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Report

Defeating meningitis by 2030 – developing a global roadmap

Wednesday 27 February – Friday 1 March 2019 |
WP1675



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In association with the World Health Organization (WHO) and the Meningitis Research Foundation (MRF)

An extended Technical Taskforce meeting

Executive Summary

Meningitis remains a public health challenge around the world, causing an estimated 300,000 deaths in 2015. Meningitis can also lead to serious impairments, termed “sequelae”, such as hearing loss, visual impairment, limb loss, and cognitive impairment, with lasting effects on individuals and their families.

In early 2019, Wilton Park, WHO, and MRF convened 50 government officials, health experts, researchers, and representatives of industry and civil society organizations to further develop a roadmap to “defeat meningitis by 2030” and agree on a path forward. Participants reviewed the current situation and goals and milestones for the roadmap and provided expert feedback and advice.

Key recommendations included:

- Ensuring that the five pillars of the roadmap, 1) prevention and epidemic control; 2) diagnosis and treatment; 3) disease surveillance; 4) support and care for patients and families after meningitis; and 5) advocacy and engagement; work collaboratively and do not become silos.
- Implementing the roadmap in conjunction with broader programmes to strengthen healthcare, enhance surveillance, and improve the lives of persons with disabilities and to avoid creating new systems that deal with meningitis alone.
- Addressing meningitis impairments in alignment with existing commitments for disability rights and disability inclusion, such as the United Nations Convention on the Rights of Persons with Disabilities (UNCRPD)^a, by adopting the language, frameworks, and aspirations of this rights-based agenda.
- Conducting a detailed mapping of current resources for meningitis and for related agendas such as disability rights and universal health coverage to inform resource mobilization and system improvement.
- Actively mobilizing resources to defeat meningitis using both economic arguments (including the costs to families due to the disease and related impairments and the societal costs of disruptive epidemics) and values-based arguments that draw on the UNCRPD and the existing commitments made by its signatories.

“There was a vibrant call to, ‘Please do something!’”

Important next steps will be to:

- Establish workgroups for each of the five pillars and a mechanism to ensure overall consistency to refine the roadmap in the near term and contribute to its execution in the long term.
- Build support for the plan by forming a Strategy Support Group, mobilising funders, holding consultations at global and regional levels, and aligning with country perspectives.
- Obtain endorsement for the roadmap from the WHO Strategic Advisory Group of Experts on Immunization (SAGE), the WHO Strategic and Technical Advisory Group for Infectious Hazards (STAG-IH) and the World Health Assembly.

The meeting concluded with a call for the assembled participants to contribute to the evolution and implementation of the roadmap as founding members of the new workgroups, to engage the support of their home institutions, and to help grow the coalition of meningitis stakeholders.

Context for this meeting

Answering the call to action

1. Meningitis remains a public health challenge around the world, causing serious disruptions during epidemics and estimated 300,000 deaths in 2015: deaths from meningitis and sepsis in children under 5 are estimated to be as numerous as deaths due to malaria. Meningitis also causes serious impairments such as hearing loss, visual impairment, limb loss, and cognitive impairment, with lasting effects on individuals and their families.
2. In May 2017, over 50 representatives from governments, global health organizations, public health bodies, academia, private sector, and civil society called for a global vision to “defeat meningitis by 2030”.^b In September of that year, 200 representatives from the 26 countries of the African meningitis belt amplified this call and highlighted the need for equitable and sustainable access to meningitis vaccines.^c
3. Since then, WHO has coordinated the response to this call to action. It has assembled a Technical Taskforce which conducted a Baseline Situation Analysis^d and drafted a global roadmap to align stakeholders around a new, shared strategy.^e
4. This meeting was an opportunity for meningitis, health and disability experts to further develop the roadmap and to set the stage for engaging with a wider group of stakeholders.

