Report of the Eleventh Meeting of the WHO Strategic and Technical Advisory Group for Neglected Tropical Diseases

Geneva, 26–27 April 2018
The eleventh meeting of the Strategic and Technical Advisory Group for Neglected Tropical Diseases (STAG-NTD) at the headquarters of the World Health Organization (WHO) in Geneva, Switzerland on 26–27 April 2018. The annex and the list of participants are available from the STAG-NTD website (http://www.who.int/neglected_diseases/events/eleventh_stag/en/).

Day 1

The meeting was opened by Dr Ren Minghui, WHO Assistant Director-General for Communicable Diseases (CDS), who welcomed participants and paid tribute to Professor Nilanthi de Silva, chairperson of STAG-NTD, who will be standing down from her role at the conclusion of her term.

Dr Ren emphasized the importance of STAG recommendations and their implementation. The recommendations of this eleventh meeting would be shared with and welcomed by the Director-General. An increasing number of countries were progressing towards the NTD targets and goals, and these gains must be sustained, improved and aligned with universal health coverage.

At the request of Professor de Silva, all those present introduced themselves.

There followed a review of progress towards the 2020 targets and goals led by Dr Gautam Biswas, interim director of the WHO Department of Control of Neglected Tropical Diseases. He recalled the Global Partners meeting (Geneva, April 2017) that had been attended by Dr Kofi Annan, former General-Secretary of the United Nations, Mr Bill Gates, Bill & Melinda Gates Foundation, Dr Margaret Chan, former WHO Director-General, health ministers of countries affected by NTDs and chief executive officers of pharmaceutical companies, among others.

Dracunculiasis eradication

Introduction

During the 1980s, dracunculiasis (guinea-worm disease) was endemic in 21 countries in WHO’s African, Eastern Mediterranean and South-East Asia regions. In 2017, only two countries, Chad and Ethiopia, reported human cases. The number of human cases fell from an estimated 3.5 million in 1986 to only 30 in 2017: Chad and Ethiopia reported 15 human cases each, from a total of 20 villages. In 2017, for the first time, South Sudan reported zero human cases and zero infected animals. Mali reported zero human cases in both 2016 and 2017 but 11 and 9 infected dogs respectively in 2016 and 2017). The reduction in the risk of dracunculiasis in marginalized communities helps in the attainment of universal health coverage.

Progress towards the 2020 target

Tremendous progress has been made towards reaching the goal of interruption of dracunculiasis transmission by 2020. However, security concerns and *D. medinensis* infection in animals may delay the target.
1. **Achievements**

- Kenya was certified by WHO as free of dracunculiasis transmission in February 2018 following the recommendation of the 12th meeting of the International Commission for the Certification of Dracunculiasis Eradication. To date, WHO has certified a total of 199 countries, territories and areas, including 187 WHO Member States, as free from dracunculiasis transmission. Seven Member States remain to be certified: Chad, Ethiopia and Mali, in which the disease is currently endemic; South Sudan and Sudan, in the pre-certification stage; and Angola and the Democratic Republic of the Congo, which have had no history of the disease since the 1980s.

- South Sudan for the first time reported zero cases for more than a full calendar year, and claims to have interrupted transmission in 2016, thus meeting the 2020 target.

2. **Achievable by 2020**

- With their current level of preparedness, Angola and the Democratic Republic of the Congo could be certified either in 2018 or by mid-2019.

- Depending on the outcome of surveillance in Sudan in 2018, the country may be ready for certification in 2019.

- Mali and Ethiopia could interrupt transmission by 2020 if concerted efforts are made by their respective national programmes to expand active surveillance to all possible endemic foci and to systematically and comprehensively implement an adequate vector control strategy.

3. **Outlook beyond 2020**

- The goal of interrupting dracunculiasis transmission in Chad is feasible by 2022, provided the programme deploys an intensive, comprehensive and adequate vector control strategy in addition to the ongoing interventions.

4. **Challenges**

- The insecurity arising from conflicts in Mali and South Sudan continues to hamper national efforts to eradicate the disease. Access to conflict zones remains difficult, and programme activities are often interrupted. Conflicts have also led to population displacements both within and outside the borders of these countries, posing additional challenges to surveillance.

- Surveillance has been intensified in the Malian refugee camps in Burkina Faso, Mauritania and Niger in an effort to prevent the spread of infection and disease.

- Much of the region has been spared the conflict that erupted in South Sudan in December 2013, where most cases and the height of transmission occurred. The Ethiopian dracunculiasis eradication programme is likewise reinforcing surveillance in South Sudanese refugee camps and in areas bordering South Sudan.

- *Dracunculus medinensis* infection in dogs remains a challenge to the global dracunculiasis eradication campaign. In 2017, Chad reported 817 infected dogs; 11 infected dogs and four infected baboons were reported by Ethiopia, and nine infected dogs by Mali. In Chad, the number of infected
dogs fell by 26% and the number of *D. medinensis* worms emerging from infected dogs by 38% during 2017 as compared with 2016 data.

- Results of operational research indicate that transmission can be interrupted through the application of current strategies, including vigorous and comprehensive copepod control measures and the prevention of transmission from human cases and/or infected dogs.

