



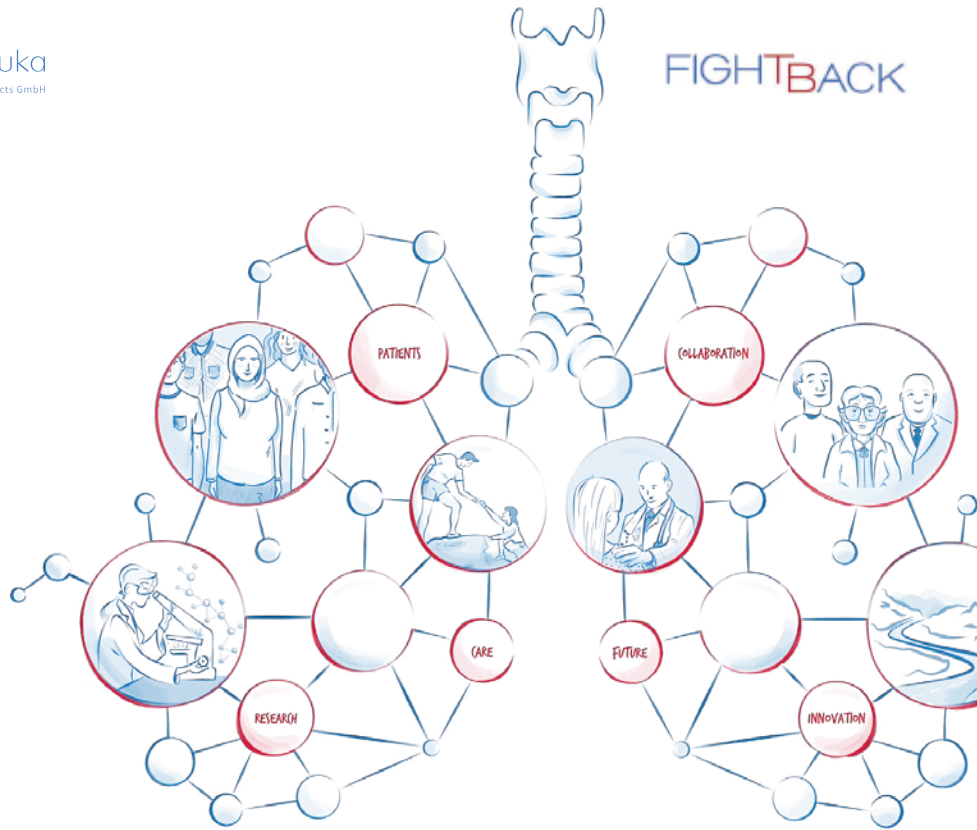
Akkon-Schriftenreihe

Akkon-Hochschule für Humanwissenschaften
Special Issue

Current trends in global health

**Tuberculosis: From the Berlin Declaration 2007 to
the Moscow Declaration 2017**





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Special Issue

Prof. Dr. med. Dr. PH Timo Ulrichs (Editor)

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the Moscow Declaration 2017**



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Global health is a multidisciplinary, dynamic new scientific field which primarily falls into the responsibility of the World Health Organization (WHO). However, since so many medical and health aspects also have political, economic and social impact and since many global health topics are of interest to neighbouring scientific fields such as demography, climatology, geography and political sciences, global health topics are also addressed by supranational institutions (other than WHO), national governments and facilities, non-governmental organizations, universities and scientific institutions.

Their common interest is to tackle acute health issues in humanitarian aid, to elaborate suitable health strategies in development aid and to prepare the basis for future developments in human health. The current framework for all efforts in this regard is the collection of sustainable development goals (SDGs) as successors of the millennium development goals and meant to combine both environmental and development issues and to address both developed and underdeveloped countries.

The year 2017 saw a variety of conferences, meetings and workshops on various global health issues. Each topic or issue was broadly discussed by different stakeholders, and at the end of each convention, declarations, statement papers, announcements and working papers were adopted, agreed upon and published. Very often, the fate of these papers is to have a very short half-life, virtually no political or practical consequences and to be forgotten and/or replaced by new declarations or consensus papers (with the same fate).

The special issue 2018 of the periodical of the Akkon University for Human Sciences is therefore published to provide current reports, summaries and documentation of ongoing discussions of 2017 to form a basis for future follow-up and further development: with a special focus on tuberculosis. At the same time, it is also a compendium to allow the efficient use of the results of the global health discussions in 2017 for any institution to remind political decision makers of their commitments and consensus statements in TB research and control.

The special issue, dealing with tuberculosis and one health is meant to serve as basis for ongoing activities on World Tuberculosis Day and subsequent international meeting such as the UN Highlevel Meeting in New York.

*Prof. Dr. med. Dr. PH Timo Ulrichs,
Akkon-Hochschule für Humanwissenschaften*

1. Tuberculosis as global health threat – Global and regional efforts to control tuberculosis in the year 2017

Timo Ulrichs

1.1 Introduction

Tuberculosis has accompanied mankind over millennia causing many deaths and accounting for the loss of many healthy life years from generation to generation. In industrializing countries of Europe around 1900, tuberculosis was the most prominent disease, and in the pre-antibiotic era, there was virtually no tool for a causative therapy (“therapeutic nihilism”). Then, with the development of effective anti-TB drugs in the time between the 1940s to 1960s, a combination therapy revealed to cure TB, and physicians, scientists and politicians counted on an eradication of TB within the next decade.

However, resistance against anti-TB antibiotics emerged and is now the major obstacle in efficiently control TB worldwide and especially in the WHO European Region. In fact, in 1993, WHO declared TB a global health emergency. Two developments aggravate the global TB problem in our days:

- i) increasing numbers of resistances per clinical isolate of *Mycobacterium tuberculosis* and increasing rates of multidrug resistant cases, and
- ii) HIV-TB comorbidity, especially in countries of Sub-Saharan Africa, but also as an emerging epidemic in the successor states of the former Soviet

Union in the WHO European Region. In our days, the WHO European Region is the only world region with increasing rates of new HIV infections.

In order to address current challenges of TB control and to join efforts to fight the disease, a series of symposia, conferences and meetings were organized in 2017, whose major contents and results as well as impacts on research and control issues in the TB field are presented in the following chapter.