Key features of the roadmap

The roadmap promotes collaboration by providing a comprehensive and detailed guide to defeating meningitis and clear milestones to drive progress

5. **Vision: a world free of meningitis.** The roadmap vision is *global*, since meningitis affects all populations worldwide, and *ambitious*, to harness the energy of the coalition that is assembling around meningitis. It expresses the shared value that progress should leave no-one behind. The target date for fulfilling this vision is 2030, in alignment with the Sustainable Development Goals (SDGs).^f
6. Three **visionary goals** have been drafted and are in circulation for refinement. These goals address the major impacts of meningitis worldwide and are to:
 - Eliminate meningitis epidemics
 - Reduce cases and deaths from vaccine-preventable meningitis by 80%
 - Decrease the impact of impairments due to meningitis by 50%

7. The **serious impairments caused by meningitis** feature prominently in this strategy for the first time, reflecting a greater awareness that meningitis has a spectrum of outcomes, not the simple binary of survival or death. The visionary goal for decreasing the impact of impairments due to meningitis requires further consideration given the lack of data on meningitis impairments in much of the world and the challenges associated with measuring the impact of sequelae.
8. The visionary goals will be refined to ensure that they **reflect the priorities and language of meningitis stakeholders** and have the specificity needed to guide decision making. Key concerns include clarifying how the impact of sequelae will be defined and measured and ensuring that the numeric targets are consistent with the predicted outcomes of full implementation of the roadmap.
9. The visionary goals are supported by **five pillars**, each with concrete strategic goals and specific milestones to be achieved in order to reach these goals. These pillars are:
 - Pillar 1: Prevention and epidemic control
 - Pillar 2: Diagnosis and treatment
 - Pillar 3: Disease surveillance
 - Pillar 4: Support and care for patients and families after meningitis
 - Pillar 5: Advocacy and engagement
10. While serving to organise action, **the five pillars must not become silos**: diagnosis is closely linked to surveillance, surveillance informs prevention and epidemic control, support and care for patients and families should commence during treatment, and advocacy and engagement are necessary for the success of every pillar. Maintaining these links will be essential to success.
11. The roadmap was presented as focusing on the **four main infectious pathogens** responsible for acute bacterial meningitis, *Neisseria meningitidis* (Nm, meningococcus), *Streptococcus pneumoniae* (Spn, pneumococcus), *Haemophilus influenzae* (Hi) and *Streptococcus agalactiae* (group B streptococcus, or GBS). GBS causes sepsis and meningitis in neonates.
12. While Pillar 1, Prevention and epidemic control, focuses on these four causes of meningitis, the remaining pillars **will address other causes to varying degrees**. Pillar 2, Diagnosis and treatment, and Pillar 3, Disease surveillance, will build health system capacity to diagnose, treat, and report meningitis cases regardless of pathogen. Pillar 4, Support and care after meningitis, and Pillar 5, Advocacy and engagement, will address all meningitis regardless of causative microbe.
13. **Context-specific approaches**. Although meningitis is a global issue, there are no “one size fits all” solutions. The roadmap strategy will reflect the different realities across the globe and should be adapted by countries into locally relevant, evidence-based meningitis action plans.

This report gives key discussion points for each of the 5 pillars, followed by reflections on roadmap implementation.

Pillar 1: Prevention and epidemic control

Achieved through development of and enhanced access to affordable vaccines, effective prophylactic measures and targeted control interventions

14. **Current state**. Vaccines are available for Spn, Hi, and Nm, but many of these vaccines are limited in supply, unaffordable, or do not address all the pathogen serotypes and serogroups causing disease. Vaccines for GBS are in an advanced stage of development and are likely to become available in 5 to 10 years.

“When the machinery is put in place and the people do the work, it works.”

15. **The proposed Pillar 1 strategic goals** included the development of affordable and accessible vaccines, optimizing vaccination strategies, achieving and maintaining high coverage of current and new vaccines, and optimizing strategies for outbreak prevention and response. They also called for screening and intrapartum antibiotic prophylaxis (IAP) for GBS prevention in infants as an interim measure until vaccines are available.
16. **Improving the affordability and supply of existing vaccines** is a top priority. A greater awareness of the burden of meningitis and the impact of meningitis sequelae can contribute to demand and willingness to pay, ultimately improving availability and affordability. Increasing vaccine manufacturing capacity in middle-income countries such as India, China, Korea, Indonesia, Thailand and Brazil can also contribute to the global supply of affordable vaccines. Technical assistance, particularly to achieve international quality standards, will facilitate this contribution.
17. **Vaccination strategies must be adapted to fit regional and local contexts** and consider the serotypes and serogroups causing disease, the age groups that contribute most to transmission, and the capacity of the immunization system, as shown in the case study for Nigeria (below). They need to adapt to changes in epidemiology, as shown in the case study for South Africa (page 6).

