GLOBAL TASK FORCE ON CHOLERA CONTROL

Third meeting of the Global Task Force on Cholera Control (GTFCC) Working Group on Case Management

5–6 November 2018 – Les Pensières Center for Global Health

Contents

Abbreviations

ALIMA	Alliance for International Medical Action
AMR	antimicrobial resistance
AWD	acute watery diarrhoea
CDC	US Centers for Disease Control and Prevention
CFR	case fatality rate
CHEW	Community Health Extension Workers
CHW	community health worker
CHIPS	Community Health Influencer and Promoter Program
CHO	Community Health Officer
CTC	cholera treatment centre
DFID	Department for International Development
Gavi	Gavi, the Vaccine Alliance
GTFCC	Global Task Force on Cholera Control
HSA	Health Surveillance Assistant
icddr,b	International Centre for Diarrhoeal Disease Research, Bangladesh
IFRC	International Federation of Red Cross and Red Crescent Societies
IPC	infection prevention and control
JCHEWS	Junior Community Health Extension Workers
M&E	monitoring and evaluation
MoH	ministry of health
MSF	Médecins Sans Frontières
NCCP	national cholera control plan
NGO	nongovernmental organization
OCV	oral cholera vaccine
ORS	oral rehydration solution
RDT	rapid diagnostic test
RfP	Request for Proposal
RRT	rapid response team
SAM	severe acute malnutrition
UNICEF	United Nations Children's Fund
WASH	water, sanitation and hygiene
WG	working group
WHO	World Health Organization

Introduction and objectives of the meeting

Following introductions by all participants, Md Iqbal Hossein, chairperson of the Case Management working group (WG), opened the meeting. He noted that representatives from Bangladesh, Haiti, India, Malawi and Nigeria were in attendance, among other Global Task Force on Cholera Control (GTFCC) partners.

He introduced the objectives of the meeting as an opportunity to present an update on the GTFCC and the implementation of the Ending Cholera Roadmap at country level and in this context to discuss evidence-based standards for the management of cholera patients, and how the Case Management WG can best support countries to implement the Roadmap.

Specifically, the objectives of the meeting were to:

- provide an update on the implementation of the *Ending Cholera Roadmap* and country engagement;
- provide an update on the GTFCC research agenda and priorities for the Case Management WG;
- present new training and case management tools and agree on a dissemination strategy;
- discuss a review of rapid response teams (RRTs) during cholera outbreaks and lessons learned;
- present an update on the treatment of cholera in patients with severe acute malnutrition (SAM);
- discuss opportunities for coordination with other GTFCC working groups, including areas requiring the development of technical guidance.

This document provides a summary of discussions held during the two-day meeting. Presentations are available on the website of the Fondation Merieux: https://www.fondation-merieux.org/en/events/3rd-meeting-of-gtfcc-on-case-management-working-group/. Annex 1 contains the meeting agenda and list of participants.

GTFCC update

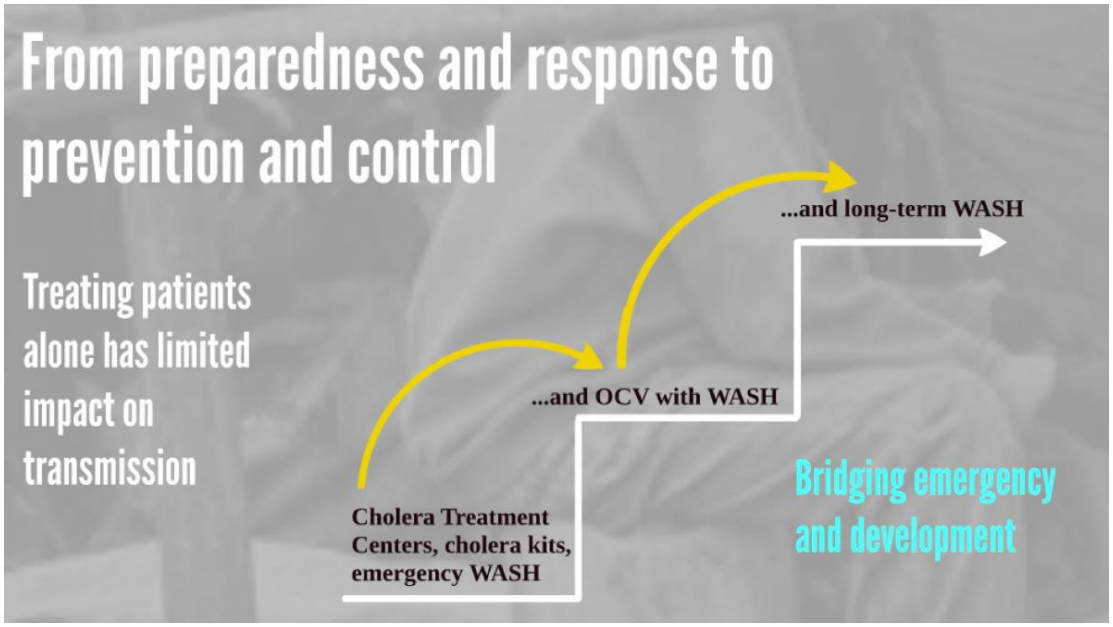
Ending cholera – A Global Roadmap to 2030 – Dominique Legros

Key points

- Dominique provided a rapid overview of the principles of the Roadmap. Case management focus is to reduce cholera deaths, contributing to the first step on the ladder towards cholera control (Fig. 1)
- One year on from the official launch of the Roadmap, the visibility of cholera and its impact on society is increasing; requests for oral cholera vaccine (OCV) are steadily increasing, and still outpace production.
- An increasing number of donors are interested in supporting the Ending Cholera Roadmap: Bill & Melinda Gates Foundation, Wellcome Trust, Gavi, the Vaccine Alliance (Gavi), among many others.
- OCV needs to be used more strategically; this includes using it as a gateway to improve water, sanitation and hygiene (WASH) infrastructure and development.
- The recent World Health Assembly resolution WHA71.4 is part of raising awareness of cholera's burden on health systems and society and has maintained the momentum to end cholera.

- Advocacy and communication around cholera continues, and the GTFCC's investment case is to be complete by the end of January 2019. The investment case will provide a cost–benefit analysis comparing business-as-usual to implementing the Roadmap strategy.

