



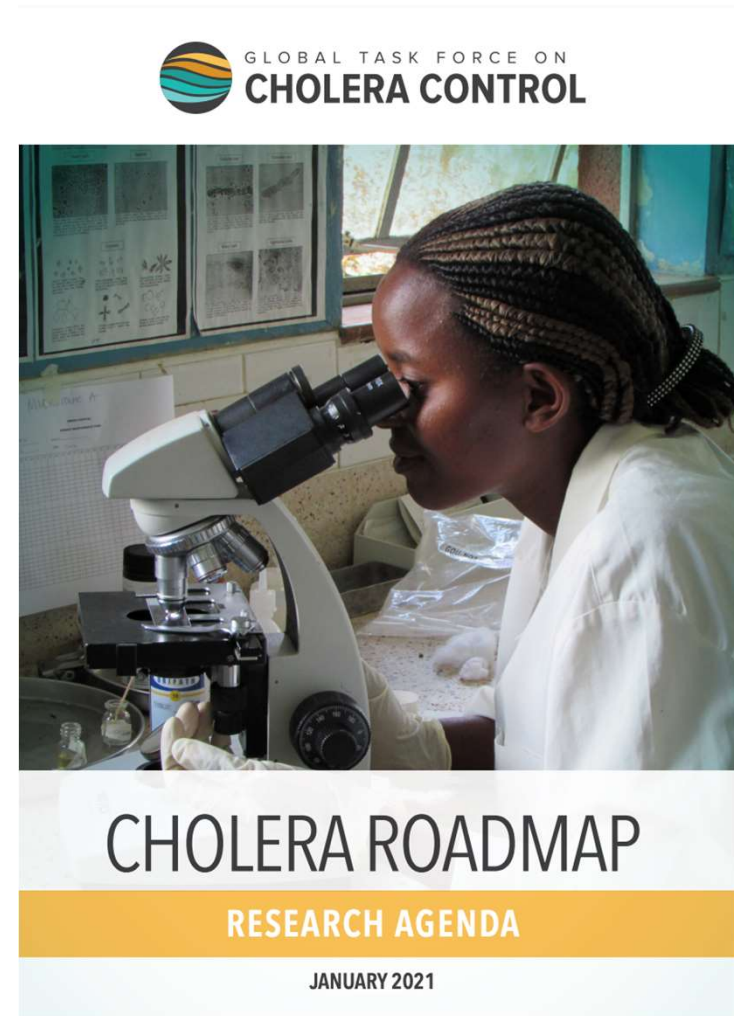
GLOBAL TASK FORCE ON
CHOLERA CONTROL

RECENT WASH - CHOLERA RESEARCH HIGHLIGHTS

GT FCC WASH Working Group
Annual meeting
June 17th, 2024
Prof. Daniele Lantagne, with
GT FCC, for WASH Working
Group Meeting






Cholera Roadmap Research Agenda

- Research Agenda
 - CHRNI methodology
 - Funded by Wellcome
 - Adopted by GTFCC
 - January 2021
- Prioritization
 - Top 20 Questions
 - Top 5 WASH
 - Research Discovery (no WASH)



Priority Research Questions - WASH

Table 5: Overview of the top five research priorities for WASH

Rank Within Pillar		Research Question
1		What levels of coverage for relevant water, sanitation and hygiene interventions is required in cholera hotspots to control and ultimately eliminate the risk of cholera?
2		What are the most essential (or what is the minimum set of) infection prevention and control (IPC) interventions in cholera treatment facilities and oral rehydration points to reduce risk of transmission within these facilities?
3		Is improved access to safe water (e.g., water points and distribution networks) effective in controlling and preventing cholera outbreaks?
4		How can "design thinking" be used to improve the delivery and uptake of water, sanitation and hygiene interventions? Design thinking focuses on understanding the needs of people who will use the intervention and working with them to improve it.
5		What are the factors and determinants that lead to sustainable investments in water, sanitation and hygiene at the country level?