The reports cover the following symposia, conferences and meetings:

- 11th Scientific Symposium of KMF and Akkon University on the occasion of World Tuberculosis Day 2017, Berlin, March 21 and 22;
- Symposium of KMF and Central Tuberculosis Research Institute on immunological aspects of host pathogen interactions in human tuberculosis, Moscow, April 25 to 28;
- Executive Board Meeting of the Stop TB Partnership, on the occasion of the G20 Health Ministers' Conference, Berlin, May 14 and 15;

■ Tuberculosis Symposium of KMF, Akkon University and Free University on the occasion of One Health Day 2017, Berlin, November 3rd, see chapter on One health, below;

■ First Global Ministerial Conference „Ending Tuberculosis in the Sustainable Development Era: A Multisectoral Response” of WHO and the Russian Federation, Moscow, November 16 and 17.

1.2 11th Scientific Symposium on the occasion of World Tuberculosis Day

Berlin, March 21 and 22, 2017

„Multidrug-resistant tuberculosis in Eastern Europe – political and practical aspects of TB control“

The biggest challenge in fighting tuberculosis in the WHO-European Region is the fast growing rate of multidrug-resistant strains of *M. tuberculosis* in the region.

Multidrug-resistance, aggravated by an emerging HIV-epidemic in many of the successor states of the former Soviet Union, counteracts all efforts to efficiently control tuberculosis. In fact, we more and more lose control, and tuberculosis already gets virtually untreatable in some areas of our WHO-European Region. Thus, the development of new drugs and novel vaccine candidates becomes more and more urgent.

To address these challenges, Koch Mechanism Forum (KMF) and its partners in the Russian Federation initiated scientific collaborative projects in the fields of immunology, medical microbiology, epidemiology and public health. The first scientific partnership dates back to November 2001 and is still active: The characterization of host pathogen

interactions in human tuberculous lung tissue is of great importance to better understand immunological processes that are correlated with protection against infection or disease. The Central Tuberculosis Research Institute in Moscow is specialized in dissecting human lung tissue and combine human and animal model approaches. Besides immunology, various projects with partners in St. Petersburg, Smolensk, Yekaterinburg, Toms and Novosibirsk aimed and still aim at addressing problems in TB diagnostics, in case notification and infection epidemiology. KMF and its partners developed a scientific network and a variety of publications.

As a platform for scientific exchange, the symposium on World Tuberculosis Day has been launched in March 2007. The first symposium was organized to prepare the Ministerial Forum on Tuberculosis in Berlin in October 2017 which then adopted the so-called Berlin Declaration on Tuberculosis (www.euro.who.int/__

data/assets/pdf_file/0008/68183/E90833.pdf, see attachment 1). The symposia following the first year 2007 which also commemorated the 125th anniversary of Robert Koch's famous lecture "Ueber Tuberculose" each had a specific scientific focus:

2007: 125th anniversary of Koch's lecture and preparation of the Ministerial Forum and the Berlin Declaration on Tuberculosis;

2008: Current research topics in diagnostics, therapy and prevention;

2009: Public health intervention in TB control;

2010: Exchange of expertise in TB control between Eastern Europe and South Africa;

2011: Childhood tuberculosis;

2012: Evaluation of progress made in TB control four years after the adoption of the Berlin Declaration on Tuberculosis;

2013: Public private partnerships in diagnostics, therapy and prevention of TB;

2014: HIV-TB-comorbidity in different WHO world regions;

2015: Public health interventions and vaccine development; in collaboration with Tuberculosis Vaccine Initiative, TBVI;

2016: TB and migration.

Today, KMF's TB symposium on the occasion of World Tuberculosis Day is a well-established scientific meeting with both interactions among TB experts and scientists as well as with representatives of politics, public private partnerships, and other decision makers including those from WHO. The 11th symposium in March 2017 was opened by Vladimir Grinin, ambassador of the Russian Federation to Germany, highlighting the importance of joint Russian-German projects in TB control even in times of political turbulences.

State-of-the-art lectures followed, given by Lucica Ditiu, executive director of the Stop TB Partnership, about global perspectives of TB control; Martin van den Boom, WHO European Office, about the newest figures of TB in the WHO European Region; Beatrijs Stikkers, KNCV, about current aspects of TB advocacy; and Basel Karo, RKI, about the results of a study on TB therapy in the EU. The following two sessions contained best-practice examples of TB control presented by the partners of KMF in Russia, Moldova, Belarus and Moldova.

Session 4 was organized together with the Global TB Caucus (www.globaltb-caucus.org), a global organization of parliamentarians dedicated to support the fight against TB. The session was opened by the former German Federal President Christian Wulff. Members of Parliament from the United Kingdom, Saudi-Arabia and India presented their approaches to fight TB. At the end of the session, a joint declaration of the parliamentarians was presented to be submitted to the German minister of health

Hermann Gröhe, asking for integrating MDR-TB into the G20 Summit discussion of Antimicrobial Resistances, AMR. The 11th TB Symposium ended with state-of-the-art presentations on diagnostics and therapy, put forward also by private company partners such as Becton Dickinson Diagnostics and Otsuka.

Outcomes

The results of this year's 11th TB Symposium were reported directly to the World Health Summit in Berlin in October 2017 (www.worldhealthsummit.org, WHS). There, it was agreed that the political and scientific discussions will be continued in an own workshop in the upcoming WHS 2018.

The paper of the parliamentarians of the Global TB Caucus was supported by KMF and Akkon University together with many other NGOs in the field of TB research and control. It was submitted to the German Federal Minister of Health, Hermann Gröhe, who hosted the health ministers' conference of G20 in May 2017 (attachment 2).

In an open letter to the G20 member states, a consortium of many non-governmental and scientific organizations (among those the Koch-Mechnikov-Forum and the Akkon University for Human Sciences) that are active in TB research and control asked for a strong G20 statement on the necessity to strengthen efforts in fighting antimicrobial resistances and thus also TB (attachment 3).

All of these joint efforts finally resulted in highlighting MDR-TB as a major glo-

bal health threat in the final document of the G20 Summit in Hamburg in July 2017 (www.g20germany.de/Content/EN/_Anlagen/G20/G20-leaders-declaration.pdf, page 9, attachment 4).

The 11th TB Symposium, the workshop at the World Health Summit and various other meetings and conferences (among those the VI. Congress of Phthisiatrists in the Russian Federation) will prepare the First Global Ministerial Conference entitled "Ending Tuberculosis in the Sustainable Development Era: A Multisectoral Response" in Moscow in November 2017.

