Defeating meningitis by 2030: a global roadmap
From regional implementation to impact in countries

Eighth meeting of the Technical Taskforce (TTF)
Geneva, 13–15 December 2022
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Opening

The eighth meeting of the Technical Taskforce (TTF) on the Global roadmap for defeating meningitis by 2030 took place at the headquarters of the World Health Organization (WHO) on 13–15 December 2022. Members of the TTF and other meeting participants were welcomed by Dr Katherine O’Brien, Director of WHO’s Department of Immunization, Vaccines and Biologicals who noted that since the Global roadmap was approved by the World Health Assembly in 2020, the process towards defeating this disease is moving forward thanks in large part to the taskforce. The work on meningitis is one of WHO’s core global strategies, and defeating the disease will not only save huge numbers of lives but will help to strengthen health systems worldwide.

The TTF Chair, Professor Brian Greenwood of the United Kingdom, and the co-Chair Dr Samba Sow of Mali added their welcomes to participants. On Day 1 Professor Sow took the chair and welcomed the contribution of the TTF’s efforts to strengthening primary health care. Meeting participants then introduced themselves around the table and also over the Internet.\(^1\) Annex 1 contains the agenda of the meeting and Annex 2 has the list of participants.

Global update and next steps

Dr Marie-Pierre Preziosi noted dramatic progress on meningitis in the WHO regions and stressed that 2023 would be a pivotal year for global efforts to defeat meningitis by 2030. The TTF leads and coordinates the implementation of the framework for action to defeat meningitis. The present meeting involved staff from all WHO regions – as well as from the London School of Hygiene and Tropical Medicine (LSHTM), Médecins sans Frontières (MSF), Epicentre, the Meningitis Research Foundation (MRF), PATH, the United States Centers for Disease Control and Prevention (CDC), the United Nations Children’s Fund (UNICEF) and individual experts from the Bill & Melinda Gates Foundation, the Institut Pasteur, the Norwegian National Institute of Public Health, University College London and the University of Cambridge. Health experts and scientists from Burkina Faso, Chad, Ghana and Niger, as well as experts from Gavi, Global Health Visions and the University of Liverpool also participated in this 8th TTF meeting. In February 2023, the first meeting of the Strategy Support Group (SSG) would take place comprising representatives from ministries of health (one from each of the six WHO regions), six civil society organizations with regional and global representation, as well as donor representatives at global and regional levels, including bilateral or multilateral government agencies and philanthropic foundations. Progress reports on defeating meningitis by 2030 would also be on the agendas of the 152nd session of the WHO Executive Board in February 2023 and of the Seventy-sixth World Health Assembly in May 2023.

2023 will see continued development of the regional implementation frameworks and national plans. In mid-2023, a pledging event will take place to coincide with the official launch of the investment case for the global roadmap.

From regional implementation to impact in countries (1)

Regional update: South-East Asia Region

Dr Manish Kakkar reported on progress towards defeating meningitis in WHO’s South-East Asia Region. The regional vaccine action plan 2000–2030 has been adopted, including the goal of

\(^{1}\) TTF Chair Professor Brian Greenwood was unable to reach Geneva as planned on the first day of the meeting due to transport delays and joined via the Internet. He was able to chair the meeting in person on days 2 and 3.
increasing equitable access and use of new and existing vaccines. Member States had been informed of the Global roadmap for defeating meningitis and in August 2022 the Regional Immunization Technical Advisory Group meeting included an information session on defeating meningitis. Member States were asked to integrate meningitis vaccines into their national immunization strategies and/or comprehensive multi-year plans. A representative of the Ministry of Health of a Member State in the region has been proposed as a member of the Strategy Support Group (SSG) of the Global roadmap, and regional strategic roadmaps for health security and for diagnostic preparedness have been endorsed by the Regional Committee. Terms of reference (ToRs) have been finalized for a consultant to assist with a landscape analysis and to draft the regional framework for defeating meningitis.

All countries in the region are using Hib as part of a pentavalent vaccine, and pneumococcal conjugate vaccine (PCV) is now used in a number of countries. Surveillance is being strengthened and the importance of the role of immunization and surveillance in defeating meningitis has been recognized. Nevertheless, challenges remain – including competing priorities due to the COVID-19 pandemic response, concerns as to coordination between different departments in the regional office and insufficient technical support for regional adaptation of the roadmap. An immediate next step is to identify a suitable candidate to support the development of the regional implementation framework for the Global meningitis roadmap.

**Discussion**

In discussion, the region was congratulated on the progress made so far and was urged to complete its implementation framework as soon as possible. In terms of interdepartmental collaboration, TTF members stressed the importance of including representatives of the mental health team, and particularly the brain health unit, in the effort to defeat meningitis.

**Regional update: Region of the Americas**

Dr Lúcia de Oliveira reported that the Pan American Health Organization (PAHO) had conducted a landscape analysis and a Member States’ workshop for developing a regional roadmap to defeat meningitis. The landscape analysis was based on a review of literature and secondary data sources, with a risk assessment that looked at indicators of health services and the burden of disease. TTF members were informed that meningococcal vaccines had reduced infection in countries of the Americas when they were used widely in a population. Unfortunately, it was not always possible to reach 80% coverage. The countries most at risk are Haiti, Dominican Republic, Guatemala, Bolivia, Honduras, Venezuela, Paraguay, Suriname, Brazil and Argentina.

Regional activities in support of the Global roadmap have included PAHO interdepartmental meetings to discuss strategy, the landscape analysis to build an evidence base for selecting countries to be targeted, a PAHO webpage on meningococcus, and the launch of the regional roadmap in September 2021. A virtual course on meningococcal meningitis was organized with 300 participants from 20 countries, and a meeting with eight selected countries focused on sentinel surveillance data for invasive bacterial diseases. In addition, a workshop with 60 participants from 12 countries was held in Lima, Peru, to develop the regional roadmap for Latin American countries.

During 2023–2024, the regional roadmap on defeating meningitis will be further developed on the basis of country inputs. Activities will aim to achieve regional and national commitment and political will to defeat meningitis, and will strengthen the engagement of public-private partnerships and civil society. It will be necessary to ensure there are sufficient technical, human and financial resources to achieve roadmap goals. A team of consultants will be formed to provide direct support to countries. Country visits are planned in order to prepare roadmaps according to national specificities. It was
stressed that, although targeted countries have been selected on the basis of their needs, all countries should work towards advancing the roadmap. Ministries of health will have plans for monitoring activities and evaluating indicators. Communication and risk management plans will be developed to support the implementation of roadmap activities.

**Discussion**

During discussion, the collaborative workshop was described as a significant step forward for achieving implementation of the roadmap. Different countries have different approaches and the PAHO workshop helped to bring them together and encouraged cooperation. The TTF felt that more such meetings in other regions would be helpful.

It was noted that surveillance varies considerably between countries in the Americas. TTF members stressed the importance of community involvement in support of surveillance. There is a lack of consistency between the health information systems of countries in the Americas, and a unified system is needed both regionally and globally. It was suggested that global unification of health information systems should come first and should then be adjusted to regional needs. In answer to a question on whether to have national champions for defeating meningitis, the response was to be careful because high-profile persons at national level often tend to have strong political views which may be inappropriate for PAHO and WHO.

**Process and materials to develop national plans to defeat meningitis by 2030**

Dr Lorenzo Pezzoli pointed out that an action framework exists, several regional frameworks are complete and others are in progress, and it is time to move ahead to develop national plans. His presentation aimed to show ideas on the way forward and to gather feedback from members of the TTF. He described the strategic plan as a “living document” that could change as time progresses and as feedback is gathered. The strategic plan will be followed by operational plans that will align with other global initiatives such as immunization strategies and primary health care (PHC) and will ultimately have an impact beyond meningitis. He noted two main aims of the process to develop national plans, namely: 1) to have a description of objectives, activities and milestones with related timelines, budget and responsible organizations (i.e. technical output); and 2) to engage stakeholders at all levels (i.e. political output). Each country needs a strategic plan with foundation activities, operational building blocks and support functions.