Case Study: Prevention and epidemic control in Nigeria

- Nigeria conducted a phased introduction of Hi type b vaccination into its routine infant schedule from 2012 to 2013, and of Spn vaccination from 2015 to 2017. Mass vaccination campaigns with Nm serogroup A conjugate vaccine (MACV) were conducted in 4 phases from 2011 to 2014, targeting 1 to 29-year olds: these campaigns have led to the virtual disappearance of serogroup A meningitis from vaccinated communities. In 2019, Nigeria plans to incorporate MACV into routine paediatric vaccination. This will be accompanied by a catch-up campaign targeting the cohort of 1 to 7-year olds too young to have been vaccinated in the mass campaigns.
- As Nigeria is transitioning away from Gavi support, the cost of vaccines such as the Spn vaccine will be borne domestically. Improving vaccine development, supply and affordability will be needed to achieve the 2030 ambitions of the roadmap.
- In the 2016-2017 epidemic season, Nigeria experienced a large outbreak of meningitis with 14,542 cases and 1,166 deaths reported. Laboratory testing was conducted for 9.2% of suspect cases and Nm serogroup C was identified as the causative agent in 66% of confirmed cases. Reactive vaccination campaigns were conducted to control the outbreak. Since 2017, outbreaks have waned and laboratory testing has been increased to over 25% of suspect cases.
- Improvements in epidemic detection and control have included implementation of a software system for reporting and harmonizing surveillance data and weekly feedback to states, deployment of rapid response teams and commodities to affected states, and activation of Emergency Operation Centres at national and state levels. These improvements were made possible by the Global Polio Eradication Initiative (GPEI) and may not be sustained after that programme concludes.
- The meningitis roadmap can help countries make a strong case for investing in meningitis prevention, surveillance, and treatment. Without additional investment, roadmap implementation is likely to be limited in a country such as Nigeria.

18. **GBS prevention strategies** should be reviewed and context specific prevention policies developed as a priority. Many evidence gaps remain to be addressed in low-income countries, including the burden of disease, risk factors, and how to cost-effectively target prevention measures. An affordable rapid diagnostic test for GBS carriage would facilitate research as well as implementation of prophylaxis programmes.
19. In the long term, outbreaks should be prevented through vaccination of at-risk communities. In the near term, **outbreak response strategies** must address unmet community needs such as guidelines for chemoprophylaxis and managing Spn outbreaks. Implementation of these strategies must be enabled by the creation and maintenance of stockpiles to ensure rapid availability of affordable and appropriate vaccines, antibiotics, and medical supplies in sufficient quantities. Communication approaches to outbreak control can be modernised to make use of social media and text messages, in addition to traditional community-based and mass media approaches.

Pillar 2: Diagnosis and treatment

Achieved through access to appropriate diagnostic tests and appropriate quality-assured treatment and supportive care for every patient

20. **Current state.** Diagnostic methods and treatment regimens are well-established in high capacity settings, but not available or feasible in many low resource settings where insufficient workforce, poor laboratory capacity and the limited availability of quality-assured diagnostic tests and appropriate antibiotics hamper care. Recommendations for adjunctive care to prevent sequelae, screening for complications and impairments, and systematic transition from acute care to aftercare are incomplete or absent, particularly in low- and middle-income settings.
21. **The proposed Pillar 2 strategic goals** included improving the availability and use of diagnostics to inform patient care and contribute to surveillance programmes and the provision of appropriate treatment and supportive care to every patient.
22. **Health systems strengthening** is essential for improved diagnosis and treatment, particularly in low resource settings. This includes improving the capacity of front-line health workers to detect suspected meningitis; ensuring timely referral from lower levels of care; improving clinical management; increasing the capacity to conduct lumbar punctures (LP), for example by allowing well-trained but not medically qualified staff to conduct LP; and building laboratory capacity to identify causative organisms and assess antibiotic resistance. In addition to education on all these functions, health workers should be trained on how to support patients and their families in the management of sequelae.
23. **Community engagement** is needed to ensure that families are aware of meningitis and promptly seek care, and that community health workers have the training required to recognise and urgently refer cases of suspected meningitis.
24. **Protocols for diagnosis and treatment** should define evidence-based packages of care that address all causes of meningitis and provide guidance appropriate to low-resource settings. This need is particularly acute for neonatal meningitis and sepsis, given the lack of GBS screening, prophylaxis, diagnosis, and treatment in low-resource settings. Protocols should reflect current evidence on antibiotic resistance and include adjunctive care, screening for complications and sequelae, and systematic transition from acute care to aftercare.
25. Diagnostic tests, particularly **rapid diagnostic tests, are urgently needed** in low-resource settings. These diagnostics must be suitable for use in primary healthcare, quality-assured, affordable, and available in sufficient supply. Useful features include the ability to test blood rather than cerebrospinal fluid; differentiating meningitis from other diseases such as cerebral malaria; differentiating bacterial and viral meningitis