Priority Research Questions – Top 20

3



Is there additional benefit to adding WASH packages, for example household WASH kits, to an oral cholera vaccine campaign?



11



What is the incremental benefit of implementing a comprehensive interventions package (including water, sanitation and hygiene, antibiotics, oral cholera vaccine, oral rehydration therapy) to reduce cholera mortality during an epidemic?



13



What is the most cost-effective package of water, sanitation and hygiene, and oral cholera vaccine in different situations, based on transmission dynamics in cholera hotspots?

16



What is the role and added value of CORTs (community outbreak response teams) in enhancing case investigation and outbreak detection?

18



What are effective strategies to scale up the use of household water treatment in controlling cholera outbreaks?



Research Discovery

The three highest priority areas for discovery research are as follows:

Research for the discovery and development of novel and innovative diagnostic tests to increase speed, efficiency and quality of detecting and confirming cholera

.....

Research for the discovery and development of new or improved vaccines to strengthen the bridge between emergency response and long-term cholera control and prevention

.....

Research to contribute to the collection of genomic data to create a global **V. cholerae** sequences database to map and understand long-range transmission routes.

Recent Highlights: Country Programs

- Results - Surveillance
 - Low cholera with vaccine
 - Lack of WASH a risk factor
 - WASH + OCV needed
 - *V. cholerae* is in local waters
- Results - HCF
 - WASH in HCF reduces cholera
 - HCW cholera knowledge depends on demographics
- Results – Conflict
 - Conflict increases risk
- Successes
 - More local research and Global South authors!!!

Cholera and diarrheal diseases in Cuamba District, Niassa Province, Mozambique: Systematic healthcare facility-based surveillance strengthening, characteristics of suspected cholera and diarrheal patients, and incidence of diarrheal diseases

Der Cynthia Semá Baltazar ¹, José Paulo Langa ¹, Liliana Dengo Baloi ¹, Jucunu J Elias Chitio ¹,
Anr José Alberto Manuel ², Ramos B J Mboane ², Sadate Assane ², Alide Omar ³, Mariana Manso ³,
Reg Igor Capitine ¹, Naira Luiz ⁴, David Mukasa ⁵, Geun Hyeog Jang ⁵, Ju Yeon Park ⁵,
Dori Florian Marks ⁶, 7, Ramzi Mraidj ⁵, Gi Deok Pak ⁵, Deok Ryun Kim ⁵, Se Eun Park ⁴, 8 ei,
Yora

Healthcare workers knowledge of cholera multi-stranded interventions and its determining factors in North-East Nigeria: planning and policy implications

hc Kelly Elimian ¹, 2, Carina King ³, Ozius Dewa ⁴, Emmanuel Pembi ⁵, Benjamin Gandi ⁶,
cl Sebastian Yennan ⁷, Puja Myles ⁸, Catherine Pritchard ⁹, Birger Carl Forsberg ³,
Tobias Alfvén ³, 10

Mai **Occurrence of waterborne pathogens and antibiotic**

Aulk **Evaluation of a WASH/MNCH targeted primary health care program in Uganda; a mixed methods study**

Comfort Hajra Mukasa ¹, Maureen Nankanja ¹, Margaret Mugisa ¹, Ojoro Valentine ¹,
Patrick Kagurusi ¹

Recent Highlights: Protective/Risk Factors

- Cases have many WASH risk factors
 - Syria
- HWT protective
 - Yemen
- Context impacts OCV/WASH choice
 - Bangladesh
- Seasonal changes in WASH increase cholera risk
 - Bangladesh
- In line with older SR

Geographical Origin, WASH Access, and Clinical Descriptions for Patients Admitted to a Cholera Treatment Center in Northwest Syria between October and December 2022

Ahmad Hmaideh ^{1 2}, Maia C Tarnas ³, Wasim Zakaria ¹, Ahmad Oussama Rifai ^{1 4}, Mosab Ibrahim ¹, Yaser Hashoom ¹, Nusaima Ghazal ¹, Aula Abbata ^{1 2 5}