WHO is developing a guidance manual on *Defeating meningitis by 2030: a guide to developing national plans*. The publication was still in a preliminary version at the time of the TTF meeting, but it will describe three phases of plan development – 1) a preparation phase (with a situational analysis based on meningitis risk assessment, landscape analysis and stakeholder mapping); 2) an activity planning phase (with brainstorming about activities and interventions, creative thinking in technical areas, and goals broken down into achievable steps of a detailed plan); and 3) an implementation phase (with processes for developing the plan, for validating and endorsing it, and for reporting on progress). The implementation phase requires the use of building blocks to build on what already exists. It will include establishing a process for review of the plan at key stages on the road to 2030. Goals and focus can be adjusted as needed. It was stressed that the whole process should be country-led (to identify the gaps and define objectives, activities and resources) but with a multi-level and multi-disciplinary approach (including decision-makers and fieldworkers, and not limited only to traditional meningitis experts and players).
Discussion

A number of issues were raised – such as whether formal processes should be defined to support countries in developing plans, whether this would benefit countries, and what support partners can provide. TTF members were strongly in favour of letting countries decide, rather than telling them what to do, although it was also felt that it can help to decide if you have a starting point to guide you. A clear national framework can help facilitate funding, and many countries are already working in global partnerships with donors and aid recipients. It would be important to establish clearly who is accountable for each national plan. If accountability is clear and formal processes are followed, donors are more likely to support a programme. It is hoped that a draft of WHO’s manual will be shared early in 2023. Civil society is a key element in any national partnership and should be involved early in the process. Meningitis is clearly a global disease, and it is important to keep this in mind when planning.

Regional update: African Region

Dr Anderson Latt and Professor Andre Bita reported that the Regional implementation framework to defeat meningitis in Africa by 2030 was launched in September 2022 by the Regional Director of WHO’s African Region. An update on implementation of the framework was provided during the 19th annual meningitis meeting and at the 9th meeting of MenAfriNet partners on 8–9 November 2022 (during which there was also a side-meeting dedicated to the regional framework). The region’s first workshop on the development of national strategic plans to defeat meningitis by 2030 for 15 targeted countries was held on 28–30 November 2022. There were two prior briefing sessions with the 15 countries: one on advocacy, stakeholder sensitization and the formation of country teams, and one on the use of a template to do an analysis of the fight against meningitis plus a pre-workshop. Countries at high and medium risk were considered priorities.

Challenges to defeating meningitis in the African Region include competing public health priorities such as the ongoing COVID-19 pandemic, an outbreak of Ebola virus disease in Uganda and a variety of humanitarian crises. In the past two years, the need to combat COVID-19 interrupted other vaccination programmes such as those for PCV. Chad, Guinea, Somalia and South Sudan were mentioned in this regard. Additionally, there is a lack of standardized guidance for identifying and managing sequelae, funds still need to be mobilized, and 10 high-risk countries still do not yet have the monovalent meningococcal A conjugate vaccine (MenACV) in their routine immunization schedules.

Discussion

The next steps for Africa will be to support the first batch of 15 targeted countries to finalize and implement their plans, to mobilize resources to support countries to implement their plans, and to organize a second workshop (for 15 additional targeted countries) on the development of national strategic plans to defeat meningitis by 2030. This is scheduled for April 2023. The target of the regional framework is for 80% of countries to be using PCV in time to report to the 73rd Regional Committee in August 2023. During discussion, it was noted that PCV is increasingly being used and is being encouraged in the remaining countries.

Update on Burkina Faso

Professor Mahamoudou Sanou told the TTF that Burkina Faso is in the centre of Africa’s meningitis belt. Every year in the dry season there is a rise in the number of cases. However, the number of cases and fatalities from serogroup A decreased after 2010 when MenACV was introduced. This
vaccine has shown good protection of young children. After 2011, the number of total cases and deaths fell with regular vaccination and there were minimal cases of serogroup A. However, the number of cases of serogroups X and Y has grown. In 2019, there was an outbreak of meningitis of serogroup C in Burkina Faso near the border with Niger.

**Discussion**

TTF members noted the necessity of continuing to mobilize resources against meningitis and urged larger use of vaccines against serogroups A, C, W, X and Y. The Chair reinforced the need for this pentavalent vaccine, pointing out that there are many villages in the meningitis belt where the residents can go for a year or more without ever being able to see a community health worker.

**Update on Niger**

Dr André Bita reported on a workshop in which country representatives were asked a set of four questions – on progress towards development of national workplans, innovative activities, collaboration with neighbouring countries, and challenges. There were 90 representatives of countries at the workshop. Niger reported that it had a first draft of a national plan. Niger along with other countries at the workshop reported they had plans that covered the five pillars of the meningitis framework.

**Discussion**

TTF members raised the issue of surveillance for sequelae although it was felt that it was difficult for many countries to do this. It was noted that, in Africa, meningitis is the second cause of neurological conditions after stroke. There was discussion as to what the purpose of conducting surveillance for sequelae would be – would it be to measure the burden of meningitis or to estimate the needs for clinical care? It was pointed out that there is little evidence, in the places where surveillance of sequelae has been attempted, that patients have access to neurodevelopmental care. It was agreed that this issue should be considered by the WHO Regional Office for Africa. It was suggested that care might be more likely if one clinic can take care of all the possible sequelae that meningitis patients experience. It was agreed that PHC is a good model on which to base such services, with meningitis being considered not only in terms of the mortality it causes but also in terms of the morbidity linked to sequelae. If there is no attempt to follow up people who have had meningitis because care is not available, they can be lost to follow-up even if care becomes available several years later. This further led to the question of whether illnesses are really sequelae of meningitis. A training package would be needed to deal with this. An additional issue raised was that there are widely differing attitudes to the safety and usefulness of lumbar puncture and who should be allowed to perform this, and that this situation should be clarified.

**Regional update: Western Pacific Region**

Dr Hardeep Sandhu noted that WPRO is trailing other regions in developing national plans to defeat meningitis. A regional framework has been developed for vaccine-preventable diseases (VPDs) and immunization in the Western Pacific Region and was endorsed by the Seventy-first session of the Regional Committee. The framework involves 18 strategies and aims to achieve three strategic objectives, namely: 1) strengthening and expanding the immunization systems and programmes; 2) preparing for and responding to public health emergencies; and 3) managing health intelligence on VPDs and immunization. However, the real burden of meningococcal disease in the region is unknown and meningitis is not generally considered a priority among countries in the Western Pacific. There is a lack of data on the disease burden and there is under-reporting due to weak
surveillance, lack of guidelines and inconsistent case definitions. As of 2020, meningococcal vaccination was a part of standard immunization only in Australia and China.

The strategic directions identified by the regional office for countering meningococcal disease are: 1) to prevent and control outbreaks through development and enhanced access to affordable vaccines, effective prophylactic strategies and targeted control interventions; 2) establish, sustain and strengthen surveillance; 3) improve diagnostic capacity at all levels of health care; and 4) ensure prompt and effective management and treatment. Dr Sandhu summarized the main surveillance systems in the region – chiefly for polio, measles/rubella, invasive bacterial diseases (IBD), Japanese encephalitis (JE) and rotavirus – which report data regularly to the regional office. Surveillance is very uneven and only nine of the 13 countries where JE is endemic have actually introduced a JE vaccine. Since JE is an important disease in the Western Pacific Region, and there is pressure to increase JE surveillance, it was suggested that it could be worthwhile to include surveillance for meningitis too. As of 2021, four countries of the region had still not introduced PCV.

Strategies proposed are: 1) to introduce PCV in the remaining countries, prioritizing countries with high childhood mortality; 2) to achieve and sustain high immunization coverage with PCV throughout the region; 3) establish, sustain and strengthen surveillance for invasive pneumococcal disease; 4) strengthen laboratory capacity to detect pneumococcal isolates from patients; and 5) conduct nasopharyngeal carriage surveys and monitor changes in disease circulation after the introduction of PCV. It was reported that ToRs are being prepared for a consultant to carry out the landscape analysis and support the development of the implementation plan for the roadmap. Informal consultations have begun with other WHO units, and a Member State representative for the SSG has been identified.

Discussion

There was a comment that the low rate of IBD in the region was likely to be due to the wide use of antibiotics making it difficult to obtain positive cultures. However, it was also noted that, even when trying to diagnose very sick children, parents and health care providers resisted the use of lumbar puncture, so that diagnosis could not be done in time to affect the course of the disease. Even if patient or their family agrees to a lumbar puncture, this happens only at tertiary-level hospitals which means waiting for a referral and during the waiting period a doctor is likely to give the child an antibiotic. Meningitis in children is often a consequence of systemic bacterial infections, and it was confirmed that the approach in the Western Pacific is to take a “pan-bacterial” approach, testing for all invasive infections. In West Africa it is now 10 or 12 years since MenAfriVac immunization began and during that time parents and health workers have come to recognize the value of lumbar puncture. In the Western Pacific Region this process is only just beginning.