### Yaws

**Introduction**

Yaws is a chronic disfiguring and debilitating infectious disease of childhood caused by *Treponema pallidum* subspecies *pertenue*. Fourteen countries remain endemic for the disease (eight in the African Region, two in the South-East Asia Region and four in the Western Pacific Region). Children are most frequently infected (representing at least 75% of new cases), with cases peaking among those aged 6–10 years. Boys are more often infected than girls. Typically, diagnosis is made on a clinical basis, but recent reports show that the ulcers caused by *Haemophilus ducreyi* coexist in areas endemic for yaws, which could complicate clinical diagnosis.

Serological tools (rapid syphilis tests) are available for confirmation of clinical diagnosis and for surveillance. Molecular techniques such as polymerase chain reaction are also available to definitively confirm yaws (especially in the post-zero phase) and monitor resistance to azithromycin.

WHO recommends azithromycin for treatment for yaws. However, a recent report of five cases of azithromycin resistance in Papua New Guinea calls for heightened surveillance and maximum coverage during implementation. Injectable benzathine benzylpenicillin remains the backup for those allergic to azithromycin or in cases of resistance.

**Progress**

- In January 2018, WHO signed an agreement with EMS, the biggest domestic pharmaceutical company in Brazil, for a donation of 150 million tablets of azithromycin for the next five years.
- WHO is helping countries to access the medicines.
- An operational research agenda has been developed to support the eradication effort.
- A study comparing 20 mg/kg versus 30 mg/kg of azithromycin in the treatment of yaws has shown that the lower dose used for trachoma is effective.
- Pilot studies to evaluate the WHO yaws eradication strategy have shown promising results; however, more than one round of treatment will be needed to interrupt transmission.
- WHO has published guidance for programme managers and procedures to assist verification and certification of countries.
Challenges in reaching the 2020 target

The WHO roadmap on NTDs targets the eradication of yaws by 2020. This target will not be achieved by 2020 for two main reasons: (i) the donation of azithromycin only materialized in 2018; (ii) operational funds to ensure its distribution have not yet been secured. Discussions are in progress to secure funds to assist countries.

Perspectives beyond 2020

The interruption of yaws transmission in India and its subsequent certification by WHO corroborates that eradication of yaws is both technically feasible and a realistic target. With the donation of azithromycin now secured, a new realistic target date will have to be set together with countries based on resources to achieve the eradication objective. This will be done before 2020. Governments, donors and partners must commit to and make concerted efforts to mobilize the financial and technical human resources needed to get the job done in the remaining endemic countries. Surveillance must be strengthened in all areas including those in which the disease was formerly endemic and are not reporting active yaws cases.

Over one billion individuals in more than 130 countries received treatment for at least one NTD in 2016. Sustained progress has reduced the number of people needing preventive treatment from 2 billion in 2010 to 1.5 billion by 2016. In 2017, WHO coordinated the delivery of over 1.5 billion donated tablets.

The Expanded Special Project for Elimination of Neglected Tropical Diseases (ESPEN), based in the WHO Regional Office for Africa in Brazzaville, has provided operational and technical support to 32 countries. Through ESPEN, WHO supports national NTD programmes to accelerate the control and elimination of the five NTDs which are amenable to preventive chemotherapy (the so-called PC-NTDs).

Dr Biswas recalled another important development related to the inclusion of NTDs into the African Leaders Malaria Alliance (ALMA) Scorecard for Accountability and Action for the final quarter of 2017. The scorecard is reviewed by African heads of state every year and positions NTDs alongside malaria and maternal and child health as leading public health priorities for the continent.

Also in 2017, WHO recommended triple drug therapy to accelerate the global elimination of lymphatic filariasis. The treatment, known as IDA, combines ivermectin, diethylcarbamazine citrate and albendazole. IDA is recommended annually in settings where its use is expected to have the greatest impact. The recommendation builds on evidence from recent research which demonstrated that adding ivermectin to the combination of diethylcarbamazine citrate plus albendazole clears microfilariae more efficiently from the blood than the two-drug regimen.

Guidelines were published by WHO in 2017 for large-scale deworming against soil-transmitted helminthiases to improve children’s health and nutrition. New rabies guidelines and recommendations on immunization were issued to supersede those of the 2010 WHO position on pre-exposure prophylaxis (PrEP) and post-exposure prophylaxis (PEP) for rabies; they are based on new evidence and directed by public health needs and are cost-, dose- and time-sparing, while

1 Lymphatic filariasis, onchocerciasis, soil-transmitted helminth infections, schistosomiasis and trachoma.
2 The scorecard is an index that reports progress in the 47 NTD-affected countries of sub-Saharan Africa and their strategies to tackle the five most common NTDs: lymphatic filariasis, onchocerciasis, schistosomiasis, soil-transmitted helminth infections and trachoma.
assuring safety and clinical effectiveness. A collaboration of WHO, the World Organisation for Animal Health (OIE), the Food and Agriculture Organization of the United Nations (FAO) and the Global Alliance for the Control of Rabies (GARC) has launched a global strategy to achieve zero human rabies deaths by 2030.