Factors associated with the cholera outbreak in Al-Mahweet-Yemen: Analytic Study

Hani Nasr ¹, Marwah Al-Zumair ¹, Taha Al-Mahbashi ², Fekri Dureab ¹

Changing Water-Sanitation Determinants of Cholera over Two Decades in Bangladesh

Mohammad Habibur Rahman Sarker ¹, Sumon Kumar Das ², Hasnat Sujon ^{1 3}, Michiko Moriyama ⁴, Md Moshir Rahman ⁴, Md Nazim Uzzaman ^{1 5}, Shakila Banu ¹, Abu Smb Shahid ¹, Jui Das ⁶, Soroar Hossain Khan ¹, Mohammad Jobayer Chisti ¹, Asg Faruque ¹, Tahmeed Ahmed ¹

Influence of Seasonal Hazards on Water, Sanitation, and Hygiene-Related Behavior and Implications for Cholera Transmission in Bangladesh

Stephen Lawrence Grant ¹, Sina Lange ¹, Sara Almeida ¹, Bilqis Hoque ², Peter Kjær Mackie Jensen ¹

A Systematic Review and Meta-Analysis of the Association between Water, Sanitation, and Hygiene Exposures and Cholera in Case-Control Studies

Marlene Wolfe ¹, Mehar Kaur ¹, Travis Yates ¹, Mark Woodin ¹, Daniele Lantagne ¹

Recent Highlights: RCTs and Trials

- Consistent Results
 - OCV + WASH better than either alone
 - India, Bangladesh
 - WASH protective
 - India
 - *Clemens et al.*
- Uvira, DRC (LSHTM)
 - Challenges with safely managed water not as expected
 - But reduced cholera
 - DRC

Do Oral Cholera Vaccine and Water, Sanitation, and Hygiene Combine to Provide Greater Protection Against Cholera? Results From a Cluster-Randomized Trial of Oral Cholera Vaccine in Kolkata, India

Justin Im¹, Md Taufiqul Islam², Sophie Kang¹, Farhana Khanam¹, Asma Binte Aziz¹, Masuma Hoque¹, Khalequ Zaman², Ashraful Islam², Firdausi Qadri², John D Clemens²

Better Existing Water, Sanitation, and Hygiene Can Reduce the Risk of Cholera in an Endemic Setting: Results From a Prospective Cohort Study From Kolkata, India

Md Taufiqul Islam¹, Justin Im², Faisal Ahmmed¹, Deok Ryun Kim², Birkneh Tilahun Tadesse², Sophie Kang², Farhana Khanam¹, Fahima Chowdhury¹, Tasnuva Ahmed¹, Md Golam Firoj¹, Suman Kanungo⁴, Irks^{2 3 5 6}

The interplay between WASH practices and vaccination with oral cholera vaccines in protecting against cholera in urban Bangladesh: Reanalysis of a cluster-randomized trial

Fahima Chowdhury¹, Asma Binte Aziz², Faisal Ahmmed³, Tasnuva Ahmed³, Sophie Sy Kang², Justin Im², Juyeon Park⁴, Birkneh Tilahun Tadesse², Md Taufiqul Islam³, Deok Ryun Kim², Masuma Hoque³, Gideok Pak², Farhana Khanam³, Nigel A J McMillan⁵, Xinxue Liu⁶, Khalequ Zaman³, Ashraful Islam³, John D Clemens⁸

water supply
in urban

WASH practices in urban slums associated with a lower long-term risk of severe cholera? A prospective cohort study with 4 years of follow-up in Mirpur, Bangladesh

Sophie Kang^{# 1}, Fahima Chowdhury^{# 2 3}, Juyeon Park⁴, Tasnuva Ahmed², Birkneh Tilahun Tadesse⁴, Md Taufiqul Islam², Deok Ryun Kim⁴, Justin Im⁴, Asma Binte Aziz⁴, Masuma Hoque², Gideok Pak⁴, Farhana Khanam², Faisal Ahmmed², Xinxue Liu⁵, K Zaman², Ashraful Islam Khan², Jerome H Kim⁶, Florian Marks^{4 7}, Firdausi Qadri², John D Clemens^{2 6 8}

Recent Highlights: CATI

- DRC

- MSF

- High-quality program
 - Reductions cholera
 - Not stat. sig.

