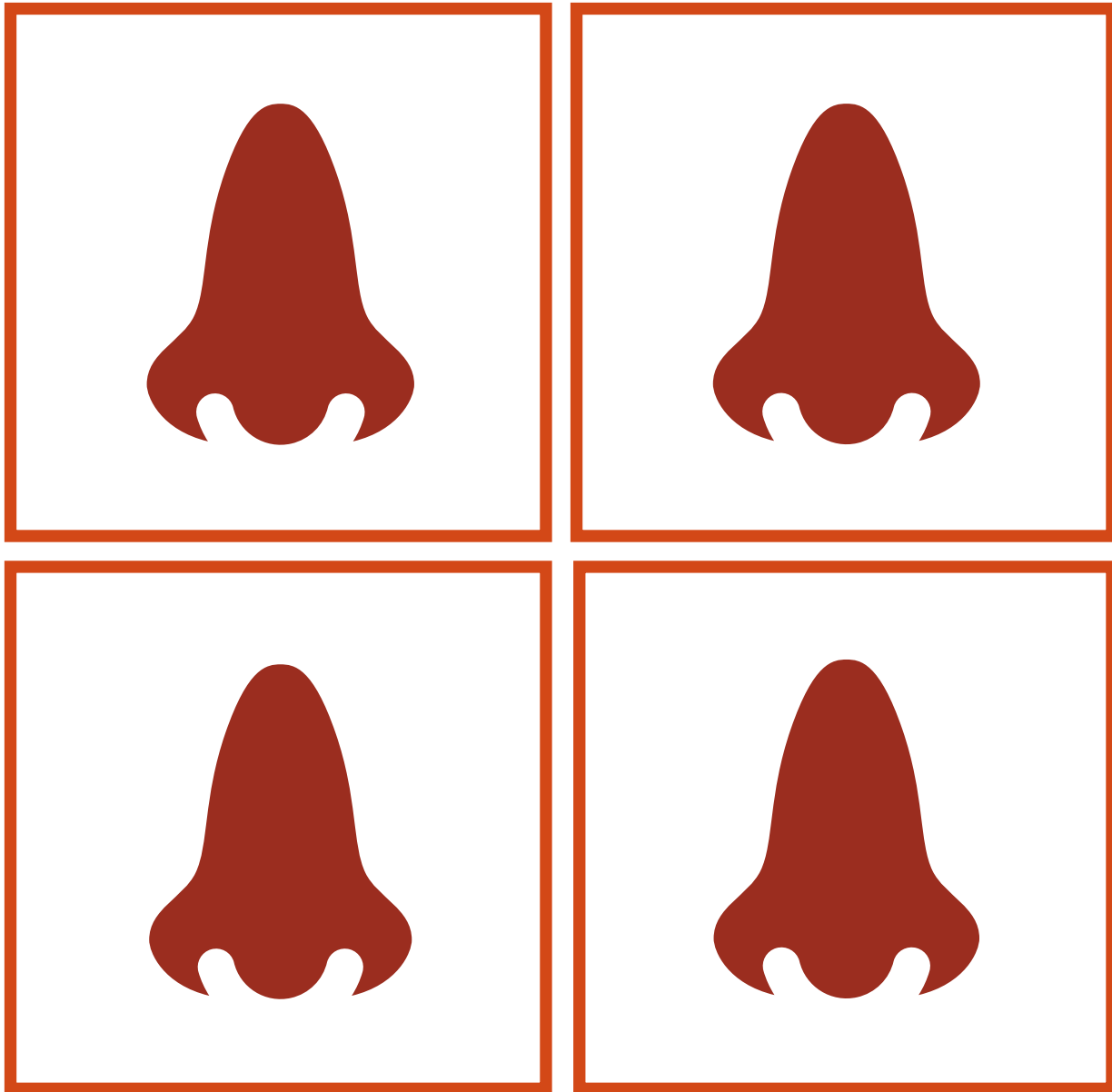
Challenges

- Get all noses in the same direction

- Establishing a case definition

- Establishing, and agreeing on, variables to be included into COVID-19 line list