Partner updates

Development of diagnostic tests

Dr Katya Fernandez addressed the development of meningitis diagnostic kits. An expert meeting in 2018 identified three needs, namely: 1) in the meningitis belt, to identify the causative organism rapidly at peripheral level for the purpose of outbreak detection (use case 1); 2) to differentiate at the point of care between bacterial and viral infections (use case 2); and 3) to identify the pathogen in a patient with the meningoencephalitis syndrome in order to determine the appropriate treatment, switch treatment or terminate inappropriate treatment (use case 3). A Target Product Profile (TPP) was developed in 2016 for a rapid diagnostic test (RDT) specific to the meningitis belt. Several products were developed – such as MeningoSpeed and PneumoSpeed from BioSpeedia, and
DiaTropix from Biomérieux (funded by the Médecins sans Frontières Foundation). While this product development work is focused on the meningitis belt, diagnostic products would be available for procurement by other regions.

A diagnostic expert group has been established to develop a RDT for use case 1 with two potential test candidates, with the intention of having some tests available for procurement in mid-2024. Development of a test for use case 2, which would aim to differentiate at the point of care between bacterial and viral disease, is still in the early stages and the TPP still needs to be developed. The TPP for use case 3 was published in April 2020, with the work supported by CDC, and PATH has completed a market review to identify potential platforms in the pipeline. There has also been an exercise to look at the demand and the market size and to estimate the global need. No current platform meets the TPP for use case 3 but an expert group has helped identify four platforms with the highest potential for successful development. PATH is assessing the suitability and probability of success of the four platforms by considering technical risks, the probability of success, R&D timelines and costs, and push–pull incentives. The overriding concerns are cost and timelines.

**Discussion**

The TTF concluded that an effective RDT is the most needed tool to support timely case detection and effective interventions. The goal must be to ensure equitable access to safe, reliable and appropriate RDTs and to do this collectively. It was proposed that partnerships, incentives and technology innovations will help to speed up the development of new RDTs. Funding will be needed to carry out technical evaluation and to enable pooled procurement for use cases 2 and 3. Members felt that support by countries and partners is essential for ensuring that appropriate RDTs are made available at the appropriate levels of care.

It was further stressed that use case 3 might be addressed in the TTF’s group discussions the following day. An RDT that can test for multiple pathogens would be key for use case 3. The Chair stressed that products should be simple and easy to use and to sustain in difficult settings.

**The role of PATH**

Dr William Hausdorff reported that PATH’s involvement in vaccine development ranges from acting as a technical consultant on trials by other groups, coordinating serological assessments, or actually coordinating and running clinical studies. PATH is involved in a study of children aged 9 months and 15 months in Mali funded by the US National Institutes of Health and using a pentavalent meningococcal conjugate vaccine produced by the Serum Institute of India. It is hoped that this will be prequalified in 2023. PATH also has a grant from the Bill & Melinda Gates Foundation to work with EuBiologics of the Republic of Korea on their pentavalent vaccine for which phase 2 and 3 studies will be conducted in the next few years.

PATH will also conduct studies, again with Gates Foundation support, of pneumococcal conjugate vaccines — the 10-valent Pneumosil from the Serum Institute of India and a 25-valent vaccine from Inventprise in the USA.

**Discussion**

The Chair commented that it would be ideal if all products could be in one vaccine. The response was that combination vaccines may well happen one day but probably not soon. Most vaccines are developed for a specific pathogen. However, it may be worthwhile for the TTF to consider the desirability and demand for combination vaccines.
Update on Group B Streptococcus

Dr Heidi Soeters and Dr Marie-Pierre Preziosi gave a brief introduction to current work on the development of Group B Streptococcal (GBS) surveillance and a strategy to prevent GBS infection in infants. It is hoped to have a full session on GBS at the next taskforce meeting and discussions are underway for this with WHO colleagues working on maternal and perinatal health. The WHO Technical Advisory Group on GBS vaccine is planning a major workshop in the second quarter of 2023 and will update the next TTF meeting.

Discussion

There were brief updates on the roadmap milestones relating to diagnosis and treatment of GBS. It was considered helpful to establish an expert group to develop TPPs for diagnostics to identify maternal GBS carriage as well as infant GBS infection. In 2023, it is planned to review the current situation re: GBS disease surveillance, consider whether to develop GBS surveillance standards, and to produce a briefing note on what is known about GBS surveillance.

Acute meningitis and sequelae

Dr Tarun Dua noted that strategic goal 9 of the Global roadmap is to “Provide and implement appropriate, context-specific, quality assured guidelines and tools for treatment and supportive care to reduce the risk of mortality, sequelae and antimicrobial resistance”. WHO evidence-based guidance should be developed on best practice diagnosis, treatment and care in detecting, monitoring and managing people with bacterial meningitis and sequelae resulting from meningitis. The target audience for this guidance will be health-care providers in first- or second-level facilities, including basic outpatient and inpatient services, particularly in low- and middle-income countries. A Guideline Development Group (GDG) has been formed with experts in infectious diseases, neurology, paediatrics, emergencies, epidemiology, One Health and lived experience of the issues related to sequelae. These efforts are linked to WHO’s agenda for brain health, Rehabilitation 2030 and PHC health system levers for action. TTF members were shown WHO’s process for the development of guidelines, including the system for the grading of evidence.

The main aim of strategic goal 13 is to generate evidence on the sequelae of meningitis. A protocol for sequelae studies has been developed and countries interested in participating are being identified. A cohort study has been proposed to evaluate sequelae among bacterial meningitis survivors. The chief objective will be to estimate the increased risk of sequelae caused by bacterial meningitis in adults and children in the meningitis belt compared with control groups. The study will be piloted in one of the 26 countries of the meningitis belt.

Discussion

Members of the TTF welcomed the report from Dr Dua, stressing that neurological sequelae are a problem in all regions. In the Eastern Mediterranean Region, for instance, there had been outbreaks of viral meningitis, including in north-eastern Syria. In the meantime, during the development of the guideline, briefing notes adapted to the regions were requested.

From regional implementation to impact in countries (2)

How to move forward specific activities in countries – breakthrough groups

The meeting then divided into three discussion groups, as follows:
Group 1: Surveillance and laboratory

Group 1 noted that Strategic Goal 5 of the Global road map aims to develop and improve strategies for epidemic prevention and response, Goal 6 aims to improve diagnosis of meningitis, Goal 8 aims to develop and implement a policy to identify mothers who are GBS carriers to prevent infant GBS infection, Goal 10 aims to ensure that systems are in place for surveillance of meningitis and detection of the main meningitis pathogens, Goal 11 aims to develop and implement strategies for surveillance of invasive GBS disease, and Goal 12 aims to develop and conduct studies on the burden of sequelae. The group addressed questions on the status of regional surveillance strategies, how to leverage partners to provide more in-country support, how to better integrate antimicrobial resistance (AMR) testing, and how to develop and implement a global strategy for studies and surveys.

In this regard, Group 1 proposed that a surveillance working group should be established to help clarify the types of surveillance models needed depending on the region and objectives. There is also a need to develop technical briefing notes on epidemic/outbreak definitions, review GBS surveillance (and surveillance standards), and produce short guides on surveillance of disease sequelae, AMR surveillance and referral networks for sequencing. The group also urged a focus on increasing capacity for lumbar puncture, serotyping and culture of blood and cerebrospinal fluid.

Group 2: Clinical diagnosis and treatment including recognition of sequelae and long-term care

Group 2 noted that, while the WHO guidelines on meningitis are to be developed over 24 months, there is an urgent need for briefing notes in the meantime – not only for health workers but also for civil society and the community. The idea would be to produce a job aid to summarize how to recognize, diagnose and treat a case and how to recognize sequelae. National bodies could add to this informing communities what to do and where to refer people in their own locality. In addition there would also be a document specifically on the recognition and treatment of sequelae – such as what to do in case of hearing or vision impairment. There were requests for such a document at workshops in the African and Americas regions. It is necessary to find out what support is available and to get communities involved in helping to provide it. The group proposed looking at existing data to identify the main sequelae and outcomes. A mapping of resources could be carried out by persons in the country to identify what groups and institutions are available to address sequelae, while an expert group would finalize recommendations. There was overall TTF support for this activity, but members felt the idea should be developed further by the working group.

Group 3: Increasing awareness and advocacy on meningitis and its impact in communities.

Group 3 called for a global advocacy strategy that can make meningitis a globally recognizable issue. The group also stressed the importance of communities and the need to work with them because community advocacy strategies and communications are important as local people know what is most effective at their level. The group noted that it is important to identify forums for information-sharing (e.g. case studies, storytelling, developing individual theories of change) and to connect people with the national planning process from the start. People want to understand how things work so they can provide a representative voice that feeds into national decisions. It was also recommended to consider efforts to build advocacy for other diseases or conditions. The roadmap is global and advocacy should be global, the effort to defeat meningitis by 2030 will also need to rely on community-based persons or groups. The number of activists for meningitis is already considerable so there is a good basis for advocacy to be expanded. TTF members welcomed the comments of the group, noting that a lot of community contacts exist in both developed and
developing countries. Local NGOs and women’s groups are active in many developing countries and these could be enlisted to assist with the meningitis campaign.