1.3 First Global Ministerial Conference

Moscow, November 15 to 17, 2017

“Ending Tuberculosis in the Sustainable Development Era: A Multisectoral Response”

The first global ministerial conference (www.who.int/tb/endtb-sdg-ministerial-conference/en/) took place 10 years after the WHO European Ministerial Forum on TB (October 2007, which adopted the Berlin Declaration on Tuberculosis, see attachment 1) and was the attempt to widen the political support in fighting tuberculosis and thus reaching the sustainable development goals in this regard (SDG #3). The SDGs followed the millennium development goals in 2015 and combine environmental and developmental goals on the global level to be reached by 2030. Within SDG #3, the health issues are summarized, among which the fight against tuberculosis, HIV/AIDS and malaria plays an important role.

The conference was opened by the general director of WHO Tedros Ghebreyesus, by the regional director of the WHO European Region Zuzanna Jakab and the Russian Federal Minister of Health Veronika Skvortsova. President Vladimir Putin gave some welcome remarks and referred to the G20 Summit Declaration (see attachment 4), the long tradition of international collaboration in medicine and healthcare and stressed the necessity of such collaborations to reach the conference's targets.

More than 1000 physicians, scientists, political decision makers and representatives of NGOs from over 100 countries par-

ticipated in the conference, among them 74 ministers. Koch-Mechnikov-Forum as a German NGO and the Akkon University of Human Sciences as a scientific institution active in the field of TB research were represented. The sessions and workshops were of highlevel quality, and the meeting with collaboration partners from other NGOs (e.g. FIND and TB Alliance), private companies (e.g. Otsuka) and partner universities and research institutes (e.g. North Western State Medical University, St. Petersburg; Central Tuberculosis Research Institute, Moscow) could be used to discuss the current joined projects and efforts in TB research.

At the end of the conference, the Moscow Declaration to End TB was adopted (www.who.int/tb/features_archive/Moscow_Declaration_to_End_TB_final_ENGLISH.pdf, attachment 5). The results of the Moscow conference also form the basis for the Highlevel UN Meeting in New York in 2018, in which the global challenges of fighting TB will be discussed on the political level.

The momentum of the political awareness of tuberculosis as a global health topic is used by Akkon University and Koch-Mechnikov-Forum by dedicating the 12th Scientific Symposium on the occasion of World Tuberculosis Day 2018 to the political framework necessary to efficiently organize global TB control efforts.

Koch-Metschnikow-Forum e.V.

Koch-Mechnikov-Forum (KMF) is a German-Russian scientific non-governmental non-commercial organisation active in healthcare realm. It was established as an initiative of the “Petersburg Dialogue” in 2006 with the purpose of contributing to aligning the Russian healthcare system with the German one. The legal framework along with the guiding priorities for its activities are enshrined in the German-Russian Agreement on Cooperation in Health signed in 2010. KMF runs projects not only in Russia, but also in a few other post-soviet states.

For over ten years, KMF has been implementing a wide range of projects and activities such as organisation of conferences, seminars, research stays, and other forms of medical and scientific exchange. Hitherto, it has successfully carried out over 150 projects on different medical topics together with its partner organisations from Russia, Georgia, Belarus, and Moldavia. Health ministries, research institutes, medical universities, health service providers, professional associations, diverse representatives of civil society, and pharmaceutical companies with social responsibility form a broad network of KMF. The work is carried out in different sections,

whose heads are renown experts in their specific medicine-related fields. The main office located in the old historical building Langenbeck-Virchow House in the Berlin downtown is responsible for general coordination of projects and cross-section activities.

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Akkon University for Human Sciences

Akkon University for Human Sciences is a young and modern private university in Berlin, officially proved and certified. The university offers science- and problem-orientated study programs in which it reflects current sociological developments and debates. The university study program comprises education in nursing, civil protection and catastrophe relief as well as pedagogics and social sciences. Students study practically-orientated courses preparing for job positions with leadership and high responsibility afterwards. Scientific collaborations and partnerships allow professional insights into practical application of the study program contents.

Besides education and training, research and development play a major role in the overall program of Akkon University. Research projects range from basic science to applied research on practical aspects and projects commissioned to the university by governmental or private partners. In a multisectoral and interdisciplinary approach, crisis relief and resilience are central themes covered by the university.

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The Berlin Declaration on Tuberculosis

1. We, the Ministers of Member States in the European Region of the World Health Organization (WHO), meeting with the WHO Regional Director for Europe and high-level partners at the WHO European Ministerial Forum on Tuberculosis, held in Berlin on 22 October 2007, note with concern that tuberculosis (TB) has re-emerged as an increasing threat to health security in the WHO European Region.
 - In 2005, there were 445,000 new cases of TB and 66 000 TB-related deaths in the Region.
 - There are high TB incidence rates within the Region.
 - Even in countries with a relatively low burden, there has been a reversal of the previous decline.
 - Throughout the Region, the presence of TB is often related to social and economic factors and migration.
 - Poor adherence to accepted TB control practices has created high levels of man-made multidrug-resistant TB (MDR-TB) and extensively drug-resistant TB (XDR-TB).
 - No new diagnostics, drugs or vaccines have been developed over the past several decades.
- Many countries in the Region face a shortage of competent and motivated human resources for TB control.
- In the Region, TB is the most prevalent cause of illness and mortality in people living with HIV/AIDS, and few countries address TB/HIV coinfection in a comprehensive manner.
- TB does not respect borders.
2. We note that, despite some achievements over the past decade, TB control and efforts towards elimination of the disease in the Region need to be improved.
 - The Region has a high proportion of unfavourable treatment outcomes resulting from poor implementation of internationally accepted TB control strategies.
 - The use of currently available quality-controlled diagnostics and appropriate evidence-based treatment strategies needs to be further strengthened.
 - TB control in groups at high risk such as migrant populations, the homeless, prisoners and other socially vulnerable groups must be addressed.