Dengue case-fatality rates have fallen by 26%. In 2017, countries in the Region of the Americas had the lowest levels recorded. Six new vector control tools are being reviewed by the Vector Control Action Group; new revised guidelines are due in 2018. Publication of new SAGE recommendations on dengue vaccine is imminent.

In 2017, the World Health Assembly adopted resolution WHA70.16 on the Global Vector Control Response 2017–2030, which aims to prevent, detect, report and respond to outbreaks of vector-borne diseases worldwide through an integrated, comprehensive approach. A WHO joint action group, which includes the Department of Control of Neglected Tropical Diseases, the Global Malaria Programme and the Special Programme for Research and Training in Tropical Diseases, has been formed to implement this response in Regions and countries.

The Seventh meeting of the Vector Control Advisory Group (Geneva, 24–26 October 2017) was held to assess the public health value of new vector control tools, technologies and approaches and to provide guidance on their public health usage. Another objective was to guide product developers on data requirements and study designs.

**Global Leprosy Programme**

Dr Erwin Cooreman, Team Leader, presented the latest data on the global burden of leprosy. In 2016, there were 217,968 leprosy cases. The largest burden was in the South-East Asia Region (163,095 new cases), the Region of the Americas (27,357 new cases) and the African Region (20,705 new cases). Smaller numbers of cases were reported from the Western Pacific, Eastern Mediterranean and European regions. India alone carried 62% of the global burden, followed by Brazil (12%) and Indonesia (7.7%).

The number of cases has steadily decreased globally by 2–3% per year. Dr Cooreman referred to the creation in 2018 of the Global Partnership for Zero Leprosy, which is advocating for research into new tools to further reduce the burden of leprosy.

**Regional perspectives**

Focal points for NTDs from all the WHO regions presented highlights and challenges to progress, as summarized below.

**African Region**

Dr Alexandre Tiendrebeogo, Regional Adviser, NTD and Dr Maria Rebolo, Team Leader for ESPEN gave joint presentations. The African Region is focusing on six diseases amenable to innovative and intensified disease management (the so-called IDM-NTDs). Two diseases (dracunculiasis and yaws) are targeted for eradication, two (human African trypanosomiasis and leprosy) for elimination as a public health problem and two (Buruli ulcer and leishmaniasis) for control.
Three countries are endemic for dracunculiasis: Chad, Ethiopia and Mali. Only Chad and Ethiopia reported human cases in 2017. South Sudan reported zero human cases and zero infected animals in 2017. Angola and the Democratic Republic of the Congo remain to be certified. The other 41 countries in the Region have already been certified. Transmission has been halted in South Sudan since November 2016. In Mali, no human case has been reported since November 2015, but there were nine infected dogs in 2017. Major problems persist in Chad and Ethiopia with infected dogs and localized outbreaks (15 cases in each country).

Six countries are confirmed endemic for yaws and four potential endemic countries require assessment and surveillance.

Some 46 countries have achieved elimination of leprosy as a public health problem. Only the Comoros Islands has not reached this target.

Of the 26 countries that are endemic for human African trypanosomiasis, 10 have reported zero new cases in 2017; 15 other countries have reported fewer than 1000 cases a year. Only one country (the Democratic Republic of the Congo) has reported cases exceeding this threshold. Progress towards eliminating the disease as public health problem is reflected in the decreasing numbers of cases from about 26 000 in 2001 to 2184 in 2016; a similar number is expected by 2020.

On behalf of ESPEN, Dr Rebollo described the priority objectives, namely: scaling up to achieve 100% geographical coverage of the five PC-NTDs; supporting countries to stop treatment and achieve WHO validation once elimination is achieved; strengthening information systems to get better data for higher impact; improving utilization of donated medicines to reach those who need them; and fostering partnerships, advocacy and resource mobilization.

Region of the Americas

Dr Santiago Nicholls commented on some of the challenges in the Region of the Americas. Following the success of the onchocerciasis elimination programme and other programmes, countries are motivated to validate or verify elimination of additional diseases. However, there is a lack of WHO guidelines available to assist this process. He gave leprosy and schistosomiasis as examples.

There is difficulty in achieving integration between NTDs and the water, sanitation and hygiene (WASH) sector.

Trachoma is now recognized as a public health problem in Peru as well as in Brazil, Colombia and Guatemala, and this may also be the case in other countries in Latin America. A further challenge is managing morbidity and preventing disability from diseases including lymphatic filariasis, leprosy and Chagas disease.

Eastern Mediterranean Region

Dr Hoda Atta highlighted the newly published Roadmap of NTDs in the Eastern Mediterranean Region for 2017–2021, which targets dracunculiasis eradication by 2019, schistosomiasis elimination (interruption of transmission), and elimination of both lymphatic filariasis and trachoma as public health problems. Onchocerciasis elimination (interruption of transmission) has been added to the Regional strategy.
ESPEN has now been extended to the Region. Elimination of lymphatic filariasis as a public-health problem has been validated in Egypt; Yemen submitted its validation dossier to WHO in April 2018. Sudan has completed mapping and scaled up mass drug administration. Both Sudan and Yemen need funds to be raised to support elimination of onchocerciasis.