Overall, it was felt that the three discussion groups could usefully evolve into working groups of the TTF and report regularly at TTF meetings.

Global update

Implementing the roadmap for defeating meningitis through the universal health coverage/primary health care (PHC) approach

Dr Gerard Schmets, Deputy Director of WHO Special Programme on PHC, drew attention to the outcome of the Global Conference on Primary Health Care which took place in Astana, Kazakhstan. The conference endorsed a new declaration emphasizing the critical role of primary health care (PHC) around the world. The declaration refocused efforts on PHC to ensure that everyone everywhere can enjoy the highest possible attainable standard of health. Dr Schmets described the strategic levers of PHC as commitment of government, policy frameworks, funding, and the engagement of communities and other stakeholders. PHC’s operational levers include models of care, a PHC workforce, physical infrastructure, medicines and other health products and engagement with the private sector. These strategic and operational levers are already being applied against epilepsy and can also be applied to the defeat of meningitis.

When integrating a new disease into PHC, it is important to consider what must contribute to the package of essential PHC services – i.e. what can be offered when an outbreak of meningitis occurs? The PHC workforce does not deal with only one disease but has to cover all diseases and conditions that are likely to occur. Nevertheless the workforce must be trained to understand each disease and how to treat it. Countries must invest in their workforces and, above all, must invest in and work with the community at all levels to ensure that meningitis is recognized as something that can be changed.

Discussion

In discussion it was noted that countries often ask how to access funding for PHC. WHO has standard way of supporting countries, but at the same time national budgets need to include financing for medicines or vaccines. If there is a package of integrated services, people have access to care for a range of diseases – including meningitis. It is easier for a minister of finance to negotiate for funding for an integrated package of care than for specific diseases.

Strengthening links with the disability agenda

Professor Nora Groce said that less than 3% of people with disabilities, including many whose lives have been impacted by meningitis, have access to rehabilitative care. The UN Convention on the Rights of Persons with Disabilities (CRPD), approved in 2006, requires that all countries that ratify the convention (184 countries as of December 2022) must align their laws with the CRPD. All countries now have groups of organizations of people with disabilities, though it is important to distinguish between organizations run “by” people with disabilities and organizations run “for” people with disabilities. Both types of organization are relevant to efforts on behalf of persons with meningitis or its sequelae. However, people affected by meningitis seem to know little about the disability community.

Currently there is little connection between people working on meningitis and those working on disability. There is also little connection between global and local disability organizations and the global, regional, national or local meningitis efforts. Dr Groce suggested it would be helpful if the
meningitis community could reach out to disability organizations, and if disability organizations could establish ongoing relations with local meningitis groups or champions. Disability organizations often specialize in training and guidance on national laws and local policies. Access to disability groups and populations could help to fast-track efforts to make meningitis concerns and services more widely known and could advise on how children and adults disabled by meningitis can lead full and productive lives at community level.

However, many organizations of persons with disabilities are not medically-based and often have low budgets. They have political influence but low membership. And, of course, many people (such as many with poor eyesight) do not see themselves as disabled. It would be good to have a plan or framework to form links with these groups. United Nations groups and national bodies that address disability rarely include meningitis. Meningitis groups should consistently engage with disability organizations. It is also important to note that people with disabilities of whatever kind are also at risk of meningitis. There is a need for clear and concise guidance on how to establish and maintain continuing contact with organizations of people with disability and with service organization. This would require multi-year strategic plans at national level with objectives, activities and resources and could potentially be built into the meningitis roadmap.

Discussion

Members of the TTF welcomed the presentation and the suggestions made by Dr Groce. It was noted that people with disabilities are frequently at additional risk of infectious diseases, and therefore meningitis vaccination through PHC is important. UNICEF reported that it is working to ensure that disabled persons receive COVID-19 vaccinations and it was suggested that meningitis vaccination could be included in these efforts. It was pointed out that there are far more data available on disabled persons in general than 20 years ago, and there are also several maps of disability organizations.

Global Meningitis Genome Partnership

Professor Rob Heyderman explained that the Global Meningitis Genome Partnership (GMGP) is a partnership between WHO and a number of collaborating laboratories interested in genome sequencing for a variety of reasons – including understanding transmission, tracking new strains, vaccine coverage, AMR and virulence. Meningitis tends to affect the poorest people in societies and the GMGP was formed to solve the problem that the disease is most common in poor locations while genome sequencing is available in wealthy locations. The GMGP aims to establish a data set that can be consistently used across countries in order to ensure quality and consistency of data, enable a common understanding of the data and facilitate data-sharing. A single meningitis genome library is currently not feasible but a central interface with analysis and visualization tools is a possibility. This can show the representativeness of genome data, data linkages and data quality, and can ensure that data are shared publicly. The challenge cannot be addressed piecemeal but can be achieved only with multiple organizations and disciplines working together with a common goal.

A demonstration project is being prepared to enable a better understanding of end-to-end whole genome sequencing capacities for meningitis by conducting a situation analysis at different stages of the GMGP-developed value chain. The project will be conducted in Chad and Nigeria and will characterize stakeholders involved in surveillance and genomics, assess genomic surveillance capacity, identify the gaps and barriers to genomic surveillance and data-sharing, and explore ways to strengthen genomic surveillance capacity. The project is expected to start in August/September 2023 and is expected to be rolled out later in other countries in the region.
Discussion

It was noted that the issue of ownership of samples and the right to use genomic data would need to be addressed in accordance with the terms of the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization. It was pointed out that in the African Region, few countries send samples to WHO and even when samples are examined the results are not always known at country level. Some countries tend to see genomic sequencing as an academic exercise that is of little relevance to them. It would therefore be important for this project to ensure that the countries concerned are kept informed of the results and that they understand how whole genome sequencing can help them decide their policies. The researchers were also urged to be in contact with the bioinformatics coordinator of the Africa Centre for Disease Control and Prevention. Members of the TTF stressed the need to have local persons trained in bioinformatics.

Confederation of Meningitis Organizations (CoMO)/MRF: World Meningitis Day

Ms Elaine Devine reported that in 2022 World Meningitis Day was held on 5 October. A multilingual toolkit was prepared and the joint work of the Confederation of Meningitis Organisations (CoMO) and the Meningitis Research Foundation turned the day into a bigger event than before. World Meningitis Day 2022 was also part of a roadmap milestone under strategic goal 15 – i.e. that the day was visibly endorsed by policy-makers and funders and used by at least 80% of countries. In 2021 CoMO tracked 48 countries and their activities for World Meningitis Day, but in 2022 CoMO focused efforts towards that 80% milestone – namely 156 out of WHO’s 195 Member States. This was done by increasing participation within the CoMO membership, increasing that membership, and reaching stakeholders outside the CoMO network. The theme was “Racing to defeat meningitis” and a toolkit was published in 20 languages, including on Twitter, Instagram, LinkedIn, Facebook and Tik Tok. The aim was to provide the tools to enable others to do the job themselves. The toolkit and other materials were shared with all roadmap partners who were encouraged to spread the messages and dedicate 5 October to World Meningitis Day in their communications.

Campaign activity was tracked in 106 countries with activities in all areas of the world. At least 7.6 million people were reached on social media, there were 3300 toolkit downloads in 20 languages and at least 228 stories about the day appeared in media around the world. Ms Devine thanked the advocacy and engagement working group that supported the day. Some 54 CoMO members took action in 32 countries, and 40% used social media. CoMO now has 115 members in 51 countries, with 40 new members added in 2022 (including 17 new members from Africa and 17 from the Americas).

Discussion

TTF members expressed their appreciation for all the work that went into making World Meningitis Day a success. A question was asked about what was done to engage with ministries of health or other areas of government. Although 17 countries in Latin America were listed, PAHO was not involved. In the Eastern Mediterranean Region CoMO has a member in Pakistan but it was unclear if there were members in other countries of the region. It was agreed that more direct collaboration between CoMO and WHO regional and country staff would be an area of growing importance and that more emphasis should be put on this in future.