- George

- Retrospective
 - Outcomes: Low uptake

- Nigeria

- Real-world program

- Not perfect
 - Conflict, delivery, stock-outs, middle outbreak

- Impact

- Reduced cholera
 - Outcome: FCR

A Quantitative and Qualitative Program Evaluation of a Case-Area Targeted Intervention to Reduce Cholera in Eastern Democratic Republic of the Congo

Kelly Endres ¹, Alain Mwishingo ², Elizabeth Thomas ¹, Raissa Boroto ², Wivine Ntumba Nyarukanyi ², Jean-Claude Bisimwa ², Presence Sanvura ², Jamie Perin ¹, Justin Bengheya ³, Ghislain Maheshe ⁴, Cirhuza Cikomola ^{2 4}, Christine Marie George ¹

Implementation considerations in case-area targeted interventions to prevent cholera transmission in Northeast Nigeria: A qualitative analysis

Gurpreet Kaur ¹, Lindsay Salem-Bango ¹, Ana Leticia Melquiades Dos Santos Nery ¹, Emmanuel Chimda Solomon ², Emmanuel Ihemezue ³, Christine Kelly ⁴, Chiara Altare ¹, Andrew S Azman ⁵, Paul B Spiegel ¹, Daniele Lantagne ⁴

Case-area targeted interventions during a large-scale cholera epidemic: A prospective cohort study in Northeast Nigeria

Jennifer O'Keeffe ¹, Lindsay Salem-Bango ¹, Michael R Desjardins ², Daniele Lantagne ³, Chiara Altare ¹, Gurpreet Kaur ¹, Thomas Heath ⁴, Kanaganathan Rangaiya ⁵, Patricia Oke-Oghene Obroh ⁵, Ahmadu Audu ⁵, Baptiste Lecuyot ⁶, Timothée Zoungrana ⁶, Emmanuel Emeka Ihemezue ⁷, Solomon Aye ⁷, Mustafa Sikder ¹, Shannon Doocy ¹, Qiulin Wang ¹, Melody Xiao ¹, Paul B Spiegel ¹

Recent Highlights: NCPs

- NCPs are in literature!
 - Global South authors

Mapping of cholera hotspots in Kenya using epidemiologic and water, sanitation, and hygiene (WASH) indicators as part of Kenya's new 2022–2030 cholera elimination plan

Catherine Kiama ¹, Emmanuel Okunga ², Annastacia Muange ², Doris Marwanga ¹, Daniel Langat ², Francis Kuria ², Patrick Amoth ², Ian Were ², John Gachohi ^{1 3}, Nolluscus Ganda ⁴, Marion Martinez Valiente ⁵, M Kariuki Njenga ^{1 6}, Eric Osoro ^{1 6}, Joan Brunkard ⁷

Conditions to eliminate cholera in Mozambique – the pathway for the development of the national cholera plan

Cynthia Semá Baltazar ¹, Lorenzo Pezzoli ², Liliana Dengo Baloi ¹, Naira Luiz ¹, Jucunu Elias Chitio ¹, Igor Capitine ¹, Major Siteo ¹, Simões Mala ¹, José Paulo Langa ¹

Summary

The goals of this short presentation were to:

- Share again the GTFCC Research Agenda
- Note key research in last 18 months on WASH-Cholera
 - To inform WASH Working Group discussions
- **Note that a full review of all cholera research is coming in Fall**
 - **Please contact Tonia Thomas for more information**
 - **Much more formal alignments/disparities between agenda and research completed**