Significant progress has been made to control leishmaniasis in Afghanistan, Pakistan, Syrian Arab Republic, Somalia and Sudan. However, cutaneous leishmaniasis has re-emerged dramatically due to recent conflicts and humanitarian emergencies; significant efforts are required to control and manage this form of the disease. In 2016, the Region reported almost 120,000 cases of cutaneous disease, and bears about 90% of the global burden.

**European Region**

Dr Elkhan Gasimov reported on the increasing risk of dengue and chikungunya spread by *Aedes albopictus* and *Ae. egypti* in the European Region, particularly in southern countries. Challenges to control include lack of accurate data, lack of financial resources to implement the Regional Framework related to these diseases and lack of vector control capacity.

Other NTDs of concern are leishmaniasis, soil-transmitted helminth infections, rabies and echinococcosis. Although the incidence of leishmaniasis in the Region is estimated at < 2% of the global burden, the disease is still endemic and still causes deaths. The Regional goal is to eliminate mortality and reduce morbidity and to supply countries in need with diagnostics and medicines.

Some 4 million people in the Region need preventive treatment for soil-transmitted helminth infections; the highest burden is in Central Asia and the Caucasus. The Regional burden is estimated at 1% of the global burden. The target is to eliminate the disease as a public health problem in pre-school and school-age children by 2020. The challenges are a lack of resources, collaboration with the WASH sector, and lack of capacity.

In relation to zoonotic NTDs, Dr Gasimov said this is a new area of work and surveillance is weak. There is a need to establish cooperation with partners such as OIE and FAO, and sectors through the one-health approach.

**South-East Asia Region**

Dr Ahmed Jamsheed Mohamed said that elimination and eradication of NTDs were a Regional priority and a flagship programme. Nine countries are endemic for lymphatic filariasis: three have already been validated as having eliminated the disease as a public health problem and a fourth is under post-MDA surveillance, making elimination by 2020 realistic. Of the three countries in which trachoma is endemic, Nepal has become the first in which elimination of the disease as a public health problem has been validated; Myanmar and India are on track for validation by 2020.

Schistosomiasis was thought to have been endemic only in Indonesia, but an increasing number of cases are now being reported in Myanmar. However, Indonesia’s focus on eliminating schistosomiasis has diverted attention away from other NTDs in the country.

The target for leishmaniasis elimination was 2020 and progress is being made, having missed the target set for 2017. Greater clarity and guidance are needed on the validation process for visceral
disease (kala-azar). In all three affected countries, there is a concern that new foci are emerging, with very little intervention, raising the risk that the disease might return.

The Region has the biggest share of the global burden of leprosy, and it is therefore unlikely that the 2020 target will be attained. This situation has not changed in the past few years.

**Western Pacific Region**

Dr Aya Yajima said that the Western Pacific Region has 15 NTDs in 28 countries and territories. A major challenge is the lack of additional financial or human resources to cover an expanded geographical area of NTDs. There are also significant geographical and logistical challenges in supporting Pacific island countries, where human resources and basic infrastructure such as laboratory and communication infrastructure are often scarce, transportation costs to reach numerous outer islands are significantly high and natural disasters are frequent.

During 2016–2017, six countries were validated for elimination of lymphatic filariasis. A further seven countries are under nationwide post-MDA surveillance and are expected to be validated in the near future. Two countries were validated for trachoma elimination in 2017.

A WHO expert consultation to accelerate the elimination of Asian schistosomiasis was held in Shanghai, China in May 2017, with a key recommendation for all endemic countries to achieve elimination by 2025 and verification by 2030. Another recommendation was for a strategy of community empowerment through a comprehensive approach.

A Regional Framework of Action to replace the Regional Action Plan 2012–2016 is in preparation and will focus on actions to build robust health system capacity in order to deliver effective multisectoral interventions and services efficiently against NTDs.

**Primary health care, universal health coverage and NTDs**

Dr Naoko Yamamoto, WHO Assistant Director-General for Universal Health Coverage and Health Systems, explained the three goals of the WHO General Programme of Work: healthier populations, health emergencies and universal health coverage (UHC), in order to protect and benefit an additional one billion people each. UHC means that all individuals and communities receive the health services they need without suffering financial hardship.

At least half of the global population is not fully covered by essential health services, and about 100 million people are still being pushed into extreme poverty because they have to pay for health care.

The links between NTDs and primary health care (PHC) and the UHC agenda call for the alignment of NTD interventions with UHC, particularly at country level, to achieve the NTD targets.

To mark the 40th anniversary of the Alma-Ata Declaration on Primary Health Care, a global conference on PHC will be held on 25–26 October 2018. Some 194 country delegations have been invited to recommit to strengthening PHC and to achieve UHC and the Sustainable Development Goals. In 2019, at the United Nations in New York, there will be a new Declaration on UHC, Dr Yamamoto said.
Aligning NTDs with UHC at the country level

Mr Christopher Fitzpatrick described the UHC “umbrella” as a people-centred, whole-of-system approach offering health care and protection across the human lifespan. Success in aligning NTDs with UHC will be measured by an increased share of people obtaining the high-quality NTD services they need and a decreased share of people paying for NTD services out of pocket. It will also be measured by strengthening health systems across the six building blocks of service delivery, human resources, medicines and technologies, financing, information, and leadership and governance.