2 The Nagoya Protocol of 2010 is a supplementary agreement to the 1992 Convention on Biological Diversity.
The Meningstop and MenMap projects: strengthening the surveillance of invasive bacterial infections in North Africa and the Middle East

Professor Muhamed-Kheir Taha said that much of the surveillance of invasive bacterial infections in this region focuses on the Hajj pilgrimage. Few data are available and diagnosis in the region is suboptimal. Consequently, the aim is to improve diagnosis of invasive bacterial infections, to implement a common case definition, to strengthen the link between epidemiological data and laboratory data, and to improve available data to support decision-making. The Institut Pasteur currently has a project with funding from Sanofi in the region (MENINGSTOP) in Morocco, Algeria and Tunisia. A similar and bigger project is about to begin in the Middle East, North Africa and Eurasia on meningitis and septicemia mapping (MenMap) with funding from Sanofi.

Professor Taha provided data from the first project in North Africa which together formed a prospective multicentre study of children between the ages of 1 month and 15 years presenting with specific signs or symptoms. The study involved implementation of real-time PCR of N. meningitidis, S. pneumoniae and H. influenzae with yearly retesting of 10% of random samples from all samples tested by PCR from each participating laboratory. The study organized a two-week theoretical and practical training course, and it is planned to continue these in future. In conclusion: the rate of positive PCR for at least one of the three agents – N. meningitidis, S. pneumoniae and H. influenzae – was stable in the three countries at around 20%. CSF samples were the most frequently tested so it is important to stress the need to test blood and purpuric lesions too. Group B invasive meningococcal disease seemed to be the most prevalent serogroup in North Africa, while Group Y invasive meningococcal disease was also frequent in Algeria. The age distribution for invasive meningococcal disease showed the highest number of cases among children aged <5 years except in Morocco.

Discussion

Members of the TTF raised the issue of testing of samples other than CSF. This was chiefly because of a policy to minimize the number of lumbar punctures where possible. There was also consideration of the fact that two of these countries (Morocco and Tunisia) are part of the WHO Eastern Mediterranean Region while Algeria is a member the African Region. Professor Taha said that work is ongoing with neighbouring countries too but these were not part of this project. It was noted that genomic sequencing showed a different strain of Group B N. meningitidis in Morocco from that in Algeria and Tunisia. The project plans to carry out serotyping of S. pneumoniae as the next step.

Roadmap Investment Case and communication

Investment case

Mr James Fishon of Global Health Visions explained that a number of key questions were used to assist in drafting of the investment case for the Global roadmap to defeat meningitis by 2030. Following comments at the TTF meeting in July 2022, a TTF subcommittee redrafted the investment case taking account of the comments of TTF members. The redrafting aimed to answer several questions, namely: does the investment case clearly outline the asks being made, including an amount timeframe and what the funding will pay for; does it accurately depict the overarching objectives of the meningitis community; does it capture the spirit of diversity, equity and inclusion; what impact will the roadmap and the investment case have on other disease areas; and how can this process leverage other activities, initiatives and stakeholders? Data on the impact of the
investment case were revised in collaboration with PricewaterhouseCoopers (PwC). The impact is expected to go far beyond meningitis.

Work is continuing on direct and indirect costs. Mr Antoine Durupt noted that the investment case has been refocused from “cost” to “ask”, with committed contributions omitted and increased emphasis on investment. All milestones are included and there are more activities and funds for contributions to PHC integration and the broader impact beyond meningitis. In particular, the new document distinguished the “total ask” from the “catalytic ask”. The “ask” is now around US$ 440 million, with the catalytic ask amounting to about US$ 130 million. Some US$ 41 million of the catalytic ask is intended for WHO- and partner-led activities with US$ 89 million for activities led by Member States. WHO’s proportion of the total ask is US$ 90 million with a total for partner-led activities of US$ 350 million. For every dollar for WHO and partners, there will be 4 dollars for countries.

As for activities, about US$100 million is earmarked for each of the technical pillars and more that 10% of the total ask for technical pillars is earmarked for advocacy and demand. There is a limited amount for coordination and M&E.

In reference to testimonials of people affected by meningitis, Ms Elaine Devine said that people who have been affected by meningitis are very enthusiastic to have their stories used. They want other people to learn from their experiences. However, it is essential to provide them with feedback on their contribution and its impact.

Dr Sanjay Bhardwaj said that at the national level, the plan has to be owned by the country, and the requirements will differ between countries. He stressed that there need to be some examples of success in order to motivate other countries to action. Success stories can also encourage donors. The document was clearly for the major international donors but it would be helpful to have a document that can also be used by countries to raise their own funds locally.

Ms Farzana Muhib said there was past experience of campaigns that failed because their ask was too high. PATH focused on pillars 2, 3 and 4 and looked at introduction costs needed by countries to get started and then at recurrent costs that will continue to be needed for a year or two as the project continues (though these could be taken over by the country). The ask for meningitis is to help countries to get the intervention started. It is not time-specified but is also not a request for long-term funding; the project is designed to be pragmatic. There was a suggestion to cover all the recurrent costs in the first year and to gradually reduce the coverage over time as the provision of resources is taken over by the country, although there was also concern that such an arrangement would need to be adjusted according the country needs. A pragmatic approach was recommended.

**Key thematic areas of the investment case**

Some thematic areas have been identified as most important for the investment case. Mr James Fishon drew attention to these, namely: the far-reaching impact of the roadmap in terms of health, education, poverty and equity; the new approach to infection control, including access to disability support; investment in the roadmap means more than preventing and treating meningitis; investment supports other initiatives such as primary health care, universal health coverage and health systems strengthening; integration into primary health care; the decrease of stigma; and support to the Sustainable Development Goals. Associated advocacy materials are planned such as an attractive Executive Summary of the investment case, a short document with key messages (developed with local groups), and a series of infographics about the investment case.
**Discussion**

Members of the TTF expressed positive reactions to the presentation of the revised investment case. There was a request for a toolkit to assist with implementation. The co-Chair added his congratulations with regard to the investment case but added a word of warning that a toolkit should take a simple approach rather than a complex one. He also noted that in many of the countries most affected by meningitis there are major problems, particularly economic ones, and finance will be a major issue. There was a concern that countries that will benefit should also contribute, but one should also recognize that their contributions may in some cases be very limited.

**From regional implementation to impact in countries (3)**

**Regional update: Eastern Mediterranean Region**

Dr Chiori Kodama said that the region had so far had 45 outbreaks during 2022. The region is the source of 64% of the world’s refugees and 43% of persons needing humanitarian assistance, with 10 of the region’s 22 countries classed as fragile, conflict-affected and vulnerable. At the same time the Eastern Mediterranean Region includes several of the world’s richest countries. Since May 2022 there has been an increase in suspected meningitis reported in three governorates of north-east Syria. Access to this area is difficult and the Regional Office has had to rely on persons already living there to act as epidemiology officers. The WHO country office for Syria is in the capital, Damascus, while there is an office and depot at Gaziantep in South-Eastern Turkey which supplies north-east Syria.

Meningitis online training has been facilitated. The Gaziantep depot has been able to gather reports from north-east Syria and interim analysis shows a mixed picture of bacterial and viral meningitis. The report of cases from Gaziantep was almost double the number from the Damascus office. Over 86% of cases had received antibiotics before sample collection, and the abuse of broad spectrum and multiple antibiotics has been observed. Consequently, an online course was used to try to promote responsible use.

There was a further meningitis outbreak in Sudan in the first six months of 2022, mainly in the regions of Khartoum and South Darfur. There were 80 suspected cases and four deaths. To overcome meningitis in the Eastern Mediterranean, the Regional Office has set up a working group and a regional framework for defeating meningitis is being developed. Countries are being identified for targeting and a process for consulting with them is being developed. A consultant will be joining the regional office in 2023 to work on this. There is a need for contextualized diagnostic measures in order to distinguish viral meningitis from bacterial meningitis. Dr Kodama added that countries in the region have so many problems that it is difficult to prioritize meningitis.

**Discussion**

Discussion included comments about the fact that antibiotics seem to be available even in difficult situations, not only in Syria but also elsewhere. It was felt that it might be difficult to define the difference between types of meningitis, but in the long term this is important in order to avoid keeping patients on antibiotics unnecessarily. In response to a question on checking the HIV status of patients with viral meningitis, it was pointed out that HIV is seen as a sexually transmitted disease in the Eastern Mediterranean Region and it is therefore difficult to raise this issue.
Mobilizing resources

The Global Health Visions team presented the issue of resource mobilization for implementing the roadmap. This process will depend to a large extent on the support of the SSG. There will also be a global pledging event, and Member States can use the investment case for their own resource mobilization efforts. For instance, in the synergistic approach proposed by the roadmap, there are existing resources on initiatives and/or budget lines that can jointly contribute to the activities of the meningitis roadmap. It will be necessary to identify new donors, to ensure that countries are put at the centre of discussions about funding, and to develop synergies with other disease programmes. And within all of these efforts it will be important to involve civil society. Local and national groups of citizens can help to “make more noise” about meningitis, and there should be an overall effort to increase awareness, both locally and globally, of the need to defeat meningitis.