and identifying causative organisms (Spn, Hi, Nm, or GBS) to inform case management; identifying serotype or serogroup to inform preventive measures such as reactive vaccination campaigns; clinically relevant timeframes for results, e.g. less than 5 hours; and the ability to link with surveillance systems for real-time data collection and reporting. Ideally, these tests could be conducted at bedside, with results available within minutes; and all tests would be integrated into a multiplex platform that includes molecular tests for antibiotic resistance.

26. The main barrier to the availability and use of such diagnostic tests was seen as funding for implementation, rather than technical feasibility. Pull funding mechanisms such as market guarantees or “a Gavi for diagnostics” were suggested to facilitate the development and implementation of diagnostic tests.

Pillar 3: Disease surveillance

Surveillance of the four main causes of bacterial meningitis and of meningitis sequelae to guide meningitis control policies and accurately monitor progress toward goals

27. **Current state.** Meningitis surveillance guidelines are not comprehensive or uniformly implemented. Surveillance for Spn and Hi has been implemented worldwide, but surveillance for GBS is extremely variable across the world. Surveillance for Nm is generally low beyond western Europe, the Americas, Australia, and countries of the meningitis belt where system improvements have been implemented to monitor the impact of MACV vaccination programmes. Surveillance of impairments due to meningitis is very limited worldwide. Challenges include high burden and poor infrastructure or data management.
28. **The proposed Pillar 3 strategic goals** called for strengthening national surveillance systems, developing and implementing guidelines for surveillance of GBS disease and meningitis sequelae, and improving data reporting to the international level.
29. **Surveillance data are needed for decision making at all levels.** Surveillance results drive outbreak response and inform case management, including the choice of antibiotics. They inform the choice of vaccination and treatment strategies, drive adjustments based on antibiotic resistance profiles, and reveal the impact of programme changes such as the implementation of a new vaccine. Further upstream, surveillance data are considered when allocating resources to prevention and treatment programmes, and when setting priorities for vaccine research and development.
30. **Surveillance capacity building.** Surveillance is a core component of well-functioning health systems, and there is a widespread need to improve overall disease surveillance capacity in low-resource settings. Given resource constraints, many high-burden areas conduct syndromic surveillance for meningitis rather than laboratory-based surveillance, which is needed to confirm cases and identify causative organisms. Improving surveillance capacity, in particular laboratory capacity, will require more comprehensive, consistent guidelines and a substantial increase in resources.

Case Study: Meningitis Surveillance in South Africa

- South Africa has implemented laboratory-based surveillance for meningitis in more than 270 clinical microbiology laboratories and enhanced surveillance at 25 hospitals. This sentinel surveillance system, which by its nature underestimates disease incidence and does not fully capture what is happening in all communities, nevertheless has provided useful data on meningitis in South Africa.
- This system has documented the rapid decline of invasive pneumococcal disease (including pneumococcal meningitis) after introduction of pneumococcal vaccines and characterized the remaining burden of invasive pneumococcal disease. It has also captured changes from 2003 to 2019 in the distribution of meningococcal serogroups causing disease: serogroup A has vanished and serogroup W has increased in prevalence and then faded away, to be replaced by serogroup B.
- Results from this surveillance system have contributed to the guidelines for management of acute meningitis in South Africa. Challenges remain in ensuring that all clinics, especially those in rural areas, have the medicines and human capacity needed to adhere to the guidelines.
- Future aims for this system include improving specimen collection, building laboratory capacity, and collection of data on clinical outcomes, including sequelae. In addition, results from point of care tests used to inform patient treatment should be captured.