The Fourth Global NTD Report identified two broad goals for NTD programmes post-2015: eliminating or “ending” NTDs, and strengthening health systems. The end of NTDs can support UHC by strengthening health systems in precisely those communities where they are weakest. However, the end of NTDs must also be supported by UHC. So-called “benefits packages” must include outreach beyond fixed health facilities, while within those facilities the quality of services must be maintained. NTD service coverage could be a tracer of equity in progress towards UHC.

WHO’s UHC cluster is preparing a “menu” of UHC interventions as a global public good for individual countries to draw on for prioritization in the context of “benefits package” design. The NTD Department is actively engaged in developing the UHC menu and in the “guaranteed” benefit packages determined by countries.

Mr Fitzpatrick spoke about the WHO/CDS “UHC Accelerator” Flagship Initiative to eliminate high-impact communicable diseases, which will focus on a short list of countries with overlapping communicable diseases and UHC challenges.

Responding to comments and questions, Dr Yamamoto said UHC is community-based in principle and the entry point to health, with primary health care at its core, but this does not imply that health facilities are not necessary. Health financing, quality and quantity are major challenges. The budget for health must be increased and used efficiently. Money for health is not a cost but an investment, and that approach should be advocated.

Statements by stakeholders

STAG received statements from the following stakeholders (listed alphabetically by organization):

Bill & Melinda Gates Foundation, Dr Julie Jacobson
Department for International Development (DFID), Dr Delna Ghandi
Drugs for Neglected Diseases initiative (DNDi), Dr Nathalie Strub-Wourgaft
Global Schistosomiasis Alliance and Merck, Dr Johannes Waltz
GlaxoSmithKline, Dr Andy Wright
Médecins Sans Frontières, Mr Julien Potet
Novartis Pharma AG, Dr David L. Hughes
Sightsavers, Dr Philip Downs
United States Agency for International Development Statement, Dr Emily Wainwright
Issues raised by participants, including stakeholders, partners, donors and invitees reflected concerns about the growing number of diseases being “foisted” onto the NTD Department, and STAG should say “no” to some of these requests. The mandate of the Department is being expanded but resources remained the same. At the same time, it remains unclear what is expected from WHO once a new disease is added to the portfolio of NTDs. A stronger, better-resourced NTD Department is needed. Caution is required in integrating NTDs into UHC to avoid them being obscured. NTDs needed to be better represented in WASH interventions.

After what she described as “very rich discussions and a learning exercise”, further discussions, statements and remarks from stakeholders, partners, donors and invitees, Professor de Silva said these could lead to a list of possible recommendations for STAG, and on that note brought the first day of the meeting to a close.

Day 2

The first session was restricted to STAG members and the WHO secretariat. The first item considered the application requesting that scorpion stings and envenoming be included in the list of NTDs. The Chair explained that a three-member STAG sub-committee was assigned to review the dossier submitted by Benin and Morocco. The sub-committee reported that after lengthy discussion they had not reached a consensus on the issue. While two of the members considered that scorpion stings did not meet the criteria of a neglected tropical disease as defined by STAG (as mortality was extremely rare) there was no long-term disability, and it was difficult to visualize a broad control strategy. One member, who favoured inclusion, argued that scorpionism and the estimated 2000–3000 deaths annually might also be under-reported and that its inclusion could be important, whereas if antivenom production was halted, more deaths would occur.

The discussion widened to examine a possible contradiction after the inclusion in 2017 of snake bite envenoming and the current arguments to include scorpionism.

Professor de Silva clarified that STAG had not advocated the inclusion of snake bites as an NTD, but had acknowledged the magnitude of the problem, deferring the matter to WHO’s senior management to decide which department was well positioned to lead the programme. Finally, the NTD Department was chosen on the grounds that it had the experience in managing complex and diverse diseases.

STAG concluded that although scorpion sting envenoming posed a health issue in some settings, it did not meet the criteria of a neglected tropical disease. There was no long-term disability, and it was difficult to visualize a broad control strategy, as it is not “immediately amenable to broad control, elimination or eradication by applying one or more of the five public health strategies adopted by the Department for Control of NTDs.”

For these reasons, STAG did not recommend the inclusion of scorpion sting envenoming as an NTD.

Progress reviews of STAG Working Groups

Monitoring and evaluation

Dr Pamela Mbabazi reported on a working group meeting (Geneva, 28 February – 2 March 2018) held to review progress during the past 12 months and identify gaps and emerging challenges for
preventive chemotherapy, IDM, vector control and WASH. The two key recommendations of the meeting related to expansion of current donations of preventive chemotherapy medicines for treatment of women of reproductive age, soil-transmitted helminthiases treatments for pre-school age children, and schistosomiasis treatment for adults and ivermectin treatment for scabies.

Such expansion would require a more proactive approach to increase access to quality-assured medicines for treatment of onchocerciasis, and WHO and country programmes should support inter-laboratory collaboration. Although onchocerciasis is the initial focus of advocacy, similar systems would be important to support NTD programmes that require laboratory testing to inform programme decisions.

STAG endorsed both recommendations of the Working Group on Monitoring and Evaluation at its meeting in 2018, as well as the recommendations regarding cross-cutting and disease-specific issues.

