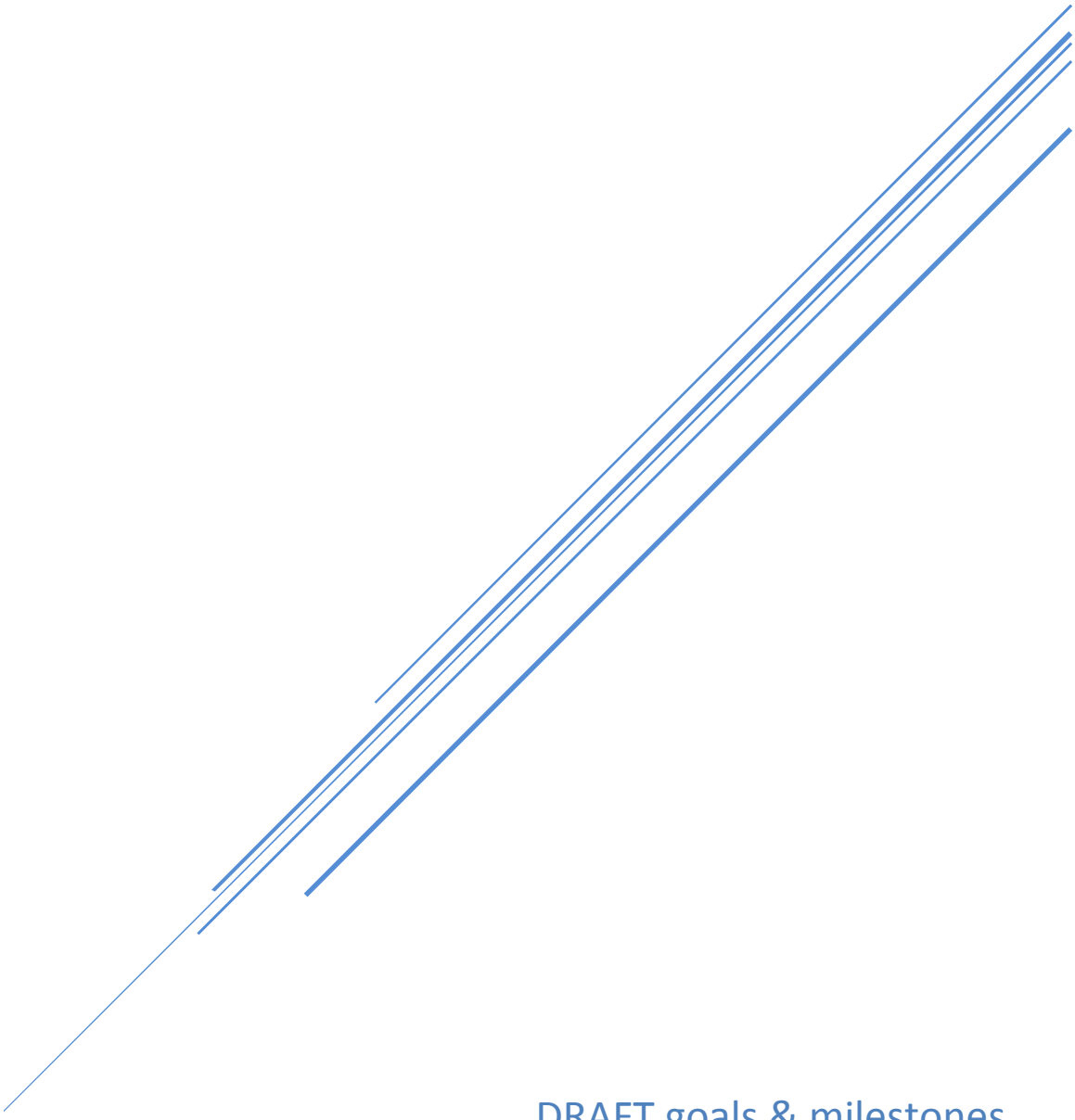
“DEFEATING MENINGITIS BY 2030”: A ROADMAP

Draft goals and milestones



DRAFT goals & milestones
20 Feb 2019

Introduction

Meningitis is a devastating disease affecting all populations and remains a major public health challenge in regions and countries around the world. Cases and outbreaks continue to be highly feared. Together with neonatal sepsis, meningitis is estimated to cause more deaths in children under 5 years of age than malaria, with the highest impact on the poorest communities. The fight against meningitis fits strategically in the WHO 13th General Programme of Work, set to drive progress towards the United Nations Sustainable Development Goals for 2030, and structured around prioritizing universal health coverage and health security, with a three-fold mission to 'Promote health, Keep the world safe, Serve the vulnerable'.

