

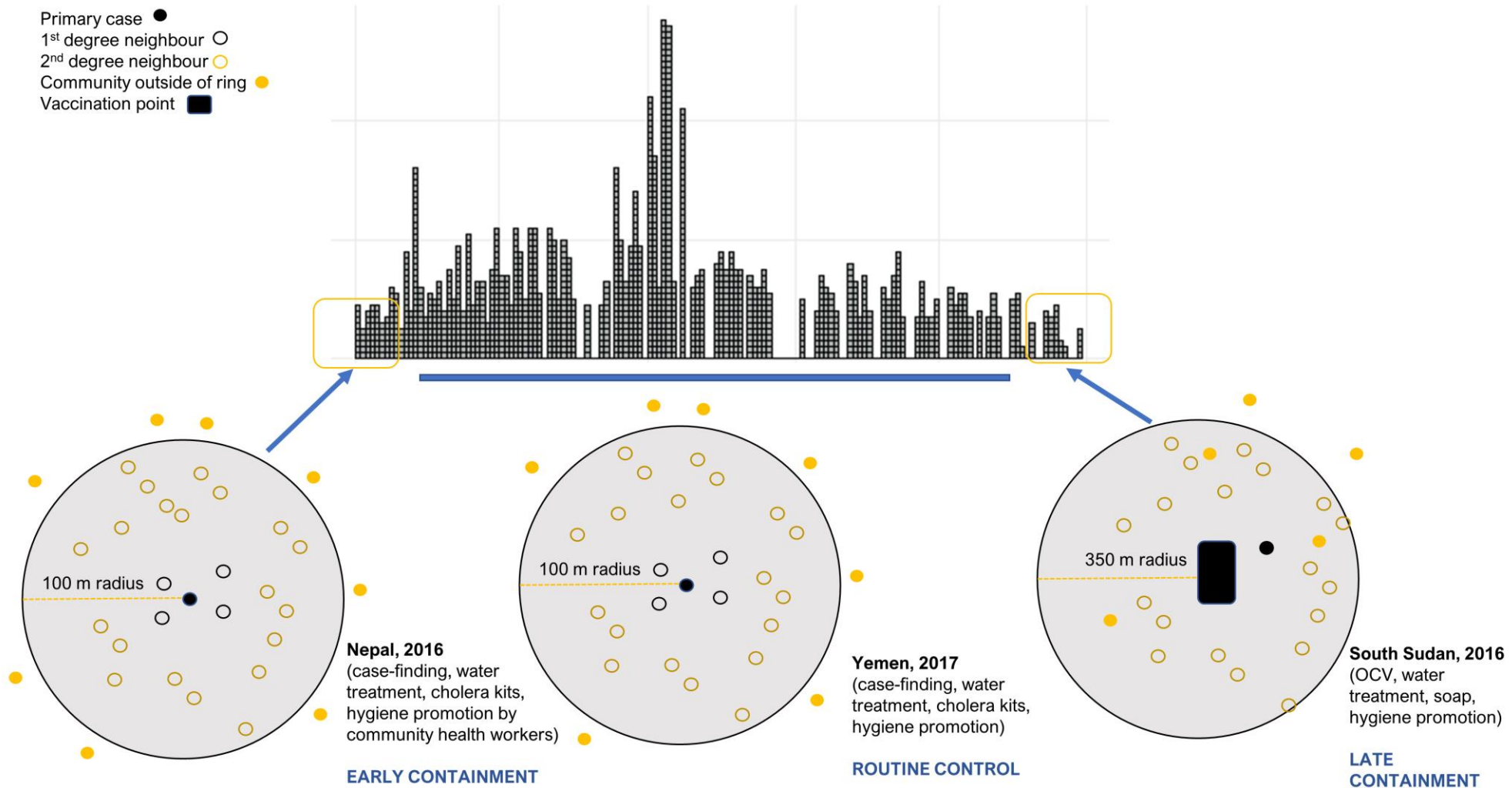
# Case-area targeted interventions (CATI) for cholera outbreaks: protocol for a prospective observational evaluation

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# CATI – Definition

- Primary case ●
- 1<sup>st</sup> degree neighbour ○
- 2<sup>nd</sup> degree neighbour ◌
- Community outside of ring ●
- Vaccination point ■



# CATI – Current evidence and gaps

- **Haiti (Centre Dept, 2015-7): retrospective data analysis**

Reduction in size and duration of small-scale outbreaks when CATI was used (WASH and antibiotic chemoprophylaxis) ([Michel et al, eLife, 2020](#))

- **Bangladesh (Dhaka, 2013): randomized trial of culture-confirmed cases**

Reduction in intra-household transmission when their household contacts were targeted with hygiene promotion and WASH (versus standard messaging) ([George et al, EID, 2016](#))