31. The ideal approach is **universal case-based surveillance**, in which every case of suspected meningitis is investigated, yielding a detailed and complete understanding of meningitis epidemiology. In areas where case-based surveillance is not feasible, enhanced surveillance or population-based aggregate surveillance coupled with laboratory confirmation can serve to detect outbreaks, and sentinel site surveillance in combination with modelling can inform disease prevention and control.
32. **Funding for surveillance.** Although surveillance data are a necessary public good, surveillance systems are often poorly funded due to more pressing needs. In many countries, this funding gap threatens to grow as resources provided by the GPEI come to an end. Making surveillance data more visible and useful can build recognition of the value of surveillance and contribute to resource mobilization. In addition, creative solutions for sustainably funding surveillance in high burden, low resource settings should be considered. These approaches could include for example small surcharges on more highly resourced health programmes to provide long-term, predictable funding.
33. **Surveillance for GBS** is not routinely conducted in many countries: meeting this goal will require protocols and diagnostic tools adapted to low-resource settings and significant capacity building. In some contexts, GBS surveillance may be best performed with sentinel sites, rather than national surveillance.
34. **Surveillance for meningitis impairments** is seen as an area for research, as data on sequelae are not systematically collected. Pilot projects in sentinel sites could inform best practices for gathering data on meningitis impairments, including the impact that sequelae have on people's lives. This has been done for other diseases that cause long-term morbidity, serving to inform global guidance on implementation and monitoring and evaluation. Routine surveillance of sequelae will require methods to identify and quantitate multiple sequelae at different ages, baseline surveys to understand the rates of impairments, and development of routine surveillance protocols. Implementing these protocols will require considerable training of healthcare workers, teachers, and the community.

35. **Innovative tools** hold great promise for improving surveillance. Electronic data systems can transform data collection, management, and analysis. For example, mobile phone applications can facilitate data transmission from local to central levels for regions that have no access to the internet. Good centralized data management platforms at regional or global scale will be essential to assess changes in global meningitis. Social media approaches can complement traditional approaches for epidemic detection. Global genome libraries for Hi, Spn, Nm, and GBS can improve understanding of the evolution of meningitis pathogens and inform prevention and treatment strategies.

Pillar 4: Support and care for patients and their families after meningitis

To ensure that people affected by meningitis can maximise their quality of life and claim their rights in accordance with the UNCRPD

“Meningitis is the most common cause of acquired deafness in Africa.”

It's not just the nice thing to do, it's the right thing to do.”

“Don't ask for less than what has already been committed.”

36. **Current state.** After recovery from acute bacterial meningitis, at least a third of patients experience impairments such as seizures, hearing loss, vision loss, cognitive impairment, neuromotor disability, memory and behaviour changes, and limb loss. Assessment of impairments after meningitis and provision of rehabilitation services and supportive care for those affected and their families are often absent or insufficient and inequitably accessible.
37. **The proposed Pillar 4 strategic goals** called for strengthening the recognition of impairments both in the hospital and after discharge, increasing access to appropriate care and support for individuals with impairments, and empowering people affected by meningitis and their families to maximize health and quality of life as a fundamental human right.
38. The roadmap should draw strength from and contribute to broader initiatives around disability rights, including the UNCRPD. The rights-based approach is reflected in the guiding principles of the UNCRPD, which include respect for inherent dignity, individual autonomy including the freedom to make one's own choices, and independence of persons; equality of opportunity; and accessibility. One hundred and seventy-seven countries have ratified or acceded to the UNCRPD. In addition, all member states have endorsed the WHO Global Disability Action Plan 2014-2021, which prioritizes health and well-being and human rights for people with disabilities and the SDGs, which address disability in goals for education, economic growth, safe cities, equity, and global partnerships and through their cross-cutting Leave No-one Behind agenda.
39. These initiatives subscribe to the **social model of disability**, in which “disability results from the interaction between persons with impairments and attitudinal and environmental barriers that hinder their full and effective participation in society on an equal basis with others.” In this framework, the impact of meningitis sequelae depends both on the incidence and nature of the impairments and on their environment. Thus, in high-income countries that provide adequate rehabilitation and reasonable accommodation, the consequences of sequelae are less severe.
40. The roadmap should reflect this framework and **avoid stigmatizing and prejudicial language** such as characterizing people affected by meningitis as survivors and sufferers or describing the impact of meningitis as a burden. Based on this discussion, Pillar 4 has been revised from “Support and aftercare for survivors and their families” to the current wording.
41. **Better data on meningitis impairments** are needed to inform prevention, case management, and the provision of support and services. This includes the nature, severity, incidence, and prevalence of impairments among those affected by meningitis; correlations between causative organism and risk of specific sequelae; potential measures to prevent or to reduce the impact of sequelae; appropriate

rehabilitation strategies; the availability of rehabilitation services, particularly in middle- and low-income countries; and the broader impacts of meningitis sequelae on families and economies. Information can be collected through surveillance as discussed under Pillar 3 or by adding questions to existing surveys such as demographic health surveys and censuses, but given the current paucity of data, more thorough measurement of meningitis sequelae will be needed. Organisations of and for persons with disabilities must be included as they are essential partners in delivery of support and services.