Fig. 1. The ladder to reduce cholera cases



Discussion summary

- Only two or three countries worldwide continue to resist naming cholera for what it is, grouping it instead under the term acute watery diarrhoea (AWD) – this is a positive sign that increased awareness of and advocacy for cholera control is removing the stigma around the disease. Advocacy, however, must continue.
- OCV production could be increased, but manufacturers (including Shantha and EuBiologics) do not want to assume the risk of increasing supply and then being unable to sell it to relatively few buyers. Multi-year guarantees on amounts to purchase could help (i.e. buyers assume some of the risk), but this is currently not planned due to the structure of procurement for the global stockpile.
- Pairing OCV campaigns with WASH interventions is the strategy being adopted in the GTFCC's stable countries (e.g. Malawi and Uganda). For fragile states such as Yemen and South Sudan experiencing ongoing conflict, long-term WASH interventions are more complex. Most countries benefit from technical assistance with drafting and implementing their national cholera control plans (NCCPs).
- Despite the World Health Organization (WHO) prequalification guidelines in place for cholera rapid diagnostic tests (RDTs) since April 2018, no manufacturers or country governments have expressed interest in designing/creating new cholera RDTs. However, one of the participants noted that the colleagues at the University of Florida have discovered a new pathway to make an RDT; though only at the grant writing phase, it could eventually make its way through WHO's prequalification process.
- A colleague from Nigeria noted that WASH aspects are managed by the Federal Ministry of Water Resources, but yet the Federal Ministry of Health (MoH) gets most of the funds related to cholera. Cross-sectoral collaboration is needed, particularly to address urban slums/informal settlements, which is an area that is a risk factor for cholera outbreaks in Nigeria.

Update on the GTFCC governance – follow up from the GTFCC annual meeting and research agenda – Johanna Fihman, GTFCC Secretariat

Key points

- A GTFCC National Cholera Control Framework is currently being developed. It is designed to help countries develop and implement their National Cholera Plans.
- The GTFCC is continuing to adapt in order to optimize its role in supporting countries. To that end, in additional to a Steering Committee, a GTFCC technical review committee will be established to ensure NCCPs align with the Roadmap, ensure costs are appropriate, and review OCV requests generally.
- The GTFCC research agenda is being developed by partners and for case management includes subjects such as targeted chemoprophylaxis and treatment of cholera in malnourished children. The Wellcome Trust and the Department for International Development (DFID) have launched a request for proposals (RfP) related to the research agenda.

Discussion summary

- Countries taking responsibility or ownership of cholera control plans is critical to controlling cholera, and is of course a challenge among so many competing priorities at national level. An example from Nigeria may prove useful for the GTFCC to increase national ownership: antimicrobial resistance (AMR) was an issue that needed such ownership within the context of the International Health Regulations (2005) and the One-Health approach. Focus on it was incentivized via funds in Nigeria, which included a monitoring and evaluation (M&E) component to ensure that projects were effective; successful projects led to continued (financial) support and today awareness of AMR is now much more fully dispersed throughout the country. Such incentives, perhaps also with a certification, could be useful in doing the same for cholera. Such a plan could be useful in the Democratic Republic of the Congo, which is developing an NCCP, but is finding it difficult to maintain political momentum for the process. Developing plans is the first step, but implementation is more complex.
- Certain medical schools, particularly in low-income countries, are looking for ways to enhance their curricula. Cholera is a good example to include within curricula in medical schools, as it touches on rehydration practices and use of antibiotics. If the GTFCC/Case Management WG were to build a module on cholera, this could be given to medical schools looking to expand their health curricula. This would have the benefit of increasing awareness about cholera and its treatment among graduating health cadres.

Partner and country updates

United States Centers for Disease Control and Prevention – Eric Mintz, US CDC

Key points

- The US Centers for Disease Control and Prevention (CDC) has received additional funding for cholera-related activities and has used it to hire personnel in several countries (e.g. Ghana, United Republic of Tanzania, Zimbabwe) and they hope to have further funding.
- Challenges identified by CDC include: climate change; management of potential simultaneous disease outbreaks in the same location (e.g. Ebola virus disease and cholera); and translating guidance into practice.

Wellcome Trust and the Department for International Development – Zoe Seager

Key points

- A meeting was held with representatives of all working groups on 23–24 July 2018 to identify research priorities. Subsequently Wellcome Trust and DfID launched an RfP. Applications for the RfP will be accepted until 26 November 2018. Decisions are anticipated in February 2019 (*Note: this was completed as anticipated in February 2019*).
- Wellcome Trust and DfID are hoping to support a broad range of proposals, guided by the GTFCC research priorities.
- There are finite funds available for this RfP, but it is hoped it will be a first step in funding the research priorities. Other donors are interested and a GTFCC research coordination mechanism is planned.

Discussion summary

- A research centre in Africa is lacking; it would be useful if some of the funds set aside for the RfP could be used to lay the groundwork for such a centre in one or two African countries.

Update from India – Pranab Chatterjee

Key points

- Cholera cases are massively underreported in India; since there is limited surveillance, it is impossible to state an actual case fatality rate (CFR), but an estimate is 2–3%. Lack of political will is among the main drivers for the limited data and the GTFCC was asked to assist in advancing the issue among India's politicians.
- General points: community health workers (CHWs) usually work in the community without formal training; antibiotics (e.g. ciprofloxin, gentamicin) are used indiscriminately in India; there has not been a formal assessment of the effectiveness of the health referral system; in remote areas it is very difficult to enforce correct disease management; water supply in many parts of the country is intermittent, and while it may test as potable when collected, it frequently tests contaminated at the point of use.
- Several initiatives are ongoing: mapping of cholera hotspots for better disease burden estimates (rough estimate is 139 million people living in hotspots); studies reviewing behaviours and their effect on risk exposure of susceptible populations; developing a multi-modal package of interventions to reduce the burden of diarrhoeal diseases in children < 5 years of age.

Pan American Health Organization/Haiti – Joao Toledo

Key points

- A summary of epidemiological data on cholera cases was presented for the region in 2018: countries affected were the Dominican Republic (~100 cases, 1 death), Haiti (~3000 cases; 37 deaths; CFR .05%) and Mexico (1 case, not fatal).
- OCV campaigns in Haiti are scheduled to continue until 2020 as part of the National Cholera Control and Elimination Plan (NCCP).

Zanmi Lasante, NGO in Haiti – Kenia Vissieres

Key points

- The long-term part of Haiti's NCCP begins in January 2019.

- An assessment is being done of the "Aba Kolera" or stop cholera project[1], funded by the Bill & Melinda Gates Foundation, to determine the impact that integrated OCV and WASH campaigns are having in Haiti (among many other projects).
- Challenges include political unrest, donor fatigue and status-quo mentality at the national level.
- Promising developments include: a new treatment centre that will open in Haiti in December 2018, for all diarrhoeal diseases; a laboratory in Mirebalais (Department Centre) has opened; there is an ongoing case–control study of an OCV and WASH intervention in Mirebalais – if proven successful, the intervention will be replicated in the commune of Hinche, funded by the United Nations Children's Fund (UNICEF).