Meningitis can be caused by many different organisms, notably bacteria, viruses, protozoa and fungi. The highest global burden is seen with bacterial meningitis, though cryptococcal meningitis, a fungal infection, has emerged in recent years as an important cause of meningitis among adults linked to HIV infection.

This roadmap covers the organisms responsible for the majority of acute bacterial meningitis, namely *Neisseria meningitidis (*Nm*), Streptococcus pneumoniae (*Spn*), Haemophilus influenzae* (Hi) and *Streptococcus agalactiae (*commonly referred to as Group B Streptococcus (GBS). Other important causes of meningitis, such as tuberculosis (TB) or Cryptococcus are not a focus of this roadmap, as they are already included in other preventive strategies. However, several goals directed at reducing the burden of disease will be equally applicable to other causes of meningitis, particularly in support, after-care, advocacy and information.

The number of deaths from bacterial meningitis in all ages was estimated by WHO as around 300,000 in 2015, with close to 100,000 deaths in children between one month and 5 years of age. Mortality rates varied by organism and by WHO region, with the highest overall burden in Africa. Global estimates of GBS meningitis cases in young babies aged up to 3 months were similar in number (70,000) to estimates of pneumococcal meningitis cases in 1-59 month old children.

All the leading causes of bacterial meningitis were estimated to result in a high degree of disabling sequelae among survivors of meningitis. The proportion of survivors with severe after-effects varied by organism, being highest for pneumococcal meningitis (25%) and GBS disease (32%), and by setting, with survivors in low income countries being the worst affected. Meningitis sequelae can have an enormous emotional, social and economic impact on individuals, families and communities.

Vision

Our vision is **a world free of meningitis.**

This roadmap sets out a global strategy to achieve the following goals by 2030:

- **Eliminate meningitis epidemics**
- **Reduce cases and deaths from vaccine-preventable meningitis by 80%**
- **Decrease the impact of sequelae by 50%**

The global roadmap

The global strategy sets a path, for the first time, to tackle the four main causes of acute bacterial meningitis. Achieving these goals will rely on strong commitments from countries, partners, and donors to collectively engage in defeating meningitis.

The Global Roadmap is based on **five pillars**:

- **Pillar 1**: Prevention and epidemic control
- **Pillar 2**: Diagnosis and treatment
- **Pillar 3**: Disease surveillance
- **Pillar 4:** Support and aftercare for families and survivors
- **Pillar 5:** Advocacy and information

All five pillars need to be developed together and implemented globally in order to achieve the overall goals. The strategic goals, milestones and priority activities outlined below will also need to be tailored to the context of each region and coordinated across regions.

Pillar 1: Prevention and epidemic control

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

Enhanced efforts are needed to advocate for immunization. This includes (i) encouraging vaccine introduction and sufficient vaccine coverage especially in lower- and middle-income countries where the burden of meningitis is greatest, (ii) promoting the development of vaccines to address the residual disease burden due to pathogens, serogroups or serotypes not covered by existing vaccines and (iii) ensuring equitable access to affordable vaccines. Polysaccharide-conjugate vaccines are dramatically reducing the global burden of disease caused by Nm, Spn and Hi but their global impact needs to be considerably enhanced. No vaccine exists for the prevention of GBS disease, but GBS conjugate vaccine candidates are in advanced development. Several Nm and Spn conjugate vaccine candidates are also in late stage development including multivalent products with broader serogroup/type coverage than existing vaccines. Novel protein-based vaccines against NmB disease are now being used at public health scale in some countries. In addition, several protein vaccine candidates against Nm, Spn and GBS are in development. Enhanced and sustained use of vaccines will allow vaccines to play an increasingly important role in strategies for controlling antimicrobial resistance.

Chemoprophylaxis is generally used for close contacts of cases of meningococcal meningitis, but needs further evaluation, particularly in the context of epidemics in the African meningitis belt. Screening and intra-partum antibiotic prophylaxis are recommended for GBS infection during pregnancy, but this policy is rarely implemented in low and middle-income countries because of cost and logistic issues.

The most important challenges in the response to Nm or Spn meningitis epidemics include the lack of laboratory capacity to confirm the epidemic pathogen and of timely access to sufficient quantities of affordable vaccines for response, and, for Spn meningitis outbreaks, guidance on response is lacking.