- **WASH Rapid Response Teams in Haiti, Yemen, Nigeria, South Sudan** ([Ramos et al, UNICEF, 2019](#))

- **Scoping review of current evidence** ([Ratnayake et al, Lancet ID, 2020](#))

- **Gaps:**

- Most studies are retrospective
- No CATI evaluations including OCV
- Based on suspected cholera

# Including OCV in CATI

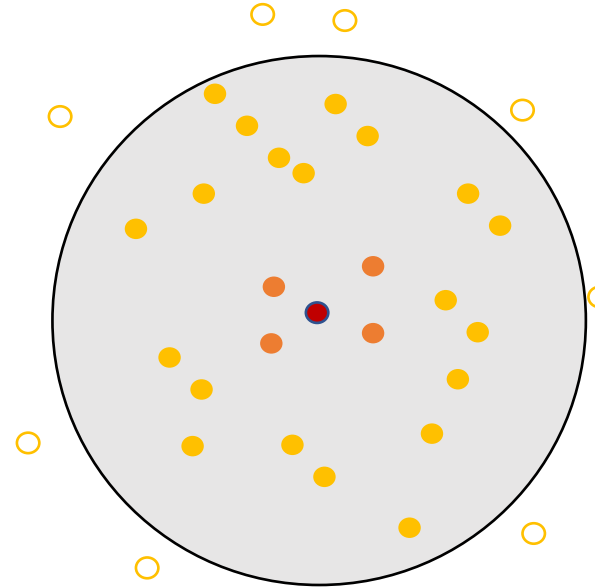
- Increased effectiveness
- Longer duration of protection
- Single dose
  - Short term protection demonstrated
- But:
  - ramp-up period of protection
  - OCV needs to be combined with other, faster acting interventions
- Little experience (South Sudan, very recently in Cameroon) and limited evidence so far
- Can be complementary to mass OCV campaigns

# Using CATI with OCV in outbreak response

- MSF is interested in the concept of CATI with OCV as an additional tool for cholera outbreak response
- Combining single-dose OCV with household WaSH, possibly chemoprophylaxis
- Different MSF Operational Centres involved in developing strategies
- Discussions with MoH of DRC, Zimbabwe and Cameroon about first implementations
- Evaluation using research protocol developed in collaboration with Epicentre & LSHTM

# Example

Target CATI only to enriched RDT-positive cases which are most likely to be true cases



- Primary case-household
- Adjacent households (highest risk)
- Ring household (high risk)
- Household just outside ring (elevated risk)

	Primary case household	Adjacent households	Ring households
Single-dose oral cholera vaccine (1-dose, oral)			
Water treatment, safe storage, soap			
Doxycycline or azithromycin (1-dose, oral)			
Intensive hygiene promotion			
Community hygiene promotion			

# Evaluation – research questions

**Aim:** to evaluate the effectiveness of CATI in the rapid containment of case-clusters, at the start of the outbreak

**Primary objective:** to evaluate the effectiveness of CATI in the reduction of incidence of enriched RDT-positive cholera within targeted rings

**Secondary objectives:**

1. Population-based coverage
2. Spatiotemporal transmission patterns of the outbreak
3. Effectiveness in the reduction of household transmission
4. Antimicrobial resistance related to chemoprophylaxis (if used)
5. Resources and costs required

# Evaluation – principles

- Observational study of CATI performed by MSF
  - CATI can include OCV, WaSH, chemoprophylaxis
  - Evaluation can adapt to ring-size of intervention
- Use a study design appropriate for an outbreak (e.g., no explicit control group)
- Use real-time data collection to evaluate a CATI strategy prospectively
  - CTC linelist data & location of primary cases
- Compare immediately-implemented CATIs with naturally delayed CATIs on incidence of enriched RDT-positive cholera
- Understand the pathway to impact:
  - Coverage of CATI (each individual component)
  - Impact on household transmission and ring transmission



# Conclusions

- CATI is an interesting new tool for cholera response
- Including OCV could increase effectiveness
- Complementary to preventive mass OCV campaigns and long-term WaSH improvements
- MSF planning on using CATI with OCV
- Discussions ongoing with several MoH about first implementations
- Systematic and prospective evaluation to provide more evidence
- Generic study protocol for evaluation of CATI interventions developed, currently under ethical review

# Thank you!

**This is a large and interdisciplinary project with many contributions:**

- **MSF:** Nicolas Peyraud, Iza Ciglenecki, Catherine Bachy, Andrew Azman, Isabella Panunzi, Claire Dorion, Rob D’Hondt, Caroline Henry-Ostian
- **Epicentre:** María Lightowler, Etienne Gignoux, Francisco Luquero
- **LSHTM:** Ruwan Ratnayake, Francesco Checchi, John Edmunds
- **MoH of DRC**
- **MoH of Zimbabwe**
- **UNICEF DRC**