Discussion summary

- A short discussion occurred about surveillance in Haiti. While surveillance is capturing suspected and confirmed cases in Saint-Marc, through 12 cholera treatment centres (CTCs) and a laboratory, the surveillance system is not countrywide, due to a lack of infrastructure, and therefore the total burden cannot be stated with certainty; this also means that there remains underreporting in Haiti. The CDC will be opening a laboratory in Cap-Haïtien in 2019 to assist with surveillance.

Nigeria Centre for Disease Control support to Nigeria cholera control efforts – Sebastian Yennan

Key points

- The cholera outbreak in Nigeria, affecting 20 states, reached its peak during week 37 of 2018, and had a CFR of 1.95%. Over 40 000 suspected cases were reported.
- The Surveillance Outbreak and Response Management System (SORMAS) provides harmonized real-time access to (surveillance and laboratory) data, and allows for management and response to health threats; it is currently deployed across 90% of Nigeria. A priority is extending the program to the final 10% of the country.
- Other priorities include completing the NCCP, and reliable chlorination of drinking water in identified hotspots during Nigeria's "cholera season".
- Among the challenges are treatment of cholera at the local level, in rural areas outside of CTCs; high cost of health care workers; inadequate culture capacity at the state level; and poor confirmation rate due to early use of antibiotics.

Discussion summary

- Case confirmation was being done by culture.
- It was noted that getting (properly packaged) samples from remote locations to national laboratories is a huge challenge; additional local level training is needed.

United Nations High Commissioner for Refugees – Allen Maina

Key points

- There were approximately 68.5 million displaced persons in the world in 2017. Uganda is among the top countries accepting displaced persons into their country. High numbers of displaced persons living in informal settlements is a risk factor for cholera outbreaks. A cholera outbreak occurred in Hoima, Uganda, in early 2018, during a peak influx of displaced persons, which had ~2% CFR.
- An outbreak also occurred in refugee camp Kyaka II, in Uganda, due to overcrowding and initial suboptimal infection prevention and control (IPC) and CTC

[1] https://www.pih.org/article/mission-stop-cholera-haiti

management (during which some health staff also contracted the disease, underscoring challenges in IPC).
- Chemoprophylaxis dilemma: Uganda's MoH suggested mass chemoprophylaxis, but there are insufficient data to determine its effectiveness and its impact on AMR.

Discussion summary

- In review of the outbreaks in Uganda it was noted that the influx of refugees (over 800 a day in March 2018) overwhelmed the capacity of the health system. Contact tracing was done of immediate contacts (i.e. people who share the same household) of those positively diagnosed, and selective chemoprophylaxis (doxycycline stat dose) given if also positive.
- Surveillance along the border with the Democratic Republic of the Congo was similarly not robust enough to detect cholera.
- The poor IPC is an issue that must be quickly addressed: health workers treating cholera patients should never contract cholera themselves while treating patients.

Médecins Sans Frontières – Natalie Roberts

Key points

- The Médecins Sans Frontières (MSF) response to health/humanitarian emergencies is primarily reactive, though there is a discussion internally about how and whether to begin advocating pre-emptive approaches. Its work on cholera is in areas where it is working on other ongoing humanitarian crises. In 2017, the organization treated ~143 000 people for cholera.
- In some countries MSF is involved in both OCV campaigns as well as case management, such as Nigeria and Uganda. In Uganda and other countries in which it works, MSF finds there is little awareness among the population on when to seek care, even in urban settings (leading to the question of how to encourage health-seeking behaviour). Also worrying is the finding that trained health staff were often not familiar with the basic principles of cholera treatment, which is often the reason for indiscriminate chemoprophylaxis.
- With respect to Uganda, it took the Government some time to declare the cholera outbreak, which MSF assumes means many cholera-related deaths were never reported (and when MSF went into the host communities, it found people had been dying of diarrhoea and not reporting it). Once the outbreak was declared, however, CFRs in the refugee camps went down quickly.
- In the panic of the first two weeks of the outbreak in Uganda all health staff were given doxycycline regardless of illness.
- Data collection in several countries is very poor. All stakeholders rely on the registers in health facilities, but those registers have no objective indicators of disease severity, indications of co-morbidities, or whether the patient has or is receiving antibiotics, for example. MSF and Epicentre have been working on a standardized line list to help model epidemics (which captures the necessary data without being overly complex), but the model would only be as good as the data informing it (and, in the case of Uganda or Niger, for example, that would mean a very poor foundation).

The Alliance for International Medical Action – Eric Barte de Sainte Fare

Key points

- The Alliance for International Medical Action (ALIMA) partners with other nongovernmental organizations (NGOs) and international organizations during outbreaks and for research. This work in carried out many countries in Africa. The presentation included details from outbreaks in Niger and Nigeria.

- In Niger, ALIMA noted delayed care seeking as an issue. Methods need to be implemented to encourage people to seek care early.
- Other issues seen in the field include coordination between actors and improving awareness and implementation of WASH and IPC.
- In Nigeria, ALIMA noted the cost of responding to outbreaks in hotspots ("fire fighting"), which underscores the need for a longer-term preventive approach as outlined in the Ending Cholera Roadmap.

Discussion summary

- The discussion began about the costs of pre-empting cholera versus reacting to outbreaks. The GTFCC investment case will show that long-term capacity building is less expensive than reacting every year or two with a response to stop an outbreak. In its work, ALIMA is using outbreak response to talk about mid-term strategies a country could implement to prevent future outbreaks; however, these do not extend to long-term strategies such as improved WASH infrastructure. The representative from ALIMA noted the organization was interested and willing to discuss long-term solutions during its outbreak support.
- To that end the WG suggested aligning with and advising partners on the most cost-efficient solutions to propose (and on which solutions to discourage based on lack of evidence for efficacy).

icddr,b – Islam Khan

Key points

- Approximately 30% of all patients in Bangladesh have or have had cholera. This represents a rich source of data, which should be studied – funds to conduct studies, however, are currently lacking.
- The International Centre for Diarrhoeal Disease Research, Bangladesh (icddr,b) is working extensively in Cox's Bazaar, one of the refugee camps housing the Rohingya who fled Myanmar. Work at Cox's Bazaar is an example of good coordination between stakeholders (e.g. with the International Coordinating Group (ICG), for pre-emptive OCV campaigns, the 2nd dose of which was administered in November 2017 in tandem with oral poliovirus vaccine for children). icddr,b was also a part of the study assessing the OCV campaign's effectiveness. During the OCV campaign in the camps. The surrounding local communities were also vaccinated.
- icddr,b is strengthening capacity of health care workers in partnership with UNICEF, by offering training programmes.
- Community engagement is also proactive in the camps, with health workers in contact with religious and political leaders; health-care seeking is also encouraged.
- Challenges include indiscriminate administration of antibiotics, both oral and IV.