- Focused action is needed to tackle MDR/XDR-TB and TB/HIV coinfection.
 - Prevention, including infection control, is a factor of continued importance in TB control, especially among vulnerable groups.
 - Timely collection, transmission, validation and analysis of quality TB surveillance data are essential for proper TB control and elimination interventions.
3. We recognize that:
- many countries have national plans for TB control;
 - a plan has been adopted to stop TB in the high-priority countries of the WHO European Region over the period 2007–2015 and a European Union action plan on TB is currently being developed;
 - Member States in the WHO European Region can contribute considerably in skills and finance to the development of new tools for TB diagnosis, treatment and vaccination;
 - national and international funding and support for TB activities in the European Region have grown;
 - the previous United Nations Secretary-General appointed Dr Jorge Sampaio, former President
- of Portugal, as his Special Envoy to Stop TB;
- the Stop TB Partnership for Europe and central Asia has been launched with substantial support from the Stop TB Partnership.
4. We note with concern the gaps to be bridged in order to fully implement the Stop TB Strategy for effective TB control and agree on the following priorities:
- universal access to the Stop TB Strategy should be promoted by strengthening the health sector and involving the full spectrum of health care providers, private and public, civilian and penitentiary, all of whom should follow the International Standards for Tuberculosis Care and promote the Patients' Charter;
 - civil society and affected communities should be considered as essential partners in and integrated into TB control;
 - the shortfall in funds, as identified in the Global Plan to Stop TB 2006–2015, should be met through increased, properly prioritized, sustained and targeted local, national and international funding;
 - TB control should be given high priority within national development plans presented for external financing;

- better use should be made of currently available effective tools, and new diagnostics, drugs and vaccines should be developed through basic research and product development, including by public-private partnerships, private industry and national research institutes;
 - TB should be integrated into HIV treatment and care programmes, as the two diseases together represent a deadly combination that is more destructive than either disease alone;
 - special efforts should be made to ensure that highly vulnerable documented and undocumented migrant and other populations have access to adequate culture-sensitive services providing quality care for TB;
 - greater partnership and coordination across the health, penitentiary and social services sectors should be promoted, as well as inter-country collaboration.
5. We therefore commit ourselves to responding urgently to the current situation.
- (i) We will strengthen:
- political will;
 - the public health and social services systems;
 - commitment from the full range of care providers;
 - human resource capacity that is adequate in both quality and quantity for effective TB care;
 - the evidence base for TB policy and practices through enhanced TB surveillance and monitoring;
 - collaboration between TB and HIV programmes;
 - collaboration with the private sector;
 - coordination at national and international levels;
 - civil society involvement.
- (ii) We will adopt the Stop TB Strategy in all its components, thereby:
- ensuring the expansion and enhancement of high-quality implementation of the directly observed treatment, short course (DOTS) approach;
 - addressing MDR-TB, XDR-TB, HIV-related TB and other challenges, particularly in high-risk populations;
 - integrating TB care delivery with general health services and reinforcing activities aimed at strengthening health systems;

- securing commitment from all care providers;
 - empowering people with TB and their communities, and removing stigma;
 - allowing and promoting research into and the development of new diagnostics, drugs and vaccines, as well as programme-based operational research.
- (iii) We will endeavour to secure sustainable financing by:
- implementing the resolutions on TB prevention and control adopted by the World Health Assembly in 2005 and 2007;¹
 - in collaboration with the G8 countries, supporting the Global Plan to Stop TB 2006–2015;
 - attracting funding from appropriate multilateral mechanisms at the global and European levels, such as the Global Fund to fight AIDS, Tuberculosis and Malaria, UNITAID, the Bill and Melinda Gates Foundation, and other inter-governmental and philanthropic organizations, as well as bilateral mechanisms.
- (iv) We will channel such financing towards:
- ensuring the implementation of regional and national plans to stop TB, including the WHO plan to stop TB in the high-priority countries of the WHO European Region;
 - addressing the funding gap between the total resources available and the resources needed to control TB, as well as accelerating the development of new diagnostics, drugs and vaccines, with the aim of achieving the 2015 target related to TB within the Millennium Development goals.
6. We commit ourselves to closely monitoring and evaluating the implementation of the actions outlined in this Declaration, and call upon the WHO Regional Office for Europe, in partnership with the European Union and other relevant regional institutions and organizations, to establish adequate fora and mechanisms, involving civil society, communities and the private sector, among others, to assess progress at regional level every second year, starting in 2009.

(1) World Health Assembly resolutions WHA58.14 on sustainable financing for tuberculosis prevention and control and WHA60.19 on tuberculosis control: progress and long-term planning.

Berlin TB Summit: Outcomes Document

We, members of parliament from across the Group of 20 (G20) countries, meeting in Berlin, Germany on 20–22 March 2017, call for G20 leaders:

1. To prioritize TB within all initiatives to combat antimicrobial resistance, to ensure TB is recognised as a priority pathogen within the AMR agenda, and to devote all necessary efforts to tackling the disease within the G20 and across the world.
2. To recognize in the G20 Heads of State Declaration: the global burden of TB as the world's leading infectious disease killer; as both a cause and consequence of poverty; as a leading threat from antimicrobial resistance through drug-resistant TB; and the need to increase support for TB research and development and for the scale up and implementation of new and improved tools.
3. To establish a G20 supported mechanism to fast-track the development of a shorter and more effective TB treatment regimen, a point of care rapid molecular test and an effective vaccine which will be available and affordable for all.

in the world. It predominantly affects people in their most productive years, robbing children of their parents and families of their major earners. It is both a driver, and a consequence, of poverty. If we are to achieve the ambitious vision articulated in the Sustainable Development Goals (SDGs)¹ of a world free from poverty by 2030, we must first end TB.

Headline statistics on TB and drug-resistant TB (DR-TB)²

1. Tuberculosis (TB) is the world's leading infectious disease killer. In 2015, 1.8 million people died from TB and 10.4 million people fell ill. 4.3 million people with TB were 'missed' by their healthcare systems; that is, they were not diagnosed or treated in officially recognised settings.
2. 46 per cent (816,000) of all deaths from TB, and 54 per cent (5.6 million) of all cases of TB in 2015, were in G20 nations. The majority of these occur in Brazil, China, India, Indonesia, the Russian Federation and South Africa, but high rates are found in many other G20 countries.
3. TB is the leading cause of death among people infected with HIV and is responsible for 1-in-3 deaths from HIV (400,000). Since 2000 over 8 million people have died from TB-HIV co-infection.

Explanatory Notes

Tuberculosis (TB) is the world's deadliest infectious disease. It is airborne, drug-resistant and found in nearly every country

4. Drug-resistant TB (DR-TB) remains a major challenge. In 2015 there were 580,000 cases of DR-TB, more than any other form of antimicrobial resistance. Overall, 55 per cent (322,000) of MDR-TB cases were in G20 countries.