1. 1. Strategic Goals

- SG 1: Development, licensure and WHO pre-qualification of affordable and accessible new vaccines targeting more causal agents for meningitis
- SG2: Optimization of vaccination strategies that result in individual and community protection (where feasible to do so)
- SG3: Achieving and maintaining high coverage of current and new vaccines in all countries
- SG 4: Implementing screening and chemoprophylaxis against GBS infection in pregnant women where not already introduced (before vaccine introduction)
- SG 5: Optimization of strategies for outbreak prevention and response including vaccination and chemoprophylaxis

1.2. Milestones

1.2.1. By 2020, rollout of preventive vaccination against Nm serogroup A in EPI will have been completed in meningitis belt countries as appropriate; by 2023, at least three countries in the meningitis belt will have started preventive vaccination against Nm serogroups A, C, W, X and Y; and by 2030 all countries will have done so as appropriate. In parallel, a strategy to maintain coverage is implemented, reinforcing and complementing other such strategies

1.2.2. By 2020, the stockpile of meningococcal conjugate vaccines will be appropriately replenished (quantity, composition, timeliness) to enable an early response to outbreaks

1.2.3. By 2021, WHO strategy for pneumococcal meningitis outbreak prevention and response will be available

1.2.4. By 2022, at least one additional affordable pneumococcal conjugate vaccine, with coverage consistent with emerging data on serotypes causing disease, will be licensed and WHO prequalified

1.2.5. By 2022, a policy will be available on GBS screening in pregnant women and intrapartum antibiotic prophylaxis, considering highest needs and feasibility; by 2030 all countries will have implemented this policy unless superseded by a vaccination programme (see 1.2.7.)

1.2.6. By 2025, all countries will have introduced pneumococcal and *H. influenzae* type b conjugate vaccines with locally-relevant strategies; and with a >90% vaccine coverage by 2030. In parallel, a strategy to maintain coverage is implemented, reinforcing and complementing other such strategies

1.2.7. By 2026, at least one vaccine against GBS will be licensed and WHO prequalified; and by 2030, at least 10 countries will have introduced the vaccine, consistently with a WHO policy

1.2.8. By 2026 at least one additional affordable new MenB vaccine will be licensed and WHO pre-qualified

Pillar 2: Diagnosis and treatment

achieving access to appropriate diagnostic tests at all levels of care, to enhance surveillance and ensure patients can be promptly treated through effective antibiotics and adjunctive care

Laboratory confirmation is well defined for the main bacterial pathogens (real time PCR and culture being the gold standards), but health workers especially in lower- and middle- income countries (LMICs) may not be trained or resourced to identify cases of meningitis, cerebrospinal fluid (CSF) sampling is often not undertaken, and laboratory capacity is often weak. There is a lack of quality assured affordable high performance rapid diagnostic tests (RDTs), and in 2018, use cases (describing use, impact, target population, skill level) were developed for three RDTs to improve case management of meningitis and strengthen surveillance. Antibiotic treatment regimens are well established, but WHO guidelines for treatment of adults with bacterial meningitis are not currently available and recommended antibiotics are not always available. Adjunctive therapies need further evaluation in some settings.

2. 1. Strategic Goals

- SG6: Increase confirmation of bacterial meningitis and make diagnostic tools available at the appropriate level of care to initiate recommended treatment as early as possible and to improve surveillance
- SG7: Provide appropriate quality-assured treatment and supportive care to every patient to reduce sequelae and deaths

2.2. Milestones

2.2.1 By 2023 a quality assured multiplex diagnostic test will be available to identify the main pathogens responsible for meningitis (bacterial, viral, fungal) that is affordable for LMICs

2.2.2 By 2026 a quality assured, affordable and accessible point of care (POC) diagnostic test will be developed for individual case management

2.2.3 By 2026, guidance on antimicrobial and adjunctive supportive therapy covering all meningitis bacterial pathogens will be published

Pillar 3 Disease Surveillance

encompassing all main causes of bacterial meningitis and their sequelae to guide meningitis control policies and accurately monitor progress toward goals

Guidelines for national surveillance of meningitis pathogens are not uniformly implemented and there are no recommended guidelines for GBS surveillance. In many countries, weak surveillance systems hamper prompt outbreak detection and response. In addition to the limited diagnostic capacity, needed for effective surveillance, laboratory capacity for molecular characterization and whole genome sequence based global surveillance for meningitis pathogens needs to be advanced. Disease data reporting to the international level is incomplete. There is very limited guidance and implementation of surveillance of sequelae in all regions.