Discussion

A communication strategy should be drafted to support resource mobilization efforts. Champions of the meningitis campaign can be identified at local and national levels and a special toolkit should be prepared to assist champions in their promotional efforts. TTF partners, including UNICEF, have strong experience in working with champions. UNICEF could work through its national committees which help to raise funding and identify champions.

The global pledging event will not only help to “make more noise” but will seek out countries and other donors that already pledge to encourage them to add meningitis to their portfolio. The value of investment will be demonstrated, and long-term funding opportunities will be presented. It will be stressed that the funding will go to defeating meningitis and not just to WHO. Planning for the pledging event will begin in 2023 and the event itself is expected to take place in the latter half of the year. There was a comment that it would be important to map funding cycles and to identify what donors are already supporting.

Mr Antoine Durupt noted that the catalytic ask is the most important at the beginning of roadmap implementation (it is considerably less than what is requested for other major programmes for the same period). A resource mobilization group will be established as of January 2023, as approved at the previous meeting of the TTF.

Although national efforts must be country-owned there was still concern, however, that this did not seem to be evident. There was a brief discussion on whether the focus should be on public health or on research. The conclusion was that public health must be primary. However, it must be possible to monitor and assess in order to improve what is being done. There was a comment that being able to say (and show) that an approach works in a particular country is a great way to show donors what their funding will achieve.

Developing synergies – learning from other initiatives (4)

Developing synergies: learning from other initiatives for wider coverage

Improving diagnosis, treatment and management of acute brain infections

Professor Tom Solomon described his work and that of his colleagues on surveillance of brain infections caused by vaccine-preventable diseases (VPDs). He pointed out that for VPDs such as meningitis, Japanese encephalitis and others the key to reducing the global burden is better surveillance. He explained that neurological infections such as meningitis and encephalitis are a major cause of illness and death globally, treatment is often poor because of failure to diagnose
accurately, and critical investigations such as lumbar puncture and microbiology are performed poorly or not at all.

As a result, the National Institute for Health & Care Research (NIHR) is conducting a three-year programme in Brazil, India and Malawi to improve management of acute brain infections. The programme has five themes, namely: to understand the experiences of patients, families and healthcare workers; to improve routine diagnostics; to strengthen diagnosis; to work with policymakers and economists; and to increase training and capacity-building. The long-term aim is to improve diagnosis and early management of people with suspected acute brain infections, to focus on secondary and tertiary care, and to work towards a standard care package for low- and middle-income countries.

When COVID-19 began to spread, the NIHR team switched its focus to study the impact of this virus on the brain. That period has now ended but it showed that this approach to illness could be used for many diseases. Professor Solomon emphasized that the team works with policy-makers before the studies begin. If it will not be possible for the country to continue the work after the programme team has left, then they do not start. In many cases today, people are being discharged from hospital without the pathogen that made them ill being identified. A lot of the advocacy for managing diseases that cause brain infections comes from clinicians or patients’ family members.

**Discussion**

Members of the TTF were impressed by the Liverpool group’s activities and asked how this could be spread further. The idea of a standard care package for diagnosis and case management of all brain and meningeal infections was particularly appreciated. It was felt that a number of the lessons learned by the NIHR would be useful for the roadmap to defeat meningitis. Professor Solomon suggested that the TTF could consider some of the tools used by the NIHR. The TTF would be welcome to use them or recommend them further. He further referred to a neurology course which has been taught in Liverpool, of which meningitis is a major part. This could be used as it is or adapted for wider use if required.

**Health promotion and access to care**

Fr Angelo Gherardi leads a mission in Gundi in southern Chad. His work was recommended by representatives of Chad at a WHO African regional workshop because of his successful approach to PHC. Fr Gherardi thanked WHO for his invitation. He also pointed out that the TTF members were all professors and specialists while he was not a doctor but a priest who came to Chad at the age of 24, some 60 years ago. He recounted cases of suffering that he saw, especially in his early days in Gundi. Soon after he arrived a young woman 19 years of age came to the mission trembling in search of help after walking to 40 km to get there; she died a few days later from meningitis. Mothers typically sought help from traditional healers and came to the mission with their babies when it was far too late to save them. Another priest arrived with a medicine bag but the help that could be offered was minimal. The mission is at the heart of the meningitis belt. At one stage some visitors from Italy came to the mission when there was a sick young girl there with meningitis. By sharing their medicines with her they saved her life.

Fr Gherardi said he realized at that time that being priest was not enough; he needed proper medicines to prevent illness and he needed people to be able to identify what was wrong with their children. He started with some funds from friends, and he encouraged a priest with medical training to join him from Uganda. They managed to raise some money to put up a building as a small hospital. Around that time, they heard about the 1978 Alma-Ata meeting and the Declaration on
Primary Health Care. At that time there were only three hospitals in Chad. The idea of PHC showed them that there was hope. Eventually he was able to attract young people to the idea of PHC and was even able to raise funds for them to study PHC in Europe and to understand what was needed in order to avoid common diseases and respond to symptoms to stop diseases from getting worse.

He stressed that the biggest lesson he learned is that you need to have respect for people’s culture. Obviously, you need hygiene and you need to care for people but you also need to respect them. The new health centre emphasized education, prevention (such as keeping food in a safe manner) and caring for people. In more recent years, he managed to obtain funds to start a school for nurses and has been able fund a college to train doctors who can move to villages in different parts of the country. Money was not normally used in the place where he was located. The local economy was in kind. Now they charge small amounts per patient per illness, not for each visit to the doctor but for each period of illness. All medicines have to be imported from Europe, and he expressed concern that no medicines can be manufactured in Chad. His key message was that the more you do in this area the more you see still needs to be done. But PHC is saving lives and saving money in Gundi.

**Discussion**

Co-Chair Sow thanked the speaker for his contribution and re-emphasized the significance of primary health care. In many places like Gundi, there is need for a combined package of surveillance, prevention and care. Fr Gerardi noted that in Chad they have in some cases been able to have aspirin or other simple medicines transported along with supplies of bread, sugar and salt.

TTF members thanked Fr Gerardi for his first-hand account of the health work in Gundi. The meeting said it would be useful to gather further examples of this kind of work. There was a comment that much of the problem in underserved areas such as southern Chad is the lack of a supply chain. This is not specifically a medical issue, but it clearly has a serious impact on the provision of effective health care. It was pointed out that WHO has a medical commodity package, including for lumbar puncture, and supplies are sent to the affected countries prior to the meningitis season, but the numbers are limited because of the cost. However, these packages could be made more widely available if there was more funding.

**Financial access to quality health care**

Dr Joseph Commey presented the work of the National Health Insurance Scheme (NHIS) of Ghana, explaining that it is based on the principles of quality health care defined by the US National Academies of Sciences as “safe, effective, patient-centered, timely, efficient and equitable”. The NHIS, which was established in 2003, aims to provide equitable access and financial coverage for basic health-care services to the citizens of Ghana. The scheme reportedly covers 95% of disease conditions affecting the population and the benefit package is the same for all members. The NHIS is largely tax-financed through a 2.5% value-added tax on selected goods and services. Dr Commey outlined the variety of benefits of the scheme which includes coverage for malaria and meningitis (during epidemics).

The contributions to the scheme are low to make it accessible, although there are a number of notable exceptions such as preventive activities (e.g. immunizations), surgery other than for road traffic injuries, meningitis epidemics, cosmetic services, and public health outbreaks. Malaria is a priority disease all year round (and the diagnosis is straightforward) whereas meningitis is seasonal and is an outbreak disease. Consequently, the treatment of malaria is covered at all levels of the health service but meningitis is reimbursed only at higher levels. As a result, if a general practitioner has a patient with suspected meningitis, the practitioner needs to refer the patient to a higher level
Discussion

Dr Commey’s recommendation was that access to the diagnosis of meningitis needs to be increased. He suggested that Ghana could make more widely available the products needed to perform lumbar puncture, train other cadres to assist in performing the procedure and increase advocacy on the long-term outcomes of meningitis. TTF members agreed with his conclusion, noting that auxiliary staff can be trained to carry out lumbar puncture, and recommended more involvement of the WHO Regional Office for Africa in providing evidence of the cost-effectiveness of improved access to meningitis diagnosis.