TB funding worldwide

5. The World Health Organization (WHO) estimates that only US \$ 6.6 billion of the US\$8.3 billion required to fully fund the response to TB was provided in 2015. The majority of this funding comes from national governments, but the lowest income countries are dependent on international donors for 90 per cent of the funding for their TB programmes. Largely due to the lack of funding, the number of global cases of TB every year is falling at only 1.5 per cent a year. At this rate, TB will continue to be a threat to global public health into the next century.³
6. TB research and development (R&D) is critically underfunded. “The 2016 Report on Tuberculosis Research Funding Trends, 2005–2015: No Time to Lose” by the Treatment Action Group (TAG) and the Stop TB Partnership estimated that of the US\$9.84 billion needed for R&D between 2011–2015 – identified by the Stop TB Partnership’s Global Plan to End TB 2011–2015 – actual funding amounted to only US\$3.3 billion.⁴⁵ According to the G-Finder 2016 Report only \$98

million was invested in TB vaccine research in 2015 and funding for TB diagnostics research fell by 39 per cent in the last year.⁶

Market failure

7. The incentives that currently exist for commercial R&D have failed for TB. As the disease predominantly affects poor people there is little prospective financial return from new TB medicines to encourage commercial entities to make the major investments needed to develop new drugs.
8. No new drugs have entered the standard TB treatment for close to 50 years. In that period only two drugs have been developed to fight DR-TB: bedaquiline by Johnson & Johnson and delamanid by Otsuka. These drugs have both been demonstrated to improve treatment outcomes when added to treatment for DR-TB, however, it can be challenging to integrate individual drugs into existing regimens, because extensive trials are required to understand how the new combinations of drugs work together.
9. R&D for TB vaccines and diagnostics is also hampered by market failure. The current BCG vaccine was developed in 1921 and is only moderately effective in preventing severe TB in infants and young children – and it does not adequately protect teens and adults, who

are most at risk for developing and spreading TB. The majority of diagnoses of TB today rely on technology and techniques pioneered in the 19th century.

TB and AMR

10. One-third of all deaths worldwide from AMR are due to DR-TB. Experts have estimated that, in a worst case scenario, an additional 75 million people could die as a result of DR-TB by 2050. Of these, 33 million would be in the G20. The cumulative economic impact of these deaths could equal US\$16.7 trillion, of which US\$10.5 trillion would be in the G20. The Gross Domestic Product (GDP) of sub-Saharan Africa could be 3.21% lower in 2050 as a consequence of DR-TB, and in low-income countries as a whole it could be 2.45% lower.⁷
11. DR-TB is driven by a combination of market failure and sub-standard TB care and prevention programmes. Due to the lack of development of new and better drugs, the current treatment for drug sensitive TB requires patients to take four different types of medicines associated with strong side effects over six months. This is a major driver of the DR-TB epidemic: patients struggle to finish the full treatment course and therefore are at risk of developing resistance. Treatments for DR-TB are even more difficult than drug sensitive TB, with a very low success rate.

12. TB efforts continue to be limited by a lack of implementation and scale-up of currently available TB tools in countries. Of the 10.4 million people with TB in 2015, only 6.1 million were reached with TB care, resulting in 4.3 million being missed.⁸ Only 1-in-5 people who needed treatment for MDR-TB in 2015 received it, and only half of those starting MDR-TB treatment were cured. Many high-burden TB countries are underutilizing effective new tools in the fight against TB, including rapid diagnostic tests such as GeneXpert, and new treatments for MDR-TB such as bedaquiline and delamanid.

The role of the G20

13. Leaders at the Hangzhou G20 Summit agreed that AMR “poses a serious threat to public health, growth and global economic stability,” and committed to exploring options to prevent and mitigate resistance from a “G20 value-added perspective.”⁹ As the source of the majority of public funding for medical research and development, and home to nearly all the world’s major pharmaceutical companies, G20 countries are well-positioned to address the market failure that hampers antimicrobial R&D – and through carefully tailoring the intervention, could generate a significant value-add for their existing R&D efforts.
14. G20 nations are home to over half of the global TB burden. If the G20

oversees a dramatic scale-up in investment to tackle the disease, in line with the strategies above, millions of lives could be saved with existing tools. To eliminate the disease and achieve the SDGs, however, new drugs, diagnostics and vaccines must be made available to patients by 2025. To do this, the market failure hampering TB R&D must be overcome.

15. The G20 could, and should, support a new mechanism to fast-track the development of an anti-TB regimen. TB can only be successfully treated through the use of a combination of drugs, so a regimen is required. There are a number of prospective compounds already in pre-clinical development for TB, but progress has been hampered by a lack of support for further development. With the right combination of incentives, these compounds could advance relatively quickly.

16. Any mechanism should be driven by the principles of affordability, effectiveness, efficiency and equity. Where significant public funding is invested in unlocking new R&D efforts, these products should be considered as a shared responsibility and as public goods and all efforts made to ensure access and provide appropriate stewardship. Efforts must be made to incentivise knowledge sharing, collaboration and the trialling of combination of drugs as early as possible. In this

perspective, we support innovative initiatives such as UNITAID that fosters innovation, fast-tracks access and reduces costs of new and more effective medicines. Such an approach will lead to faster development of a new regimen and help to ensure that all new products are accessible, affordable and appropriate for all.

17. Such an approach would serve to coordinate existing efforts to develop new drugs for the disease, ensure any new drugs developed by these mechanisms reached patients as quickly and safely as possible, and have an immediate and tangible impact on the health of people across G20 countries and around the world.

(1) Sustainable Development Goals: <http://www.un.org/sustainabledevelopment/sustainable-development-goals/> accessed 01/03/17

(2) All data taken from the World Health Organization Global TB Report 2016: http://www.who.int/tb/publications/global_report/en/ accessed 01/03/17

(3) See 2 above

(4) Treatment Action Group's "2016 Report on TB Research Funding Trends, 2005-2015: No Time to Lose: <http://www.treatmentactiongroup.org/tbrd2016> accessed 01/03/17

(5) Stop TB Partnership's "Global Plan to End TB 2011-2015" <http://www.stopb.org/global/plan/plan1115.asp> accessed 01/03/17

(6) G-Finder 2016, Policy Cures, <http://www.policy-curesresearch.org/g-finder/> accessed 01/03/17

(7) Extracted from a report prepared by KPMG LLP in the UK, derived from research commissioned by the Wellcome Trust, as part of an independent review into anti-microbial resistance supported by the Department of Health and the Wellcome Trust

(8) See 2 above

(9) G20 Leaders' Communique Hangzhou Summit: http://www.g20chn.org/English/Documents/Current/201609/t20160906_3395.html accessed 01/03/17

Open letter to the G20 –

Global Health Innovation and Sustainable Development

Dear G20 Leaders and Sherpas, We are a group of like-minded organisations inspired by the German Government's prioritisation of global health during its G20 Presidency. Formed by a core group¹ focused on highlighting the role of global health innovation in, for and by the G20, our inclusive coalition continues to grow and build on the momentum created during the first half of 2017.