3.1. Strategic Goals

- SG8: Strengthen country surveillance of meningitis pathogens to guide epidemic control, and case management, and to evaluate the impact of vaccine programmes and vaccination policies
- SG9: Develop guidance and implement surveillance of (i) GBS disease and (ii) sequelae from meningitis
- SG10: Improve disease data reporting to the international level to strengthen regional and global monitoring and estimation of the disease burden

3.2. Landmark goals / Milestones

3.2.1 By 2021, surveillance guidance is available in all regions for all main bacterial meningitis pathogens

3.2.2 By 2022, assessment of the impact and the additional burden of sequelae after meningitis

3.2.3 By 2024, a global genome library (GGL) is functional for each of the four pathogens

3.2.4 By 2025, 60% of Member States have implemented the minimum package of meningitis surveillance that includes complications / sequelae associated with bacterial meningitis, reaching 80% of Member States by 2030

3.2.5 By 2025, 90% of Member States report meningitis surveillance data (annual incidence for each pathogen) to WHO Regional level

Pillar 4: Support and aftercare for survivors and their families

so that the heavy burden of meningitis sequelae is recognized and alleviated in every community around the world.

It is estimated that at least one third of people surviving an episode of bacterial meningitis have enduring after-effects. Aftercare has a high cost and may not be affordable for families. Common sequelae include seizures, hearing and vision loss, cognitive impairment, neuromotor disability, memory and behavior changes, as well as limb amputations after meningococcal sepsis. Policies for assessment of sequelae, treatment and follow up are often absent or insufficient with inequitable access. Community-based rehabilitation is infrequently provided, with a lack of targeted interventions. Training on disability and bereavement for health care professionals and community workers is limited, with inadequate numbers of trained staff both in hospital and in the community. Given the ongoing global burden of bacterial meningitis, it is essential to build and strengthen health systems to provide the necessary care and programmatic support.

4.1 Strategic Goals

- SG11: Strengthen recognition of sequelae both in hospital and by follow up after discharge
- SG12: Increase availability and access to appropriate care for survivors with sequelae
- SG13: Empower survivors and their families to maximize their health and quality of life

4.2 Milestones

4.2.1. By 2023, guidelines for systematic follow-up of bacterial meningitis to diagnose, monitor and manage sequelae developed; and by 2028, implemented in all countries

4.2.2. By 2025, education about sequelae and disability integrated into training of health workers

4.2.3. By 2028, access to psychosocial support and rehabilitation services increased by 30%

Pillar 5: Advocacy and Information

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

Advocacy can drive lasting change and makes the case for that change. Advocacy goals for meningitis include better protection against meningitis, better diagnosis and treatment, and better support and aftercare for those who have experienced meningitis and their families. Suitable awareness information and resources for populations, at-risk groups, and health workers, as well as specific information for people who have directly been affected by meningitis, their families and communities, can play an important role in defeating meningitis, but are often lacking. Meningitis poses specific information challenges. Its rapid onset leaves little time to act, increasing the need for good, targeted information. It is frequently confused with other fever-causing diseases, such as malaria, increasing the need for health worker resources and training. Disability is a common feature of life after meningitis, meaning good aftercare information is essential.

Effective information can make people aware of the need to seek help based on awareness of the signs and symptoms and to increase demand from populations for vaccination. Clinical guidelines are often not available to help ensure that health workers and clinicians are trained and resourced to respond. Information is generally lacking to help signposting of patients to support services.

5.1 Strategic Goals

- SG14: Improve recognition among policymakers at national, regional and global level that meningitis and the roadmap to defeat meningitis should be prioritized
- SG15: Ensure awareness among all populations of meningitis signs, symptoms, sequelae and -seeking of healthcare as appropriate
- SG16: Ensure health workers are trained and provided with suitable resources to enable them to appropriately identify, diagnose, treat and support people with and surviving meningitis
- SG17: Ensure that the right to meningitis prevention and services is valued and demanded by communities
- SG18: Maintain high vaccine confidence

5.2. Milestones

5.2.1. By 2021 meningitis is included in all relevant WHO (Global and Regional) and donors' strategic and operational plans and budgets

5.2.2. By 2022 all countries have a meningitis action plan aligned to their national health strategy and global roadmap through to 2030

5.2.3. By 2023 all countries are conducting meningitis awareness campaigns appropriate to country burden and integrated with existing health awareness campaigns

5.2.4. By 2025 all countries have meningitis training for suitable relevant health care workers

5.2.5. By 2025 80% of countries have citizen representation and input to national meningitis annual plans