Case management in health care facilities and infection prevention and control

First Wave of the 2016–2017 cholera outbreak in Hodeidah city, Yemen – Action Against Hunger experiences and Lessons Learned – Miguel Suarez Bustamente

Key points

- Action Against Hunger (Action Contre Faim) conducted a study of the 60-bed CTC it established in the biggest hospital in the city of Hodeidah, Yemen during the first

wave of the cholera outbreak. The plan was to also build capacity locally, and hand over operations after the cholera crisis ended.

- Between 28/10/16 and 28/2/17 4517 cases were admitted to the CTC. Defaulting was an issue, largely due to security issues.
- Children with SAM were given a special protocol (discussed in the GTFCC's annual meeting report 2016[2]).
- In March 2017, the CTC was turned over to the MoH. Thereafter the second wave of cholera hit the city. The MoH brought back the local team that had worked in the CTC during the first wave, but without the salary and technical support it originally had. The local team treated 6200 patients before technical support came. At the end of the second wave, the local team had treated 17 000 cases with only 51 deaths (CFR of 0.03%) – a remarkable achievement given the conditions under which it was working, and a model that could be considered a best practice in terms of building capacity.

WASH in health care facilities – longer term perspectives – Maggie Montgomery, WHO

Key points

- WASH in health care facilities is a major need – only 2% globally meet the criteria for having all WASH facilities (i.e. water, sanitation, hygiene and waste management). A multisectoral, comprehensive package has been developed to address this need, as part of 2018 Global Call to Action on WASH in HealthCare Facilities.
- Successes have been seen in Chad, Mali and Cox's Bazaar in Bangladesh. In the former, strong political commitment to increasing WASH in health care facilities led to improvements in WASH in 30 facilities in cholera hotspots, by building multi-stakeholder support, and training of health workers on issues like IPC.
- In Cox's Bazaar and Mali the water and sanitation for health facility improvement tool (WASH FIT), a practical guide for improving the quality of care through water, sanitation and hygiene in health care facilities, was used in training health workers.
- Using cholera outbreaks to start the conversation about improving WASH in health facilities has been effective. As a pillar of pre-emption, cholera hotspot mapping could be used in the same way: as a way to highlight the need for and improvements to health facilities and CTCs in these hotspots particularly; improvements to IPC practices must also occur alongside. Provision of basic WASH in all facilities in hotspots is achievable, but requires multisectoral support

Discussion summary

- Discussion about the value of investing in WASH vs using scarce resources elsewhere was begun following a comment that the Sanitation, Hygiene, Infant Nutrition Efficacy (SHINE) project and the WASH Benefits trial proved inconclusive. It was pointed out that basic WASH was the recommendation here, small doable actions, and that WASH was not actually more expensive than other activities, but rather just required a higher *upfront* investment; in the long term, it has been proven to be cheaper than outbreak response.
- A blueprint for the so-called perfect CTC, where all resources are available, is fine; but there is also a need for a blueprint outlining the essential needs for CTCs in resource-poor areas.
- The WG suggested creating a one-page document that includes the essential needs in a CTC or other health facility with respect to IPC, WASH (including chlorination) and case management.

[2] http://apps.who.int/iris/bitstream/handle/10665/251464/WHO-WHE-IHM-EVS-2016.1-eng.pdf?sequence=1

Literature review on WASH interventions in cholera outbreak response – Daniele Lantagne, Tufts University

Key points

- In response to the scarce evidence base of WASH efficacy in breaking the chain of transmission during cholera outbreaks, Tufts University and partners conducted a systematic review of 15 000 documents (half grey and half peer-reviewed literature) and identified gaps in knowledge.
- Tufts is carrying out studies looking at the necessary chlorine solutions to effectively remove *V. cholerae* and at the effectiveness of household disinfection programmes in the field. Studies are carried out in the laboratory and evaluating field practices. The results are being analysed and will be published.
- The field studies are highlighting the need for clear protocols and systematic implementation of protocols.

Discussion summary

- In addition to the quantitative work, there is qualitative aspect to the study, which assessed individuals' reactions towards the spraying. While some noted feeling stigmatized by the spraying, several also noted the desire for the spraying, as this was perceived to alleviate neighbours' anxiety and encourage them to visit the household again. This highlights the need for contextual analysis.

Update on the GTFCC technical note on WASH in CTCs – Monica Ramos, UNICEF/GTFCC WASH WG coordinator

Key points

- There was a gap in standardized guidance outlining practical and evidence-based decision-making to support the set up, management and closure of CTCs. To fill that gap, the GTFCC developed a 15-page document for use while setting up a CTC, which includes best practices for decision-making by managers and operational actions by staff and is synergized with other GTFCC technical guidance and meant to be practical for use in the field.
- The 15-page document was field tested in rural Yemen, and has incorporated comments from members of the OCV and Case Management working groups this year.
- The document has been formulated from existing guidance from multiple GTFCC partners, harmonized and in one guide.

Discussion summary

- Questions were raised about the use of the guide in countries where cholera is not acknowledged. The principles remain the same and the name "acute watery diarrhoea" could replace cholera if necessary.
- The guide does not specifically address issues relating to marginalized groups.
- The WG suggested updating the guide to include a type of grading of each step within the guidance as "acceptable" and "ideal". That is, minimum standards necessary when creating and running a CTC for extremely resource-constrained scenarios.

Case management at the community level – Part 1

Use of rapid response teams – Presentation of UNICEF review – Monica Ramos, UNICEF (on behalf of Tim Grieve, UNICEF)

Key points

- In response to the lack of systematic reviews of cholera RRTs, and operational recommendations on how to replicate the RRT model in outbreak settings, UNICEF undertook a review of RRTs. RRTs in this context are teams visiting the households of patients.
- Results from Haiti and Yemen were presented. Lessons learned from the review include the following: establish RRTs as early as possible, as part of a comprehensive alert response strategy; RRTs are reliant on reliable epidemiological data; RRTs are sustainable when incorporated into national level programmes; political willingness to support RRTs is also critical, which would help with prepositioning of supplies, funding, etc.
- Evidence of RRTs impact on an outbreak is currently being compiled.