42. **Access to support services must be improved:** WHO estimates that worldwide only 1 in 10 persons with impairments can access any kind of services. To increase availability and access, packages of care designed for low-resource environments that take cultural, financial, and political barriers into consideration are needed. Healthcare providers, traditional healers, educators, and community members have a role in identifying and referring those in need of support. This support should be provided regardless of the cause of impairment, but meningitis-specific tools, such as case management protocols that assess sequelae and refer families, will be needed to link those affected by meningitis with these services.
43. **Understanding and addressing the resource gap.** Achieving the Pillar 4 goals will require mapping of the national policies, services and assistive technologies available to those people with impairments, cost analysis that takes into consideration the existing resources and what is required to deliver a minimum essential package of support, and allocation of resources for implementing these guidelines in the health system, education system, and communities.

Pillar 5: Advocacy and engagement

To raise public and political awareness of meningitis as a health priority and improve health-seeking behaviour and access to control measures

44. **Current state.** Meningitis is not seen as a priority in proportion to its burden and impact, at the global, regional, or national levels.
45. **All pillars require advocacy, information and communication.** For example, Pillar 1 should include advocacy and communication regarding the need for more affordable meningitis vaccines and Pillar 4 should include advocacy that amplifies the voices of those living with disabilities.
46. This pillar addresses the need for broad stakeholder engagement to build political will around meningitis as a whole and around relevant initiatives such as the disability rights agenda and universal health coverage. Accordingly, Pillar 5 has been revised from “Advocacy and information” to “**Advocacy and engagement**”, to reflect the full sequence of actions from information and communication through to commitment and execution.
47. **The proposed Pillar 5 strategic goals** included gaining support at national, regional, and global levels for implementing the roadmap; ensuring communities are aware of meningitis and demand its prevention, treatment, support and aftercare; and ensuring health workers have the resources and training to identify, diagnose, treat and support people with meningitis or its sequelae.
48. **Awareness of meningitis as a health priority**, particularly among funders and policy decision makers, is needed to build political will and increase the resources available to defeat meningitis. Champions, parliamentary groups, civil society organizations and advocacy groups such as disabled persons’ organizations (which are active in almost every country) can help build awareness. This should be supported by a robust evidence base showing the benefits of defeating meningitis, advocacy toolkits, and strong coordination.

“We are starting from a low level, there is a lot of work to do.”

“We need clear messages and we need them now.”

“Proceeding as in the last 50 years will not change the outcome.”

“It’s good to be ambitious, but it’s also good to be pragmatic.”

49. **Community-level awareness** is needed in several areas: to inform care-seeking, both for meningitis cases and those with sequelae; to minimize stigma; to build confidence in the safety and effectiveness of meningitis vaccines; and to increase demand for vaccines, health coverage, and aftercare and support services.
50. **The need is great: we must start now.** Given the low level of awareness and the fundamental need for advocacy across all pillars of the roadmap, advocacy and engagement must start immediately and continue alongside roadmap development. Institutions represented in this meeting can participate in World Meningitis Day on 24 April 2019 and ensure that meningitis is addressed in their strategic plans and budgets.

Implementing the roadmap

The action plan should:

51. **Promote the concept of progressive realization.** Following the examples of the SDGs and the UNCRPD, the roadmap adopts a vision of “a world free of meningitis” to inspire greater effort. According to the principles of progressive realization, this vision should be achieved progressively (with continuous progress and without deterioration) with the maximum of available resources while meeting specific minimum core obligations.⁹
52. **Balance inspiration and pragmatism.** The roadmap must be supported by a pragmatic action plan and specific, measurable, and feasible strategic goals and milestones. The strategic goals should reflect a realistic assessment of the resources that can be mobilized. If countries feel the goals are simply unachievable, they may do very little in response to the roadmap.
53. **Build the engagement of regions and countries** to drive roadmap implementation. The consultation process for the roadmap is designed to bring all countries to the table and provide the evidence needed to persuade them to engage.
54. **Show the economic consequences of meningitis.** A comprehensive view of the social and economic impacts of meningitis, including treatment costs and overall epidemic response costs, individual and family productivity and well-being losses, the cost of rehabilitation and support for persons and families affected by meningitis, and the consequences of stigma, can motivate greater investment in preventing meningitis and its sequelae. This will require better data on the incidence, degrees of severity, and functional limitations of impairments due to meningitis. History proves the value of such data: disability surveys in India over 40 years ago spurred the Indian government to vaccinate against polio.
55. **Mobilize resources.** Substantial resources will be required to implement the roadmap. Meeting these needs will require mapping the existing resources for meningitis and for related agendas such as disability rights and universal health coverage; an investment case that establishes the rationale for investing in meningitis; and coordinated, active resource mobilization. The investment case must be grounded in evidence; identify specific near- and long-term priorities for investment in each pillar of the roadmap; and include both a business case based on the return on investment for meningitis control and an appeal based on the shared values captured in the UNCRPD. Long-term funding will be needed to sustain the services and systems built under the roadmap.
56. **Define a monitoring and evaluation (M&E) plan.** The M&E plan should include performance indicators as well as outcomes to allow early assessment of progress. It should take data availability and quality into account and incorporate modelling as needed.