- Logistics: printing of case reporting forms and line lists

- Negotiations with MOH to use MSF line list at health facilities

- If MOH had their own line list: avoid duplication of data entry
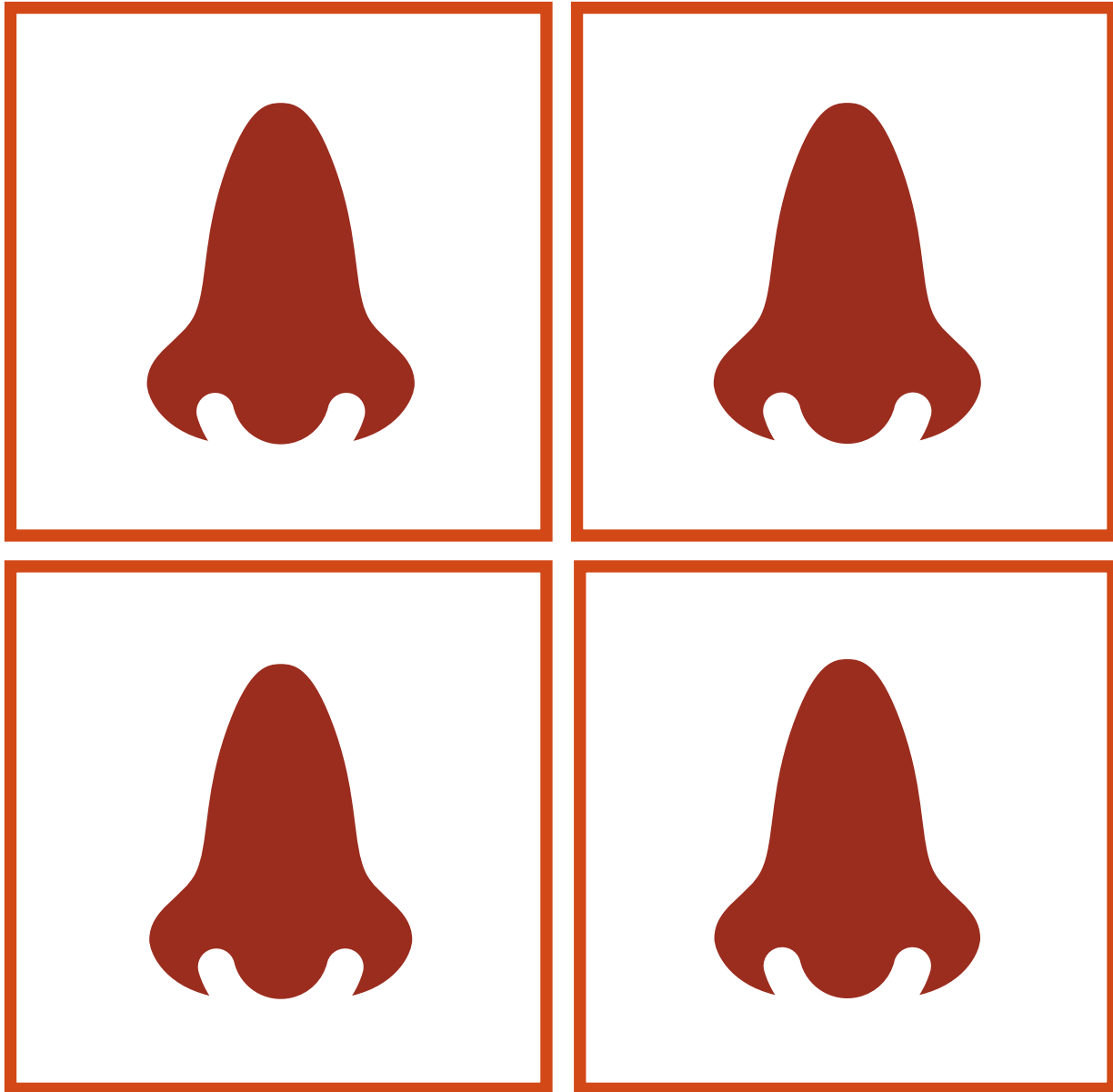
Challenges

- Remote training of field epidemiologists and data managers

- Cascade training and quality control

- Data completeness

- Ability of health service providers to fill out additional forms

- Data quality

- Timeliness of data submission

- Low number of cases admitted at MSF health care facilities

Main take aways

- Setting up surveillance in 20+ countries for a novel pathogen is not easy

- But incredibly important at the beginning of an outbreak of disease X

- In an acute outbreak situation there are many competing priorities

- As an epidemiologist you have to insist on the importance of standardized data collection

- Even if health care providers are busy with other tasks

- Because without standardized, and high quality, timely data it is impossible to do epidemiological analysis

References

- Dahab, M., van Zandvoort, K., Flasche, S. *et al.* COVID-19 control in low-income settings and displaced populations: what can realistically be done?. *Confl Health* **14,** 54 (2020). https://doi.org/10.1186/s13031-020-00296-8

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Acknowledgements

- Médecins sans Frontières