**Monitoring of NTD drug efficacy**

Helminth control programmes based on preventive chemotherapy to control schistosomiasis, onchocerciasis, lymphatic filariasis and soil-transmitted helminthiases are continuing to expand. In 2016, the global coverage of preventive chemotherapy reached 60%, with more than 1 billion individuals treated with anthelminthic medicines (albendazole, ivermectin, mebendazole and praziquantel).

The expansion of preventive chemotherapy may pose a potential risk of triggering the development of anthelminthic resistance to these essential medicines and thereby jeopardize the long-term public health benefits of the interventions. Anthelminthic resistance is not yet a public health problem in human helminthiasis, but resistance is problematic in helminths of veterinary importance.

Two drug combinations are currently used by the Global Programme to Eliminate Lymphatic Filariasis: ivermectin plus albendazole and diethylcarbamazine citrate (DEC) plus albendazole. In order to accelerate elimination, triple drug therapy with ivermectin, DEC and albendazole will start in selected countries in 2018–2019.

This combination therapy has demonstrated high efficacy against the disease in two large-scale randomized clinical trials conducted in Côte d’Ivoire and Papua New Guinea. Countries in which the combination therapy will be implemented can represent an ideal setting in which to test the benefits of preventive chemotherapy with ivermectin against other parasites, other soil-transmitted helminth infections, and scabies.

Merck has committed to expanding donations of ivermectin of up to 280 million tablets annually until 2025 for the Global Programme to Eliminate Lymphatic Filariasis.

STAG also endorsed the recommendations made by the Working Group on Monitoring Drug Efficacy.

**WHO Onchocerciasis Technical Advisory Subgroup**

The first meeting of the Onchocerciasis Technical Advisory subgroup was held in Geneva on 10–12 October 2017. The objectives were to review current strategies and provide recommendations on potential common strategies, or components of common strategies, for onchocerciasis elimination mapping, for determining when a stop-MDA evaluation should be performed, for performing stop-MDA evaluations, and to identify key research and operational questions that need to be answered.
to develop the evidence-base to support strategies for the above mentioned programmatic activities.

The transition from the goal of control (or elimination as a public health problem) to interruption of transmission of onchocerciasis necessitates a reappraisal of the methods used to evaluate programme progress and success. Although this change is important, it requires the development of some common approaches and willingness to continue to adapt these approaches as new data become available. The full report of the OTS was submitted to STAG in 2018.

STAG endorsed the recommendations of the first subgroup meeting.

**NTD Investment for Impact**

Dr Uzoma Nwankwo, Federal Ministry of Health, Abuja, Nigeria, reported on the NTD Investment for Impact Working Group (IfI WG).

STAG 2017 noted the progress that had been made to build the economic evidence for NTD interventions and their place in the SDG framework. It recognized the opportunity to re-focus IfI WG activities in 2017-2018, with less focus on economic evidence (cost of illness, cost-effectiveness) and global meetings, and more focus on financing strategy and guidance in countries.

It endorsed the reorientation of the IfI WG in its membership and processes towards more applied work in countries on financing strategy and guidance.

In particular, it encouraged the IfI WG to pursue in-country financing dialogues, with broader participation than could be managed at global meetings. These dialogues should include both traditional and emerging donors, MOH health financing, MOF, other ministries and UN agencies as relevant.

As part of its contribution to NTD monitoring in the context of the SDGs, members of the working group contributed to the development of the “NTD index”, as reported also by the M&E WG, in collaboration with Uniting to Combat NTDs.

The IfI WG will continue to work towards in-country financing dialogues. It is particularly interested in, and its work will be impacted by, STAG’s discussion around “Strategic shift towards aligning the NTD interventions within the scope of Universal Health Coverage at the country level.”

**Zoonotic NTDs Working Group**

The working group has held several meetings, but no face-to-face meetings. Much of its work has been mediated through sub-groups. Major progress has been made since 2012, notably on rabies.

The working group recognized the great work of the WHO team in dealing with an expanding portfolio within existing resources.

**Rabies**

A key target for rabies is the global elimination of dog-mediated human rabies by 2030. A global strategic plan (“Zero by 30”) has been prepared by the United Against Rabies collaboration (WHO, OIE, FAO and the Global Alliance for Rabies Control) to reach the goal. The plan is being rolled out, but there is still a need for funding and support.
A key advance has been interest from GAVI in providing support for improved provision of PEP to address the problems of access to vaccines for the most impoverished and more remote communities. This decision is imminent, but surveys indicate that access to vaccines free of charge to the poorest people is critical, and if implemented would dramatically benefit the numbers of lives saved – estimated at tens of thousands of people per year – and be highly cost–effective in reducing deaths and DALYs. Scaling up of intradermal use would also be important for reducing the number of vaccine vials required.

Mass dog vaccination remains the key component of global elimination strategies and GAVI support would be an important catalyst in accelerating efforts to vaccinate dogs as part of complementary efforts to reach the 2030 goal. Reliable supplies of safe and effective dog vaccines would be an important catalyst for implementing national programmes, and initiatives are in place to support improved supply, but will only be effective if countries can provide 5–10 year forecasts of demand.