57. **Coordinate multidisciplinary implementation** across institutions and stakeholders in each country with many different areas of work. Lessons from the cluster system for humanitarian response^h and programmes addressing other diseases such as malariaⁱ and cholera^j should inform the coordination for the meningitis roadmap. A lean secretariat hosted by WHO can play a valuable coordinating role; additional skills and resources will be needed to manage advocacy and issues outside of WHO's traditional scope such as rights-based initiatives.
58. **Provide for innovation.** New knowledge, tools and approaches are needed across all five pillars, especially for all aspects of GBS and meningitis sequelae. The roadmap should include a research agenda and remain flexible in order to adapt as its context changes.
59. **Manage risks.** The main barriers to achieving the strategic goals of the roadmap are not technical, but financial. The risk of insufficient resources should be addressed by building political will, particularly at the country level.

Success factors

These following features distinguish the meningitis roadmap and can help it succeed:

60. **A track record of success.** The control of Nm serogroup A meningitis in Africa has shown that success is possible even in very low-resource environments when communities, countries, and global stakeholders work together. This success can inspire and motivate action on other aspects of meningitis.
61. **Robust preventive toolkit.** As of May 2018, Hi type b vaccine had been introduced in 191 countries and Spn vaccines had been introduced in 138 countries.^k GBS and affordable multivalent Nm vaccines are currently in development. With these vaccines in hand, controlling the major causes of bacterial meningitis will be relatively straightforward if resources are available.
62. **Synergies with other initiatives.** Defeating meningitis will contribute to and benefit from a multitude of programmes. The meningitis, pneumonia, and sepsis agendas are linked because Spn, Hi, Nm, and GBS contribute to the burden of all three diseases; vaccinating against these organisms will reduce the incidence and impact of the multiple diseases. Meningitis treatment and prevention are important components of universal health coverage and relate to multiple SDGs. Support for persons affected by meningitis is integral to the disability rights agenda. The roadmap is well-aligned with the WHO Global Program of Work and contributes to all its core priorities: to promote health, keep the world safe, and serve the vulnerable.
63. **Grassroots advocacy.** Due to the engagement of families and individuals affected by the disease, meningitis advocacy groups abound. Disability rights advocates are active in nearly every country.^l Grassroots advocacy has the potential to drive the meningitis agenda forward just as it has driven the HIV/AIDs agenda.