Monitoring and evaluation

Global M&E Committee

Dr Ibrahima Coulibaly gave a presentation on behalf of the team that developed the M&E plan and framework of the Global roadmap to defeating meningitis by 2030. The purpose of the plan is to monitor and report on implementation of the Global roadmap, to track progress against goals while allowing changes to be made where necessary, and to facilitate generation, collection and use of harmonized data to inform decision-making. Each of the 91 milestones in the roadmap is linked to an indicator. TTF members were shown the tracking sheet for the milestones and the metadata to be collected on the 23 (core and non-core) indicators.

The M&E procedure is that each country sends information to the WHO Regional Office which compiles it, aggregates regional and country-specific data and passes these data on at the global level. Issues raised for the TTF related to the availability of resources at regional and global levels, country capacity to collect data for certain indicators, composition of the M&E committee, testing the core indicators in a sample of countries, and development of guidelines to support national M&E plans. The role of the M&E committee is to aggregate, analyse and validate regional and country data, monitor progress in implementing the roadmap, give guidance to regional and national M&E teams, ensure that data systems and tools are available, prepare progress reports, and disseminate good practices and lessons learned. The way forward is to finalize the composition of the M&E Committee, finalize the M&E plan and framework, map out data and verify global reporting tools.

Monitoring and evaluation framework for national implementation and indicators

Mr Clément Lingani then gave TTF members an insight into M&E at national level. He noted that the objectives of M&E are to establish the baseline situation and understand what reporting frameworks are in place, to develop indicators to measure the impact of activities, to develop a system for collecting data and reporting on the indicators, and to collect data, monitor progress and ensure that the data are reviewed and are used to inform activities.

Dr Lingani then proposed a set of 11 indicators for M&E for the TTF to consider and the data management system that would support the M&E process using both quantitative (aggregate surveillance data, case-based surveillance data, laboratory data, immunization data) and qualitative (survey, assessment) data collection methods as well as other methods such as audits of patient records. All these methods should be implemented in the framework of integrated surveillance and the PHC strategy. TTF members were shown reporting forms for national and subnational plans.

Some 24 countries in the African Region are currently involved in enhanced surveillance and share weekly aggregated data on meningitis (in order to detect and respond to outbreaks), while 13
countries have been supported in implementing meningitis case-based surveillance (to monitor the impact of MenAfriVac vaccine). Many countries are already using aggregated IDSR data while, for VPD case-based data, DHIS2 is in the pipeline for a number of countries.

Immediate next steps were outlined as expanding the Technical Working Group to support countries, finalizing the landscape analysis for country implementation, coordinating support to countries and then launching the regional monitoring platform and organizing a workshop in early 2023 for countries that will catalyze wider implementation.

Discussion and conclusions

- Members of the TTF were reminded that, while the African meningitis belt is very significant, there are many other countries with meningitis outside of Africa. Consequently, various sources of data will need to be brought together from around the world.
- The TTF also heard of efforts to create an M&E committee with representatives from WHO regions. The M&E committee can be kick-started in 2023.
- In considering whether all countries are able to report on all the indicators, a pilot study was recommended. It was reported that all national plans in the African Region include reporting on diseases and conditions. An M&E framework already exists although data on sequelae and GBS are not in the system as yet.
- Data collection is the responsibility of each country, and it was felt that countries may wish to encourage reputable national bodies to collect national data. Data will be reported annually in WHO’s *Weekly Epidemiological Record*.
- On a question as to whether the roadmap milestones should be readjusted because of COVID-19, it was pointed out that the roadmap was adopted by the World Health Assembly, and it is not up to the WHO Secretariat to change it. An annual workplan is in place to support monitoring of progress made so far and mentions when the achievement of milestones has been delayed due to the impact of the COVID-19 pandemic on the Global road map.
- It was also proposed that the existing annual report in the *Weekly Epidemiological Record* on developments in the African meningitis belt should begin in 2023 to transition to a more global report on meningitis.

It was expected that work on the framework for action would speed up in early 2023, and then the SSG would have its first meeting. There would need to be a very solid plan for the pledging event, so there needs to be a date and an outline available soon. The resource mobilization group is also expected to be in operation soon. New issues that are arising and that need to be dealt with are neurological and other sequelae and the importance of GBS. It was agreed that the scheduling information would be confirmed in the first part of 2023.

The next TTF meeting would focus more on regional and country developments as well as on advocacy. It may therefore have more focus on reports from specific countries from countries in the region of the country hosting the meeting.

Closure of the meeting

The Chair thanked the members of the TTF for their contributions and the WHO secretariat for its support to the TTF. He declared the meeting closed at 13:10 Central European Time.
Annex 1. Agenda

**Technical Taskforce (TTF) meeting**
**13-15 December 2022**
WHO Headquarters, Room U1 (building B)

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**Agenda**

_A time for discussion is included in each of the session time slots_

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| 13:15-13:25 | Welcome and introductory remarks  
Meeting objectives and agenda | WHO  
TTF Chair and co-Chair |
| **Global update and next steps** |  |
| 13:25-13:45 | General update | WHO |
| **From Regional implementation to impact in countries (1)** |  |
| **Regional update: Activities, challenges and plans to defeat meningitis** |  |
| 13:45-14:05 | Region (SEARO) | WHO SEARO |
| 14:05-14:45 | Region (PAHO)  
*including experience in developing the regional framework* | WHO PAHO |
| **Developing national strategies** |  |
| 14:45-15:15 | Process and material to develop national plans | WHO |
| **Break from 15:15 to 15:45** |  |
| 15:45-16:30 | Region (AFRO)  
*Including experience in developing the national plans*  
- Intercountry workshop  
- Burkina Faso  
- Niger | WHO AFRO  
Country Experts |
| **Regional update: Activities, challenges and plans to defeat meningitis** |  |
| 16:30-16:50 | Region (WPRO) | WHO WPRO |
| **Global update (2)** |  |
| 16:50-17:40 | Update on:  
- Product development (diagnostics, vaccines)  
- Policy and guidelines development (diagnosis and treatment)  
- GBS surveillance and way forward | Partners, WHO |
| 17:40-17:45 | Wrap-up of Day 1 | TTF Chair and co-Chair |
Wednesday 14 December 2022

From Regional implementation to impact in countries (2)

How to move forward specific activities in countries – breakthrough groups

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<tr>
<td>09:10-10:25</td>
<td>Participants split into three groups to identify short terms actions to kick-off critical activities</td>
<td>All</td>
</tr>
<tr>
<td></td>
<td>Group 1: Surveillance and laboratory, room U1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Group 2: Clinical diagnosis and treatment including sequelae recognition and long-term care, room Jura 413</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Group 3: Increasing awareness and advocacy of meningitis and its impact in communities, room Jura 513</td>
<td></td>
</tr>
<tr>
<td>10:25-11:10</td>
<td>Group work restitution and discussion</td>
<td>All</td>
</tr>
</tbody>
</table>

Break from 11:10 to 11:30

Global update (3)

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
<th>Speaker</th>
</tr>
</thead>
<tbody>
<tr>
<td>11:30-12:00</td>
<td>Implementing defeating meningitis roadmap through Universal Health Coverage/Primary Health Care (UHC/PHC) approach – what should be done?</td>
<td>Gerard Schmets, Deputy Director, WHO Special Programme on PHC</td>
</tr>
<tr>
<td>12:00-12:30</td>
<td>Strengthening linkages between the disability agenda and defeating meningitis road map at global and country levels: Challenges and opportunities</td>
<td>Nora Groce</td>
</tr>
<tr>
<td>12:30-13:00</td>
<td>Global Genome Partnership</td>
<td>Rob Heyderman</td>
</tr>
</tbody>
</table>

Lunch from 13:00 to 14:00

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
<th>Organisation</th>
</tr>
</thead>
<tbody>
<tr>
<td>14:00-14:20</td>
<td>The Confederation of Meningitis Organisations (CoMO) / MRF: World Meningitis Day</td>
<td>Meningitis Research Foundation (MRF)</td>
</tr>
<tr>
<td>14:20-14:50</td>
<td>The MenMap project, strengthening the surveillance of invasive bacterial infections in North Africa and the Middle East</td>
<td>Muhamed-Kheir Taha</td>
</tr>
</tbody>
</table>

Investing towards a world free of meningitis (1)

Road map Investment Case and communication

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
<th>Introduction: Global Health Visions (GHV)</th>
</tr>
</thead>
<tbody>
<tr>
<td>14:50-15:15</td>
<td>Investment case: Discussing the partnership-led approach</td>
<td>Panel discussion: MRF, PATH, UNICEF</td>
</tr>
<tr>
<td></td>
<td>• Brief introduction to the TTF sub-committee process</td>
<td>Moderated by WHO and GHV</td>
</tr>
<tr>
<td></td>
<td>• Overview of specific partner involvement during the process</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(leading questions posed by moderator)</td>
<td></td>
</tr>
<tr>
<td>15:15-15:40</td>
<td>Leveraging investment case findings for communications</td>
<td>WHO and GHV</td>
</tr>
<tr>
<td></td>
<td>• Key messages and findings to support the publication and promotion of the roadmap</td>
<td></td>
</tr>
</tbody>
</table>