The third report of the WHO Expert Consultation on rabies has been published (WHO Technical Report Series No. 1012). It includes updated information on integrating rabies within the DHIS2, and proposed procedures for validation of countries free from human rabies and verification of disruption of transmission of dog-mediated rabies.

There is also a new WHO position paper arising from the deliberations of the SAGE working group on rabies vaccines and immunoglobulins, which includes guidance on abbreviated schedules for both pre- and post-exposure vaccination and confirming the cost- dose- and time-sparing of ID vaccines.

The 2030 target of zero human deaths from dog-mediated rabies is technically feasible, but time is short and preparation and implementation of national plans must be accelerated. There are several models as to how these plans are rolling out, and several countries in Asia and Africa have shown leadership, but the momentum must be maintained.

NEEDS: While the new surveillance tools should generate better data at a global level, there is still need for improved data collection and data flows. Lessons can be learnt from the other NTDs.

Integration with other NTDs. Clear opportunities exist for linking dog rabies vaccination with echinococcosis control and new work is looking at community-based delivery strategies for dog vaccination that would allow easier integration with de-worming schedules for echinococcosis. There are also opportunities for improved linkages with the dracunculiasis eradication programme, particularly in terms of mass dog vaccination. Integrating these strategies would not only support roll out of rabies control in several African countries, but dog vaccination campaigns would likely prove to be a highly cost–effective approach to surveillance of guinea worm in dogs, which is critically important now that animal cases are included in the definitions of elimination.

**Echinococcosis**

Progress has been made towards the 2012 targets, with scaling up from local to regional initiatives particularly in China and Mongolia and plans for expansion in Central Asia. In South America, activities continue, including work on sheep vaccines which look promising.

An international working group meeting has resulted in technical manuals being drafted.
NEEDS: There is still need for improvements in diagnostics, case definitions, and identification of indicators to monitor progress.

In some areas there is less activity, including in East Africa, and there are concerns about the potential for an upsurge in the disease associated with shifts in livestock keeping to sheep/goats and changing livestock movement patterns.

Opportunities exist for integration of dog/livestock interventions with other programmes, including linking sheep/goat vaccination with vaccination against PPR and possibly brucellosis as part of larger-scale campaigns.

**Neurocysticercosis and Taenia solium**

*T. solium* is a major cause of acquired epilepsy in countries where the disease is endemic. To date most of the activities have been carried out primarily as research projects. Although there a number of challenges remain, progress has been made in both control and clinical management.

Guidelines on prevention and control of neurocysticercosis have been drafted and circulated for finalization. Target product profiles for diagnostics have been published. Several trials have been carried out to demonstrate the effectiveness of pig vaccination, and trials of mass administration of praziquantel in Madagascar are ongoing. While pig vaccines are effective, challenges remain in marketing as the disease is not considered a production/livelihoods issue for farmers and market incentives for combined vaccines are therefore low.

Plans are now to move from pilot to national control programmes, with improved diagnostics and development of point-of-care tests for neurocysticercosis.

The Chengdu Declaration was signed in December 2017 for the establishment of an international collaborative network to address both echinococcosis and cysticercosis.

**Comment on zoonotic transmission**

For several NTDs, the significance of zoonotic transmission is only becoming apparent as programmes move towards elimination (e.g. dracunculiasis, schistosomiasis). The zoonoses working group has considerable expertise in investigating animal reservoirs and zoonotic transmission dynamics that may be of value in other NTD elimination programmes.

STAG endorsed the workplan presented by the zoonotic NTDs Working Group.

**Progress towards the 2020 targets, and goals and milestones in the 2030 Sustainable Development Goals**

Many participants contributed to this lengthy discussion and a wide range of views was offered. Elimination of disease as a public health problem after 2020 would be difficult for many countries and the costs might be daunting. Some countries would not make the 2020 target, but the date should be kept as an incentive to catching up. Unless dates were set, countries would not take the targets so seriously. Even donors wanted dates as returns for their investment.
But it always had to be realized that there would always be successes in some countries and failures in others. There was strong consensus on the need for adoption of a consultative process in setting the post-2020 targets and milestones. The WHO Secretariat agreed that these could be discussed at disease-focused stakeholder and expert group meetings that will be held during the forthcoming year. STAG agreed that targets and milestones should be bold, but evidence-based and realistic too.
Conclusions and recommendations of the STAG

At the close of the meeting, STAG agreed a list of recommendations to be presented to WHO based on discussions over the two-day agenda.

Recommendation 1: Aligning NTDs with UHC at country level

NTD STAG calls on the WHO NTD Department, the Global Leprosy Programme (GLP) and Regional Advisers to: (1) Compile a UHC-NTD menu of interventions based on WHO guidance, providing options to package individual interventions and to measure their impact; and to (2) Document good practices in mainstreaming NTD interventions within UHC and, as appropriate, follow up with formal evaluation of the impact of NTD programmes on health systems.

Recommendation 2: Closer collaboration in UHC reform

STAG endorses closer collaboration between the NTD Department, GLP and other departments of the WHO Communicable Diseases cluster (CDS) and relevant departments of the UHC cluster and Regional Offices to support countries in the design of benefit packages and in broader dialogue around UHC reform, including through the joint CDS–UHC flagship initiative for eliminating high-impact communicable diseases.