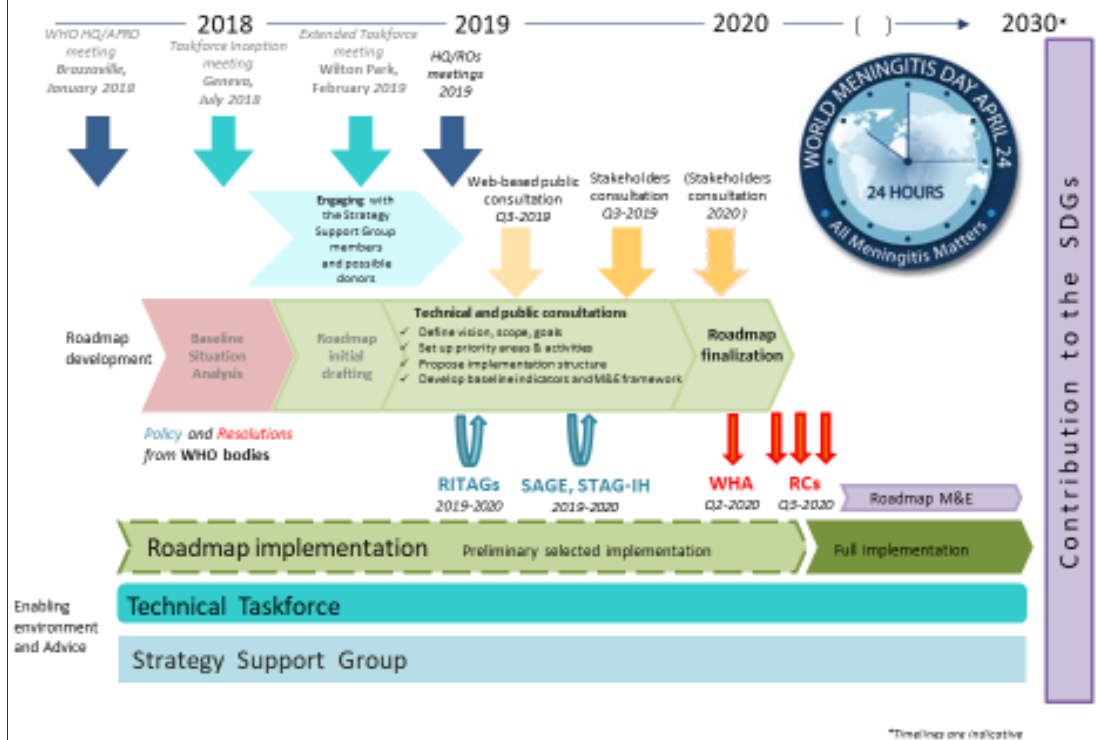
Next steps

Immediate next steps will aim to:

64. **Strengthen the plan.** WHO will convene a series of technical consultations such as this meeting to strengthen the roadmap, build awareness, and enlist support.
65. **Build consensus.** WHO will invite key partner institutions and funders to form a Strategy Support Group and serve as enablers and champions. It will host a web-based public consultation in mid-2019 and convene a global stakeholder consultation in September 2019. At this meeting, 120-150 delegates from around the world will be invited to give feedback on the roadmap: the priority for this meeting will be to align with country perspectives and ensure that people affected by meningitis have a voice. Regional meetings will be held to tailor the strategy to regional issues. The draft roadmap will be submitted to SAGE and the STAG-IH in 2019, and to the WHO Executive Board, and the World Health Assembly for review and endorsement in 2020.

"It will remain a document if we don't get buy-in."

Defeating meningitis by 2030



Set the stage for action. Workgroups will be established for each pillar, and all participants of this meeting will be considered volunteer workgroup members. Workgroup management will include strong coordination and knowledge sharing across pillars to avoid creating silos. These workgroups will be responsible for refining the roadmap in the near term and contribute to its execution in the longer term.

Conclusion

The global roadmap to defeat meningitis by 2030 will be an ambitious and comprehensive technical document that joins for the first time the health and human rights agendas around meningitis. It has been crafted by passionate stakeholders who are undertaking a formal endorsement process to build the political will needed to succeed.

Their challenge is to ensure that the roadmap drives action. Broadening the stakeholder group beyond meningitis experts and advocates, building engagement with countries, actively mobilizing resources, and coordinating around a pragmatic set of goals, activities and targets will help set the stage for success.

Angela Hwang

Wilton Park | May 2019

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- ^a <https://www.un.org/development/desa/disabilities/convention-on-the-rights-of-persons-with-disabilities.html>
- ^b <https://www.wiltonpark.org.uk/wp-content/uploads/WP1521-Report.pdf>
- ^c 14th Annual meeting on surveillance, preparedness, and response to meningitis outbreaks in Africa & 4th Annual MenAfriNet partners' meeting: Ouagadougou, Burkina Faso - 12 – 15 September 2017.
- ^d https://www.who.int/immunization/research/BSA_20feb2019.pdf?ua=1
- ^e https://www.who.int/immunization/research/Defeating_meningitis_2030_TTFJuly2018_report.pdf?ua=1
- ^f <https://sustainabledevelopment.un.org/>
- ^g <https://www.ohchr.org/Documents/Publications/FactSheet33en.pdf>
- ^h <https://www.humanitarianresponse.info/en/about-clusters/what-is-the-cluster-approach>
- ⁱ <https://endmalaria.org/>
- ^j https://www.who.int/cholera/task_force/en/
- ^k https://www.who.int/immunization/research/BSA_20feb2019.pdf?ua=1
- ^l For example, <https://www.womenenabled.org/mapping.html#appendices>