Discussion summary

- Currently there is no literature that shows that doing "intervention X" delivers "benefit Y" through RRTs in outbreaks. Such research is needed. Also suggested as a research topic is an evaluation of an RRT programme's cost-effectiveness. Such data could be used by governments or other stakeholders to "sell the product".
- There is currently a gap in guidance for setting up an RRT, similar to the GTFCC technical note on WASH in CTCs. Once there is evidence on effectiveness, this could be on the work plan.

IFRC public health emergency response units configuration development project – Tiina Sarikoski, IFRC

Key point

- Led by the Swiss Red Cross with multiple partners, this project will seek to ease the burden on health care facilities via the CTC and identify the unmet need of those not reporting for care. It will include an M&E component as well. The next step in the process of this project is development of concept.

Country presentations on community health worker programmes: Malawi's update of the Cholera Response Manual for Health Care Workers – Wiseman Chimwaza, Ministry of Health

Key points

- Malawi CHWs are called Health Surveillance Assistants (HSAs) and they constitute over 50% of the country's 17 000-strong health workforce.
- It is the HSA that is the first point of contact for citizens with the health system. HSAs add health data into the village register, educate citizens about the need for WASH, cholera control, administer oral rehydration solution (ORS) and OCV, and refer ill patients to CTCs and/or higher levels of care when necessary, among other duties. Despite this, HSAs receive relatively little training: currently three months, but there has been a suggestion to increase this to six months, perhaps as part of a government-led training programme.
- The Cholera Response Manual for Health Care Workers in Malawi has recently been revised (October 2018), and now includes line lists for cholera and OCV.

Country presentations on community health worker programmes: Presentation of the Nigerian Public Health System – Dr Tochi Okwor, University of Nigeria Teaching Hospital Ituku Ozalla

Key points

- There are three cadres of Government-sponsored CHWs in Nigeria: Community Health Officers (CHOs), Community Health Extension Workers (CHEWs) and Junior Community Health Extension Workers (JCHEWs). JCHEWs spend 90% of their time in the community and the other 10% in clinics. A fourth cadre of health worker also operates, known as community resource persons (CORPs): volunteers or staff from NGOs, which are not on the Government's payroll. Training of the cadres is shown in Fig. 2.
- The Community Health Influencer and Promoter Program (CHIPS), a four-week programme, trains recognized members of communities in each of Nigeria's health wards (lowest health level). As members of communities, CHIPS workers proactively to encourage health-seeking behaviours among citizens in the community, such as antenatal care for pregnant women, vaccination, etc. CHIPS workers inspect latrines and water sources, suggesting changes to risky behaviours.

Fig. 2. Training of Nigeria's community health worker cadres

Training and curriculum for Community Health workers

	CHO	CHEW	JCHEW	CORPS
Training	Train at Community Health Schools attached to Teaching Hospitals Duration of training is two (2) academic years Advanced Diploma	Train at a School of Health Technology in each state Duration of training is 3 calendar years Diploma	Train at a School of Health Technology in each state	Trained by NGOs Timing and duration varies.
Curriculum				
	National Standing Orders for Community Health Officers	National Standing Orders for Community Community Health Extension Workers	National Standing Orders for Junior Community Health Extension Workers.	The training curriculum used is determined by the supporting NGO No nationally approved curriculum is available.

Discussion summary

- CHIPS workers could be strengthened to include more cholera case management, an aspect of their training which is currently limited. CHIPS workers report to higher health levels, ensuring M&E is carried out.

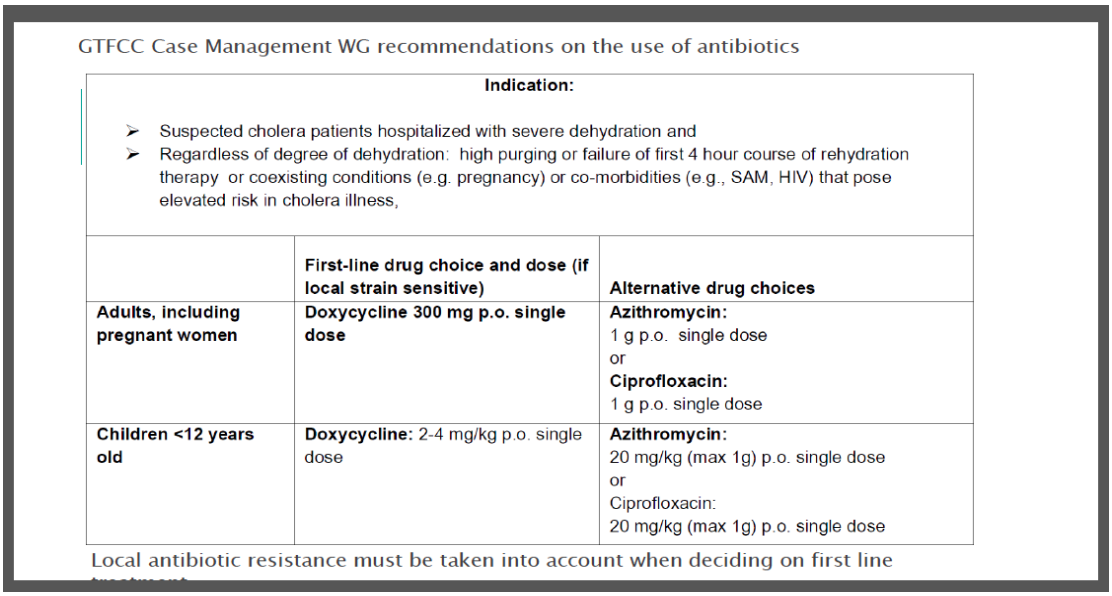
Case management at the community level – Part 2: Status of recommendations on the use of antibiotics

Update on the GTFCC technical note on antibiotics – Kate Alberti, GTFCC Secretariat

Key points

- Following discussion at the 2017 Case Management WG meeting, a technical note on the use of antibiotics was finalized and is available on the GTFCC website[3] (shown in Fig. 3). The biggest change from previous guidance is loosening restrictions on the use of doxycycline in children aged less than 8 years and pregnant women. ORS remains the main treatment recommendation.
- Regarding the use of antibiotics as chemoprophylaxis and in the context of global concern about AMR, the WG agreed to the following at the 2017 meeting: "Use of antibiotics in asymptomatic contacts of an index case within a household (defined as people sharing single cooking pot) is not recommended unless as part of a formal study designed to answer questions on effectiveness and impact on resistance development to provide evidence to inform future guidance. No mass chemoprophylaxis."