Recommendation 3: Monitoring equity and quality in UHC

STAG encourages WHO to make use of NTD service coverage and outcome indicators to monitor equity and quality in UHC, building on an NTD service coverage index and barrier assessment work, as appropriate, at country and regional levels.

Recommendation 4: Application for consideration of scorpion sting envenoming as a neglected tropical disease

After discussions, it was decided that scorpion sting envenoming did not meet the criteria of a neglected tropical disease even though it posed a health issue in some settings as mortality was rare, there was no long-term disability, and it was difficult to visualize a broad control strategy, as it is not “immediately amenable to broad control, elimination or eradication by applying one or more of the five public health strategies adopted by the Department for Control of NTDs.”

STAG did not recommend the inclusion of scorpion sting envenoming as a NTD.

Recommendation 5: Expansion of current preventive chemotherapy donations to include additional target groups

Having noted the new disease-burden estimates and the threat to public health gains consequent to the non-treatment of infected sub-populations, STAG recommended that the current preventive chemotherapy medicines donation be expanded to provide treatments for women of reproductive age, STH treatments for pre-school age children, SCH treatment of adults, and ivermectin treatments for scabies. Expansion of NTD treatments beyond the limits of current donation programmes will require support for a more proactive approach to increase access to quality-assured generic products.
**Recommendation 6: Strengthen laboratory support for essential national programme activities in NTD control, elimination and eradication**

The major change in the goal of the global onchocerciasis programme from disease control to transmission elimination has created an urgent need for quality-assured laboratory support for essential national programme activities. The inadequacy of laboratory capacity represents a major obstacle that is preventing country programs from decisions based on credible data. This is causing delays both in scaling up and scaling down preventive chemotherapy. Facility development, as well technical support, should take into consideration both national and good laboratory practice requirements.

STAG calls on WHO to advocate countries and donors to provide the funding required to establish and maintain the needed laboratories and support the development of a system of quality assurance that encompasses all of the tests required by WHO guidelines for the elimination of onchocerciasis; and on WHO and country programmes to support a system of inter-laboratory communication and support that will facilitate much needed inter-country collaboration. Although onchocerciasis is the initial focus of advocacy, similar systems would be important to support any NTD programme that requires laboratory testing to inform programme decisions.

**Recommendation 7: review mandate of currently operational STAG Working Groups**

STAG recommends that the NTD Department reviews the mandate of the currently operational STAG Working Groups in the context of existing Expert Panels and other advisory groups to the NTD Department and reconsiders their functions in the context of current needs, particularly with regard to cross cutting issues.

**Recommendation 8: Developing the post-2020 agenda**

Taking into consideration the progress and challenges experienced in the implementation of the NTD Roadmap, STAG calls on WHO to initiate a consultative process with endemic countries, implementing partners, donors and stakeholders of setting new targets and milestones for the post-2020 period, in order to achieve the 2030 Sustainable Development Goals. The proposed targets should be ambitious but supported by scientific evidence and realistic. These should be presented to STAG for consideration at its next meeting.

**Recommendation 9: Guidelines for validation and verification of NTD elimination and post-elimination surveillance**

STAG recommends that WHO continues to develop guidelines for validation and verification of NTD elimination and post elimination surveillance where such guidance does not exist at present.
Closing session

The final session was also open to partners, donors and industry. Professor de Silva summarized the STAG’s recommendations to WHO. These recommendations were also communicated by the STAG chair to the Deputy Director-General for Programmes, Dr Soumya Swaminathan, in person. Assistant Director-General Dr Ren re-joined the meeting and conveyed the thanks of the Director-General to STAG and especially to partners for their support. Dr Ren said the strong and constructive recommendations such as those on NTDs post-2020, would be considered by WHO senior management in setting new targets and milestones for the period beyond -2020.

On the issue of scorpion stings and envenoming as a proposed NTD, he said that although STAG had decided the application did not meet the necessary criteria, he asked for STAG’s help in giving WHO Regional Offices guidance to concerned Member States, for example on how to respond to the issue as a public health problem within primary health care.

Questions from participants on the STAG recommendations were invited and Professor de Silva, Dr Ren and Dr Biswas responded to questions from representatives of the Bill & Melinda Gates Foundation and USAID.

In her closing remarks, Professor de Silva thanked the STAG members, the Secretariat, partners and donors and the NTD community at large and said it had been a pleasure to have worked with them all in the past two decades. She hoped to continue working in the NTD area.

Dr Biswas in turn thanked Professor de Silva and encouraged participants to provide suggestions after the meeting on how STAG could improve its work. The key to success was partnership, he said, not just within WHO and its Regional Offices, but also with the pharmaceutical industry, donors, implementing partners and academia. A strong partnership was the backbone of NTD progress. It was the donation of medicines for NTDs that explained where the NTD programmes were today. He also thanked the managers of country NTD programmes for their efforts to do good for poor people. He commended their determination and good work.

Finally, he thanked Dr Ren for his support to the NTD Department and thanked also the Department’s staff for their contributions and organizing the meeting.

The meeting was then formally concluded.