Break from 15:40-16:00

From Regional implementation to impact in countries (3)

Regional update: activities, challenges and plans to defeat meningitis
<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
<th>Coordinator(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>16:00-16:30</td>
<td>Region (EMRO)</td>
<td>WHO EMRO</td>
</tr>
<tr>
<td>16:30-16:55</td>
<td>Mobilizing resources</td>
<td></td>
</tr>
<tr>
<td></td>
<td>High-level discussion on funding</td>
<td>WHO, GHV</td>
</tr>
<tr>
<td></td>
<td>• Generation of funding opportunities</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Mobilizing funds and finding synergies at the local level,</td>
<td></td>
</tr>
<tr>
<td></td>
<td>including leveraging civil society voices</td>
<td></td>
</tr>
<tr>
<td>16:55-17:05</td>
<td>Promotion of the road map and investment case</td>
<td>UNICEF, WHO, GHV</td>
</tr>
<tr>
<td>17:05-17:25</td>
<td>Planning a pledging event</td>
<td>WHO, GHV</td>
</tr>
<tr>
<td></td>
<td>• Key features, success factors, and timeline considerations</td>
<td></td>
</tr>
<tr>
<td>17:25-17:30</td>
<td>Wrap-up of Day 2</td>
<td>TTF Chair and co-Chair</td>
</tr>
</tbody>
</table>

**Dinner: 19:00 (Hôtel Warwick)**

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**Thursday 15 December 2022**

**From regional implementation to impact in countries (4)**

**Developing synergies – learning from other initiatives for wider coverage**

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
<th>Coordinator(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>09:00-09:30</td>
<td>Improving diagnosis, treatment and management of acute brain infections</td>
<td>Tom Solomon</td>
</tr>
<tr>
<td></td>
<td><em>Brain Infections Global (Brazil, India, Malawi)</em></td>
<td></td>
</tr>
<tr>
<td>09:30-10:00</td>
<td>Health promotion and access to care</td>
<td>Angelo Gherardi</td>
</tr>
<tr>
<td></td>
<td><em>Association Tchadienne Communauté pour le Progrès</em></td>
<td></td>
</tr>
<tr>
<td>10.00-10:15</td>
<td>Financial access to quality health care</td>
<td>Joseph Oliver Commey</td>
</tr>
<tr>
<td></td>
<td>*National health insurance scheme in Ghana: coverage for malaria and</td>
<td></td>
</tr>
<tr>
<td></td>
<td>meningitis*</td>
<td></td>
</tr>
<tr>
<td>10:15-10:45</td>
<td>Discussion: priority activities to increase access to interventions to</td>
<td>All</td>
</tr>
<tr>
<td></td>
<td>defeat meningitis</td>
<td></td>
</tr>
</tbody>
</table>

**Break from 10:45 to 11:15**

**Global update (4)**

**Monitoring and Evaluation**

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
<th>Coordinator(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>11:15-11:45</td>
<td>Global Monitoring and Evaluation (M&amp;E) plan</td>
<td>Ibrahima Coulibaly</td>
</tr>
<tr>
<td>11:45-12:10</td>
<td>Monitoring and Evaluation at the regional and national level</td>
<td>Clément Lingani</td>
</tr>
</tbody>
</table>

**Any other business and meeting closure**

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
<th>Coordinator(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>12:10-12:40</td>
<td>Any other business</td>
<td>All</td>
</tr>
<tr>
<td>12:40-12:55</td>
<td>Summary of next steps and key action points from the meeting</td>
<td>WHO</td>
</tr>
<tr>
<td>12:55-13:00</td>
<td>Meeting closure</td>
<td>TTF Chair and co-Chair</td>
</tr>
</tbody>
</table>
Annex 2. List of participants

Technical Taskforce (TFF)
Professor Brian Greenwood, Chair
London School of Hygiene and Tropical Medicine, London, United Kingdom

Professor Samba Sow, co-Chair
Centre pour les Vaccines en Développement (CVD- Mali), Bamako, Mali

Centers for Disease Control and Prevention
*Atlanta, United States of America*
Dr LeAnne Fox
Dr Lucy McNamara
Dr Ryan Novak*

London School of Hygiene and Tropical Medicine
*London, United Kingdom*
Professor Beate Kampmann*
Professor Joy Lawn**

Médecins sans Frontières and Epicentre
*Brussels, Belgium; Geneva, Switzerland; and Paris, France*
Dr Iza Ciglenecki
Dr Matthew Coldiron
Dr Daniela Garone**

Meningitis Research Foundation
*Bristol, United Kingdom*
Mr Vincent Smith
Ms Claire Wright

PATH
*Seattle, United States of America*
Dr William Hausdorff
Ms Farzana Muhib

United Nations Children’s Fund (UNICEF)
Programme division
*New York City, United States of America*
Dr Sanjay Bhardwaj

Individual experts
Professor Dominique Caugant
National Institute of Public Health, Oslo, Norway

Professor Nora Groce
University College London, London, United Kingdom

Professor Robert Heyderman*
University College London, London, United Kingdom
Professor Keith Klugman*
Bill & Melinda Gates Foundation, Seattle, United States of America

Dr Gail Rodgers
Bill & Melinda Gates Foundation, Seattle, United States of America

Professor Muhamed-Kheir Taha*
Institut Pasteur, Paris, France

Professor Caroline Trotter
University of Cambridge, Cambridge, United Kingdom

Other Subject Matter Experts

Dr Miriam Alia Prieto
Médecins Sans Frontières, Barcelona, Spain

Dr Tatiana Alvarez**
*International Federation of the Red Cross and Red Crescent Societies (IFRC), Geneva, Switzerland*

Dr Adam Cohen
Centers for Disease Control and Prevention, Atlanta, United States of America

Dr Joseph Ashitey Oliver-Commey*
Ghana Infectious Disease Centre, Accra, Ghana

Ms Elaine Devine
Meningitis Research Foundation, Bristol, United Kingdom

Ms Kate Fay*
Bill & Melinda Gates Foundation, Seattle, United States of America

Mr James Fishon
Global Health Visions, New York, United States of America

Dr Angelo Gherardi
Association Tchadienne Communauté pour le Progrès, N’Djamena, Chad

Dr Ramatoulaye Lazoumar
Centre de Recherche Médicale et Sanitaire (CERMES), Niamey, Niger

Dr Francisco Luquero
Gavi, Geneva, Switzerland

Mr Lionel Martellet
PATH, Geneva, Switzerland

Ms Kristen Cox Mehling**
Global Health Visions, New York, United States of America

Dr John Neatherlin*
Centers for Disease Control and Prevention, Atlanta, United States of America
Ms Cassandra Quintanilla  
Gavi, Geneva, Switzerland

Dr Karimou Sani*  
Ministère de la Santé Publique, Niamey, Niger

Professor Mahamoudou Sanou  
Centre Hospitalier Universitaire Pédiatrique Charles De Gaulle, Ouagadougou, Burkina Faso

Professor Tom Solomon*  
University of Liverpool, Liverpool, United Kingdom

Dr Issaka Yameogo*  
Ministère de la Santé, Ouagadougou, Burkina Faso

WHO TTF Secretariat

Regional Office for Africa  
Dr Florence Baingana**  
Dr André Bita  
Dr Anderson Latt  
Mr Clément Lingani

Regional Office for the Americas – Pan American Health Organization  
Dr Lucia De Oliveira

Regional Office for the Eastern Mediterranean  
Dr Quamrul Hasan**  
Dr Chiori Kodama

Regional Office for Europe  
Dr Siddhartha Datta**  
Dr Liudmila Mosina**

Regional Office for South-East Asia  
Dr Manish Kakkar*  
Dr Emmanuel Njambe Tondo Opute**

Regional Office for Western Pacific  
Dr Hardeep Sandhu

Headquarters  
Ms Virginia Benassi  
Mr David Bramley (meeting rapporteur)  
Mr Ibrahim Coulibaly (consultant)  
Dr Tarun Dua  
Mr Antoine Durupt  
Ms Ruth Embaye  
Ms Katya Fernandez  
Dr Mary-Anne Land (consultant)  
Dr Lorenzo Pezzoli  
Dr Marie-Pierre Preziosi
Dr Nicoline Schiess
Dr Heidi Soeters
Dr Carol Tevi Benissan

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* joined remotely
** unable to join