Fig. 3. Case Management working group recommendations of the use of antibiotics



GTFCC Case Management WG recommendations on the use of antibiotics

Indication:

- Suspected cholera patients hospitalized with severe dehydration and
- Regardless of degree of dehydration: high purging or failure of first 4 hour course of rehydration therapy or coexisting conditions (e.g. pregnancy) or co-morbidities (e.g., SAM, HIV) that pose elevated risk in cholera illness,

	First-line drug choice and dose (if local strain sensitive)	Alternative drug choices
Adults, including pregnant women	**Doxycycline 300 mg p.o. single dose**	**Azithromycin:** 1 g p.o. single dose or **Ciprofloxacin:** 1 g p.o. single dose
Children <12 years old	**Doxycycline:** 2-4 mg/kg p.o. single dose	**Azithromycin:** 20 mg/kg (max 1g) p.o. single dose or Ciprofloxacin: 20 mg/kg (max 1g) p.o. single dose

Local antibiotic resistance must be taken into account when deciding on first line

Management of cholera and latest antimicrobial sensitivity pattern of cholera organism in urban & rural Bangladesh – Md Iqbal Hossain, icddr,b

Key points

- Stool samples of cholera patients (all population groups) were studied to assess antimicrobial sensitivity of the cholera organism in Bangladesh.
- Several types of antibiotics are used in Bangladesh to treat cholera; azithromycin is used as first line, except in older patients (>65 years), for which doxycycline is used as first line. Cholera is still showing ~99.7–100% sensitivity to azithromycin over the past 10 years.
- Study shows that cholera is still very sensitive to ciprofloxacin.

[3] Full recommendations can be found online: http://www.who.int/cholera/task_force/use-of-antibiotics-for-the-treatment-of-cholera.pdf

- Cholera's sensitivity to doxycycline has been increasing over the past three years.

Analysis of strains and resistance profiles – Marie Laure Quilici, Institut Pasteur

Key points

- There have been 11 introductions of the 7th pandemic cholera agent from Asia into Africa since 1970. The first antibiotic-resistant isolates were recovered in the early 1980s. Since 2000, all tested strains were resistant.
- Non-selective chemoprophylaxis such as in Rwanda in the mid-1990s and Madagascar in 1999 may have contributed to antibiotic resistance acquisition through genetic mutation.
- While AMR is being seen among cholera isolates, this is not leading to higher virulence of strains. It is recommended to perform an antibiotic resistance test before initiating antibiotic treatment.

Discussion summary

- Discussion of the cholera-resistant strains led members of the WG to request the creation of a "strain bank", a registry showing the latest evidence of each strain's resistance, to inform treatment guidelines. The WG agreed to develop such a registry.

Treatment of household contacts – key questions informing MSF research protocol – Iza Ciglenecki, MSF

Key points

- The GTFCC does not recommend mass chemoprophylaxis, and there is currently insufficient evidence to recommend selective chemoprophylaxis. To inform the latter, a review of the literature was undertaken.
- Research from the 1970s and 1980s shows that use of antibiotics reduces shedding of *V. cholerae*, which in theory could lead to lower transmission rates. However, the research was conducted before AMR was identified as a public health concern.
- Conclusions drawn from the review led to more questions rather than answers. While individual preventive efficacy was demonstrated, impact on transmission is still unclear. This includes on determining which close contact is most at risk of getting cholera. In addition, the risk of AMR still needs to be verified, but could that risk be limited if chemoprophylaxis is targeted? And if so, which indicators would allow that to be documented?
- To answer some of these questions, Epicentre and MSF have proposed a study called "Prevention of cholera infection among contacts of case: a cluster-randomized trial of azithromycin", whose primary objective is to compare the incidence of cholera infection among household members receiving standard care or standard care plus azithromycin chemoprophylaxis.

Discussion summary

- A lengthy discussion followed in which WG members sought to weigh the possible benefits of reducing disease burden through targeted chemoprophylaxis (e.g. lives saved) and the spectre of losing one of the most formidable weapons against bacteria available to health practitioners through AMR.
- The WG agreed there is interest in targeted chemoprophylaxis but also very concerned about AMR. Studies should be carried out using targeted chemoprophylaxis integrated with other health services. There will be no change to recommendations for now, but the WG will reassess at its 2019 meeting.

Case management – targeting specific groups: Cholera and patients with severe acute malnutrition

Cholera in Yemen – Abdul-Malik Mofadal, WHO Country Office (presenting for a member of the Ministry of Health who could not attend the meeting)

Key points

- The current conflict has exacerbated Yemen's challenges with poverty, illiteracy and environmental degradation.
- Approximately 1.25 million cases of suspected cholera, with a CFR of 0.21%, coming in two waves. The Government was slow to declare cholera outbreak initially. Children aged <5 represent ~30% of all cases.
- OCV campaign was carried out during May–August 2018, vaccinated 662 000 (65% coverage).
- As the conflict continues, challenges such as lack of resources (government workers continue to work without pay), degraded WASH and health facility infrastructures, and scarcity of water deepen the humanitarian emergency unfolding in the country.

Discussion summary

- Participants encouraged each other to share the information widely, so that political leaders will even more strongly advocate for a cessation of hostilities and an end to targeting health facilities in Yemen and humanitarian organizations there.

Update since 2017 meeting – presentation of interim protocol on the treatment of cholera in children with severe acute malnutrition – Dr Tahmeed Ahmed, icddr,b

Key point

- Following discussion at the 2017 GTFCC case management WG meeting, an interim cholera treatment protocol for children with SAM was developed. The protocol was based on current evidence and follows the WHO recommendations for rehydration in children with SAM.

Discussion summary

- Evidence in this field is lacking, and therefore it was agreed that more research was needed.
- Given the dearth of evidence it was suggested that there be some flexibility in the guidelines to enable field research in some contexts.
- However, there was consensus that it is important to provide guidance with the best evidence available to date.
- Such precise guidelines used in the field is a challenge and guidelines should be adapted to poor field conditions, e.g. what was needed at a bare minimum, and in what should be done in resource-rich settings.
- The medication furosemide used to treat oedema can lead to death, so its use should also be addressed.
- Use of mid upper arm circumference is not a perfect indicator to determine SAM in children.
- Funding for research in this area is critical: WG members and other stakeholders should draft protocols, and then seek resources to fund them.
- This is a priority area in the GTFCC research agenda.

Presentation of ongoing research on rehydration of children with SAM – Kirsty Houston, Imperial College

Key points

- The mortality rate of children with SAM presenting diarrhoea and severe dehydration is very high 25–30%; cholera in addition complicates the prognosis further.
- Literature reviews of both IV and oral rehydration were undertaken.
- Imperial College and colleagues have conducted a study: Gastroenteritis Aggressive Versus Slow Treatment for Rehydration (GASTRO). Children with gastroenteritis and severe dehydration received either the GASTRO Slow Arm or WHO plan C protocol. Results will be published in 2019. Preliminary data show that up to 20% of patients were misclassified as malnourished. Mortality was low (< 5%).
- An additional study called GASTRO SAM, already funded, is being planned to assess efficacy of the same protocols for children with SAM. Training was underway at the time of the meeting. Recruitment is planned in three sites in Kenya and Uganda. This study is not cholera specific.