Following the G20-focused high-level roundtable in Berlin on 28th April 2017, "Research for Impact and the G20: How can global health innovation drive sustainable development?" experts and stakeholders in attendance called on G20 leaders to play a driving role in promoting sustainable and innovative solutions to the growing crises of antimicrobial resistance (AMR), poverty-related and neglected diseases (PRNDs) and pandemic preparedness and response. Outputs from the roundtable include a Call to Action, signed by over 100 individuals and organisations, which was sent to the G20 Ministers of Health-, Development- and Research and Heads of State, and a meeting Rapporteur's Report, which outlined the presentations and discussions which took place on that day.

As the G20 continues to position the 2030 Agenda for Sustainable Develop-

ment as a key priority and the "G20 Action Plan on the 2030 Agenda for Sustainable Development" is adapted to reflect updated priorities, we welcome the "Berlin Declaration of the G20 Health Ministers: Together Today for a Healthy Tomorrow". We agree that the G20 must lead by example in areas such as global health crisis management, Health Systems Strengthening (HSS) and AMR and subscribe to the focus in the Declaration on R&D for new and improved quality medicines, vaccines and diagnostics.

We appreciate the mention of several from our core group in the Health Ministers Declaration (Unitaid, CARB-X, TB Alliance, and CEPI) and the explicit mention of product development partnerships (PDPs).

We recommend that the G20:

1. Ensure that HIV, TB, Malaria, and NTDs, are included as key pathogens in urgent need of R&D under AMR.
2. Endorse the issues underscored in the Declaration and discussed at the Berlin roundtable, including the leadership of WHO in coordination and prioritization; the need for sustainable funding; the importance of Target Product Profiles (TPPs); HSS—including regulatory strengthening and fa-

cilitating access;—and effective international R&D coordination, monitoring, evaluation and data.

3. Increase and mobilize political and financial support for global health R&D and encourage private sector and philanthropic organizations to address the inter-related issues of AMR, pandemic preparedness/response and PRNDs, as stated in the Call to Action.
4. Together with partners, continue to urge G20 Ministers to endorse our position and build on our collective message to ensure the continued prioritisation of health in, and by, the G20, to recognise the critical role of innovation, and support the prominence of health in the upgraded G20 Compact with Africa.
5. Become a regular forum for ministerial dialogue on action required to tackle serious health threats to global security and economic development and encourage G20 Leaders to reflect the critical importance of the Berlin Health Ministers Declaration in the Hamburg Leaders' Declaration.

We believe that with effective public private partnerships in global health, more rapid progress can be made in a shorter period to achieve several of the goals in the 2030 Agenda for Sustainable Development. As the G20 affirms its role in strengthening the political support for

long-established and recent initiatives and continues to view its value through multiple lenses including those of economy and security, we stand by the commitment of G20 Health Ministers to continue this dialogue on global health under the Argentinian G20 Presidency.

Background and Objective of the G20 Global Health Innovation Initiative

The core group that co-hosted the Berlin roundtable “Research for Impact and the G20: How can global health innovation drive sustainable development?” is well placed to continue to highlight the role of innovation, in all forms. We continue to welcome additional members to our diverse coalition as we move this dialogue forward. The roundtable involved high-level participation by representatives of the German Bundestag, public-private partnerships, representatives of countries, including several from the G20, the private sector, academia, NGOs, the African Union, the World Health Organisation Special Programme for Research and Training in Tropical Diseases (WHO-TDR), the European Commission, together with representatives of the German Federal Ministry for Research and Education (BMBF) and the Business20 (B20) Sherpa. The roundtable discussions are summarised in the Rapporteur's Report.

We will continue to promote an open exchange with the Official Engagement Groups of the G20 and view the work of the B20, Science20 (S20), Civil20 (C20)

in health as having high value. We are particularly appreciative of the strong relationship we have established with the B20 and endorse the recommendations of the B20 Health Initiative. We additionally endorse the Think20 (T20) policy brief “SDGs and health: A vision for public policy”. In our “Call to Action” we formulated four recommendations leading up to the G20 Health Ministers Summit. Over 100 public and private stakeholders supported these recommendations and strongly agreed that the G20 should become a regular forum for ministerial dialogue on action required to tackle these serious health threats to global security and economic development. As global health advocates, we are appreciative of the impact of our initiative and we see high value in building on this with your support. We wish you a successful meeting.

Signed by Organisations:

Global Health Technologies Coalition (GHTC), PATH, CEPI, Sabin Vaccine Institute, Unitaaid, Medicines for Malaria Venture, Sovereign Strategy, TB Alliance, Columbia University, International Rescue Committee, Koch-Metschnikow-Forum, AMR Centre, IntraHealth, AERAS, Treatment Action Group, Akkon-Hochschule für Humanwissenschaften, International Vaccine Institute, Washington Global Health Alliance, FIND, Global Health Innovative Technology Fund (GHIT), TuBerculosis Vaccine Initiative (TBVI), King Saud University, Policy Cures Research, Wits Reproductive Health and HIV Institute (WITS RHI),

American Society of Tropical Medicine & Hygiene (ASTMH), The Amsterdam Institute of Global Health and Development (aighd), International AIDS Vaccine Initiative (IAVI), Elizabeth Glaser Pediatric AIDS Foundation, The Leprosy Mission, The London Centre for Neglected Tropical Disease Research, Liverpool School of Tropical Medicine (LSTM), BioMérieux, The International Union Against Tuberculosis and Lung Disease (The Union), International Coalition for Trachoma Control (ICTC), MedTech Europe

Signed by Individuals:

Jeremy Lefroy MP, UK Member of Parliament, Chair of the Parliamentary Network on the World Bank and International Monetary Fund
MdB Kordula Schulz-Asche, Member of the German Bundestag
John Bowis, Former UK Health Minister, Hon President Health First Europe
Rajae El Aouad, MD, MSc, MHPM, Member of the Hassan II Academy of Science and technology of Morocco
Councillor Julie Donoghue, Rushcliffe Borough Council, UK and member of the All Party Parliamentary Group (APPG) for Malaria and Neglected Tropical Diseases
Professor Janet Hemingway, Director of Liverpool School of Tropical Medicine; Chair in Insect Molecular Biology
Richard Feiner, Columbia University
Dra. Rosa María Herrera Torres, MD TB survivor
Prof. Dr. med. Dr. PH Dr. h.c. Timo Ulrichs, Head of Programm, Internationale Not- und Katastrophenmedizin Akkon-Hochschule für Humanwissenschaften, Vice-President and Head of the Tuberculosis Section of the Koch-Metschnikow-Forum

G20 Leaders' Declaration

Shaping an interconnected world

Preamble:

We, the Leaders of the G20, met in Hamburg, Germany on 7-8 July 2017 to address major global economic challenges and to contribute to prosperity and well-being.

Mastering the challenges of our age and shaping an interconnected world is the common goal of the G20 as our premier forum for international economic cooperation. The G20 revealed its strength during the global economic and financial crisis some ten years ago when it played a crucial role in stabilising economies and financial markets. What was true then continues to hold: We can achieve more together than by acting alone.

Progressing our joint objective in the G20 – strong, sustainable, balanced and inclusive growth – remains our highest priority.

Globalisation and technological change have contributed significantly to driving economic growth and raising living standards across the globe. However, globalisation has created challenges and its benefits have not been shared widely enough. By bringing together developed and emerging market economies, the G20 is determined to shape globalisation to benefit all people. Most

importantly, we need to better enable our people to seize its opportunities.

We are resolved to tackle common challenges to the global community, including terrorism, displacement, poverty, hunger and health threats, job creation, climate change, energy security, and inequality including gender inequality, as a basis for sustainable development and stability. We will continue to work together with others, including developing countries, to address these challenges, building on the rules-based international order.

Expanding on the results of previous presidencies, in particular the 2016 G20 Summit in Hangzhou, we decide today to take concrete actions to advance the three aims of building resilience, improving sustainability and assuming responsibility.

[...]

20. Safeguarding against Health Crises and Strengthening Health Systems: The G20 has a crucial role in advancing preparedness and responsiveness against global health challenges. With reference to the results of the G20 health emergency simulation exercise, we emphasise the value of our ongoing, trust-building, cross-sectoral

cooperation. We recall universal health coverage is a goal adopted in the 2030 Agenda and recognize that strong health systems are important to effectively address health crises. We call on the UN to keep global health high on the political agenda and we strive for cooperative action to strengthen health systems worldwide, including through developing the health workforce. We recognise that implementation of and compliance with the International Health Regulations (IHR 2005) is critical for efficient prevention, preparedness and response efforts. We strive to fully eradicate polio. We also acknowledge that mass movement of people can pose significant health challenges and encourage countries and International Organizations to strengthen cooperation on the topic. We support the WHO's central coordinating role, especially for capacity building and response to health emergencies, and we encourage full implementation of its emergency reform. We advocate for sufficient and sustainable funding to strengthen global health capacities, including for rapid financing mechanisms and the WHO's Health Emergencies Programme. Furthermore, we see a need to foster R&D preparedness through globally coordinated models as guided by the WHO R&D Blueprint, such as the Coalition for Epidemic Preparedness Innovations (CEPI).

21. Combatting Antimicrobial Resistance (AMR): AMR represents a growing threat to public health and economic growth. To tackle the spread of AMR in humans, animals and the environment, we aim to have implementation of our National Action Plans, based on a One-Health approach, well under way by the end of 2018. We will promote the prudent use of antibiotics¹ in all sectors and strive to restrict their use in veterinary medicine to therapeutic uses alone. Responsible and prudent use of antibiotics in food producing animals does not include the use for growth promotion in the absence of risk analysis. We underline that treatments should be available through prescription or the veterinary equivalent only. We will strengthen public awareness, infection prevention and control and improve the understanding of the issue of antimicrobials in the environment. We will promote access to affordable and quality antimicrobials, vaccines and diagnostics, including through efforts to preserve existing therapeutic options. We highlight the importance of fostering R&D, in particular for priority pathogens as identified by the WHO and tuberculosis. We call for a new international R&D Collaboration Hub to maximise the impact of existing and new anti-microbial basic and clinical research initiatives as

well as product development. We invite all interested countries and partners to join this new initiative. Concurrently, in collaboration with relevant experts including from the OECD and the WHO, we will further examine practical market incentive options.

Improving Sustainable Livelihoods

22. Energy and Climate: A strong economy and a healthy planet are mutually reinforcing. We recognise the opportunities for innovation, sustainable growth, competitiveness, and job creation of increased investment into sustainable energy sources and clean energy technologies and infrastructure. We remain collectively committed to mitigate greenhouse gas emissions through, among others, increased innovation on sustainable and clean energies and energy efficiency, and work towards low greenhouse-gas emission energy systems. In facilitating well-balanced and economically viable long-term strategies in order to transform and enhance our economies and energy systems consistent with the 2030 Agenda for Sustainable Development, G20 members will collaborate closely. Recalling the G20 Principles on Energy Collaboration, we regard energy security as one of the guiding principles for the trans-

formation of our energy systems, and we will continue to work on open, flexible, and transparent markets for energy commodities and technologies. We welcome international cooperation on the development, deployment, and commercialisation of sustainable and clean energy technologies and support financing by Multilateral Development Banks to promote universal access to affordable, reliable, sustainable and clean energy.

24. We take note of the decision of the United States of America to withdraw from the Paris Agreement. The United States of America announced it will immediately cease the implementation of its current nationally-determined contribution and affirms its strong commitment to an approach that lowers emissions while supporting economic growth and improving energy security needs. The United States of America states it will endeavour to work closely with other countries to help them access and use fossil fuels more cleanly and efficiently and help deploy renewable and other clean energy sources, given the importance of energy access and security in their nationally-determined contributions.