Discussion summary

- Discussion focused on research ethics in past studies.
- It was suggested that Nigeria could be a study site for research on cholera and children with SAM. Representatives from Nigeria agreed in principle and so this suggestion will be explored further.
- Based on the discussions, Dr Ahmed was asked to provide further input to the two-page protocol on the treatment of cholera in children with SAM. The document will be revised based on his inputs and then circulated to the WG.

Cholera and pregnancy: MSF experience and presentation of draft guidelines – Iza Ciglenecki, MSF

Key points

- Due to the dearth of guidelines for treating pregnant women with cholera, a number of years ago MSF undertook a literature review and consequently set up the treatment centres described below.
- MSF set up two obstetric units in Haiti, specialized cholera treatment units in Leogane and Port-au-Prince. These studies constitute the biggest cohorts in the literature thus far. Findings: High foetal mortality confirmed, and no observed increased risk for mothers. Half of foetal deaths occurred prior to admission. The association of foetal death with severity of dehydration and vomiting was also confirmed.
- Unpublished data from an MSF study in Conakry, Guinea, which used the same protocol as in Leogane, Haiti, showed a similar level of foetal mortality (~13%).
- MSF cholera treatment guidelines have been updated to include a chapter on cholera and pregnant women, including draft guidelines for treatment.

Discussion summary

- WG members agreed that recommendations on a treatment protocol could not be offered for pregnant women with cholera, as the evidence base was still too limited. However, in an effort to sensitize the health care community about this group, members suggested mentioning pregnant women as a distinct group in the WG's Yellow Book, noting that further research is needed to inform an updated treatment protocol, and to address the issue of septic shock.

Guidance, training and capacity building

Smartphone-based vs paper-based decision-support tool on IV fluid use for the management of diarrhoeal disease – Eric Nelson, University of Florida

Key points

- Software, called Outbreak Responder, is an application available for Android and iPhone smartphones (the latter coming in 2019), developed to facilitate real-time data collection to better respond to outbreaks.
- There are two components:
  - "The first component is a rehydration calculator that automates World Health Organization guidelines for how to assess and rehydrate a patient with diarrheal disease. The calculator is designed to be used in 30 seconds and does not require an account or connectivity.
  - The second is intended for the Outbreak Response Team that may include epidemiologists, public health administrators, and clinicians. This component requires a login/password.
  - Patients are organized in a registry with icons that designate disease severity. Each patient record contains basic demographic, clinical, laboratory, and geospatial data."[4]
- It was pilot (stress) tested in Bangladesh, which represented a "harsh" environment for software, and its results assessed[5]. The application will be ready for hand-off to interested parties in 2019–2020, and is available in French and English.

Finalization of the Cholera Outbreak Response Manual – Chesco Nogareda, GTFCC Secretariat

Key points

- The Cholera Outbreak Response Manual (the) is a pocket-sized booklet designed to give cholera outbreak response teams access to the most essential points in one place. A smartphone application is also being developed alongside the field manual, which can work offline, is editable, and from which supplementary information can be downloaded and adapted to local contexts. It will be available in multiple languages.
- Section 7 deals with all issues of case management, which includes comprehensive flow charts for decision-making.

Discussion summary

- The Yellow Book (and accompanying appendices) will be made as clear and user-friendly as possible, so terms such as "aggressive rehydration" will be removed.
- Mention of pregnant women with cholera will also be added to the Yellow Book.
- Mention of directions for making the sugar-salt-solution (when ORS is not available) will be moved to the appendices and not be mentioned in the main text
- It was also suggested to make flowcharts available in grey scale settings with no access to colour printers.
- WG members also recommended field-testing the book with three groups to evaluate actual uptake. To this point, countries were asked to provide the GTFCC information, such as names of stakeholders in countries responsible for sensitizing

[4] Text extracted from the description on the Google Play store: https://play.google.com/store/apps/details?id=com.stooltool&hl=en

[5] https://journals.plos.org/plosntds/article?id=10.1371/journal.pntd.0005290

the applicable health workforce, and details of the specific languages required for translation.

Update on the GTFCC application and other materials (job aids and others) – Kate Alberti, GTFCC Secretariat

Discussion summary

- Seven job aids have so far been developed. WG members suggested job aids on the following topics: chlorine solution creation; hand washing; how to collect a stool sample, package and send it for analysis; and incorporate PAHO's job aid on personal protective equipment.
- The colleague from Nigeria specifically suggested making job aids available to help CHWs identify cholera and danger signs that would necessitate referral of a patient to a CTC, establish oral rehydration points and making ORS. As was mentioned for the Yellow Book, job aids should also be completely unambiguous.
- An online committee of practice for these job aids could be a useful way to finalize these job aids.
- Job aids should also be field-tested as well. Both the job aids and the Yellow Book will be finalized in the coming months.

Case Management WG next steps

Summary of main points agreed during the meeting and agreement on agenda of work – Johanna Fihman, GTFCC

Key points

- IPC: Finalize and publish on the GTFCC website the WASH in CTC technical note for essential and ideal scenarios (that can be adapted to local contexts). Time frame: by end of 2018. Field test to be determined.
- Antibiotics: targeted chemoprophylaxis and its benefits on decreasing disease transmission to become a research priority. In addition, there is a request for the Laboratory sub-working group to increase countries' capacity to conduct AMR testing, and to make available information about cholera strains and their antimicrobial sensitivity in a registry, which includes information on which strains have been analysed, by whom, where and when.
- SAM: Based on the comments during this meeting, the two-page treatment protocol for children with SAM will be updated and then circulated for final review. A two-page guideline is to be published on the GTFCC website. Time frame: end first quarter 2019. This remains a research priority.
- Cholera and pregnancy: issue to be mentioned by the GTFCC in its guidelines (e.g. the Yellow Book), with the note that further research is needed. Interim guidance (technical note) will be drafted in early 2019, and the area is to be added to the research agenda. Time frame: delivery by the GTFCC's annual meeting in June 2019.
- Yellow Book: a comment on pregnant women and cholera is to be added to the final draft document. Final contents of book to be completed by end 2018. Time frame: publication by the GTFCC annual meeting in June 2019.
- Job aids: This work will include collaboration with the Laboratory sub-working group. Job aids to be finalized in quarter 1 2019.
- Once finalized the Yellow Book and job aids should be included with cholera kits. Time frame: delivery by the GTFCC's annual meeting in June 2019.

- Research priorities: the following are already identified in the GTFCC research agenda: rehydration protocol for children with cholera and SAM; targeted chemoprophylaxis and benefits on transmission vs risk of development of AMR. Additional research priorities:
    - community-based treatment – feasibility and impact on the evolution of outbreaks;
    - impact and cost-effectiveness of RRTs on the evolution of outbreaks (across sectors).

Final words – Md Iqbal Hossain, icddr,b

Dr Md Iqbal Hossain, the WG chairperson, thanked all the participants for the lively discussions. He also thanked the Fondation Merieux for its support. Before officially closing the meeting, Dr Hossain noted that the inequity of cholera has no place in 2018; through the dedicated work of the GTFCC and partners we will end cholera.

Annex 1. Meeting agenda and list of participants

3rd Meeting of the Global Task Force for Cholera Control (GTFCC)
Working Group on Case Management
AGENDA

Objectives:

The meeting will be an opportunity to present an update on the GTFCC and the implementation of the *Ending Cholera Roadmap* at country level and in this context to discuss evidence based standards in the management of cholera patients, and how the Case Management WG can best support countries in implementing the Roadmap.

Specifically, the proposed objectives of the meeting will be to:

- Provide an update on the implementation of the *Ending Cholera Roadmap* and country engagement
- Provide an update on the GTFCC research agenda and priorities for the Case Management WG
- Present new training and case management tools and agree on a dissemination strategy
- Discuss a review of Rapid Response Teams during cholera outbreaks and lessons learnt
- Present an update on the treatment of cholera in patients with Severe Acute Malnutrition (SAM)
- Discuss opportunities for coordination with other GTFCC Working Groups, including areas requiring the development of technical guidance

Dates: 5 and 6 November 2018

Location: Veyrier du Lac (Geneva area), France

Venue: Les Pensieres Conference Centre, Fondation Merieux

Session	Topics
	MONDAY 5 NOVEMBER
8.30 -9.00	*Welcome coffee*
9.00 -9.30	**INTRODUCTION** Opening Remarks – *Md Iqbal Hossain, Chair of the Case Management WG* Introduction of participants and meeting objectives
9.30 – 10.30	**GTFCC UPDATE** Update on the implementation of the *Ending Cholera Roadmap* and countries engagement – *Dominique Legros, GTFCC Secretariat* Update on the GTFCC governance – follow up from the GTFCC Annual Meeting and Research Agenda – *Johanna Fihman, GTFCC Secretariat* *Group discussion on the role of the Case Management WG in supporting the implementation of the Ending Cholera Roadmap at country level*
10.30 - 10.50	*Coffee Break*
10.50 – 13.00	**PARTNER AND COUNTRY UPDATES** Update from participating countries and GTFCC partners *10mn presentations followed by 10mn discussions*
13.00 - 14.00	*Lunch Break*
14.00 - 16.00	**CASE MANAGEMENT – IN HEALTH CARE FACILITIES** Introduction First Wave of the 2016-17 Cholera Outbreak in Hodeidah City, Yemen – ACF Experience and Lessons Learned, *Miguel Suarez Bustamente, ACF* **Infection Prevention and Control** WASH in health care facilities – longer term perspectives – *Maggie Montgomery, WHO* Literature review on WASH interventions in cholera outbreak response – *Daniele Lantagne, TUFTS University* Update on the GTFCC technical note on WASH in CTCs – *Monica Ramos, UNICEF* *Group discussion*: *next steps on developing recommendations related to IPC*
16.00 – 16.15	*Coffee Break*
16.15 – 17.30	**CASE MANAGEMENT – AT THE COMMUNITY LEVEL – Part 1** Introduction Use of Rapid Response Teams - Presentation of UNICEF Review – *Monica Ramos, UNICEF* IFRC Public Health ERU configuration development project, *Tiina Sarikoski, IFRC* **Country presentations on Community Health Worker programmes:** • Malawi's update of the Cholera Response Manual for Health Care Workers, *Wiseman Chimwaza, Ministry of Health* • Presentation of the Nigerian Public Health System, *Dr Okwor Tochi, University of Nigeria Teaching Hospital Ituku Ozalla* *Group discussion*

	DINER AT FONDATION MERIEUX – from 19.30
	TUESDAY 6 NOVEMBER
9.00 - 10.30	**CASE MANAGEMENT – AT THE COMMUNITY LEVEL – Part 2** Feedback from Day 1 **Status of recommendations on the use of antibiotics** • Update on the GTFCC Technical note on antibiotics – *Kate Alberti, GTFCC Secretariat* • Management of Cholera and latest antimicrobial sensitivity pattern of Cholera organism in Urban & rural Bangladesh, *Md Iqbal Hossein, icddr,b* • Analysis of strains and resistance profiles, *Marie Laure Quilici, Institut Pasteur* • Treatment of household contacts – key questions informing MSF research protocol, *Iza Ciglenecki* *Group discussion on way forward*
10.30 – 11.00	*Coffee Break*
11.00 - 13.00	**CASE MANAGEMENT – TARGETING SPECIFIC GROUPS** **Cholera and patients with Severe Acute Malnutrition (SAM)** Update from Yemen – *Eng. Abdul Malik Mofadal, WHO Country Office* Update since the 2017 meeting – presentation of interim protocol – *Dr Tahmeed Ahmed, icddr,b* Presentation of ongoing research on rehydration of children with SAM- *Kirsty Houston, Imperial College* *Group discussion on way forward* **Cholera and pregnancy** MSF experience and presentation of draft guidelines – *Iza Ciglenecki, MSF* *Group discussion on way forward*
13.00 - 14.00	*Lunch Break*
14.00 – 15.30	**GTFCC GUIDANCE, TRAINING AND CAPACITY BUILDING** Smartphone based vs paper based decision support tool on IV fluid use for the management of diarrhoeal disease - *Eric Nelson, University of Florida* Finalization of the Yellow Book – *Chesco Nogareda, GTFCC Secretariat* Update on the GTFCC application and other materials (job aids and others) – *Kate Alberti, GTFCC Secretariat* *Group discussion on technical guidance – gaps and priorities and dissemination strategy*
15.30 - 16.00	*Coffee Break*
16.00 – 17.00	**CASE MANAGEMENT WG AND NEXT STEPS** Summary of main points agreed during the meeting and agreement on agenda of work – *Johanna Fihman, GTFCC Secretariat* Validation of research priorities – *Md Iqbal Hossein, icddr,b* Final words- *Md Iqbal Hossein, icddr,b*
	END OF MEETING

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