25. The Leaders of the other G20 members state that the Paris Agreement is irreversible. We

reiterate the importance of fulfilling the UNFCCC commitment by developed countries in providing means of implementation including financial resources to assist developing countries with respect to both mitigation and adaptation actions in line with Paris outcomes and note the OECD's report "Investing in Climate, Investing in Growth". We reaffirm our strong commitment to the Paris Agreement, moving swiftly towards its full implementation in accordance with the principle of common but differentiated responsibilities and respective capabilities, in the light of different national circumstances and, to this end, we agree to the G20 Hamburg Climate and Energy Action Plan for Growth as set out in the Annex.

26. Leading the Way towards Sustainable Development: The adoption of the 2030 Agenda represented a milestone towards global sustainable development. We call on countries to work with stakeholders to strive towards its ambitious and integrated implementation and timely realisation in accordance with national circumstances. We commit to further align our actions with the 2030 Agenda for Sustainable Development and its integral part, the Addis Ababa Action Agenda on Financing for Development, domestically and internationally,

including in support of developing countries and the provision of public goods.

27. Building on the G20's Action Plan on the 2030 Agenda for Sustainable Development, the Hamburg Update emphasises our collective and concrete commitments. We support the central role of the high-level political forum on sustainable development and other key UN processes towards achieving the Sustainable Development Goals. We will also engage in voluntary peer learning on the implementation of the 2030 Agenda and call upon others to join this important exercise as a complementary action towards Voluntary National Reviews.

[...]

MOSCOW DECLARATION TO END TB

First who global ministerial conference ending TB in the sustainable development era: a multisectoral response

16–17 november 2017, Moscow, Russian Federation

Preamble

We, the Ministers of Health and from across Governments acknowledge that despite concerted efforts, tuberculosis (TB), including its drug-resistant forms, causes more deaths than any other infectious disease worldwide and is a serious threat to global health security.

TB kills more than five thousand children, women and men each day and leaves no country untouched. It is one of the leading killers among people of working age which creates and reinforces a cycle of ill-health and poverty, with potential catastrophic social and economic consequences for families, communities, and countries. While recognizing the higher prevalence of TB among men, women and children are also vulnerable to the consequences of TB due to gender- and age-related social and health inequalities, such as poor health literacy, limited access to health services, stigma and discrimination, and exposure to the infection as carers. Multidrug-resistant TB (MDR-TB) accounts for one-third of all antimicrobial resistance (AMR)-related deaths, making the global AMR agenda central to tackling TB. TB is also the principal cause of

death among people living with HIV/AIDS. The global TB targets will not be met without new and more effective tools and innovative approaches for prevention, diagnosis, treatment and care. Persistent funding gaps impede progress towards ending TB.

Although a concern to all people, TB disproportionately afflicts the poorest and the most vulnerable populations. Tobacco smoking, harmful use of alcohol and other substance abuse, air pollution, exposure to silica dust, living with HIV/AIDS, diabetes and malnutrition increase the risk of TB. Stigma and discrimination remain critical barriers to TB care.

We reaffirm our commitment to end the TB epidemic by 2030 as envisaged in the Agenda 2030 for Sustainable Development and its Sustainable Development Goals (SDGs), the World Health Organization (WHO) End TB Strategy, and the Stop TB Partnership Global Plan to End TB 2016-2020. We acknowledge that to fundamentally transform the fight against TB, we need to:

- (i) address all the determinants of the TB epidemic including through a high-level commitment to, and implementation of, a multisectoral approach;^c
- (ii) achieve rapid progress towards the goal of universal health coverage through health systems strengthening, while also ensuring universal access to quality people-centred TB prevention and care, ensuring that no one is left behind;
- (iii) implement measures aimed at minimizing the risk of the development and spread of drug resistance taking into account global efforts to combat AMR;
- (iv) secure sufficient and sustainable financing, especially from domestic sources, and mobilize, as needed, additional financing from development banks, development partners and donor agencies;
- (v) advance research and development, as well as rapid uptake, of new and more effective tools for diagnosis, treatment, drug regimens, and prevention including vaccination, and ensure that we translate existing and emerging knowledge into concrete action to achieve rapid results;
- (vi) actively engage people and communities affected by, and at risk of, TB.

Furthermore, an effective TB response requires a global, regional, cross-border and country specific approach with multisectoral and multi-stakeholder actions, with recognition of: (i) significant differences among and within countries with high, intermediate and low incidence of TB and MDR-TB, (ii) demographic and social trends such as population ageing and urbanization, and (iii) needs of the affected individuals and communities, and the challenges in reaching and identifying all people with TB and providing them with appropriate care.

We recognize this First WHO Global Ministerial Conference, Ending TB in the Sustainable Development Era: A Multisectoral Response, convened by the WHO and the Government of the Russian Federation, as a fundamental milestone towards the United Nations General Assembly (UNGA) High-Level Meeting on TB in 2018. To fulfil the commitments and calls to action in this Declaration, and to achieve the most from the UNGA High-Level Meeting, we need to enlist the full engagement of, and collaboration among, heads of state, UN leadership and other global leaders; technical agencies and academia; private sector and philanthropic foundations; civil society and other relevant partners (such as patients groups, health professionals, social and community workers organizations and funding agencies).

Commitments and calls to action

We commit ourselves to ending TB, which is a political priority defined in the Agenda 2030 and as a contribution to achieving universal health coverage, within national legislative and policy frameworks, and to implementing the following actions through approaches protecting and promoting equity, ethics, gender equality, and human rights in addressing TB, and based on sound, evidence-based, public health principles. We urge WHO, and call upon other UN organizations and all partners, to provide the support necessary for success:

1. Advancing the TB response within the SDG agenda

We commit to

- Scaling up TB prevention, diagnosis, treatment and care and working towards the goal of universal health coverage through public and private health care providers to achieve detection of at least 90 per cent of cases and successful treatment of at least 90 per cent of those detected in all countries through the use of rapid diagnostics (including molecular diagnostics), appropriate treatment, patient-centred care and support, applying WHO-recommended standards of care, and harnessing digital health.

- Prioritizing, as appropriate, notably through the involvement of communities and civil society and in a non-discriminatory manner, high-risk groups and populations in vulnerable situations such as women and children, indigenous people, health care workers, the elderly, migrants, refugees, internally displaced people, prisoners, people living with HIV/AIDS, people who use drugs, miners, urban and rural poor and under-served populations, without which TB elimination will not be possible.
- Addressing MDR-TB as a global public health crisis including through a national emergency response in at least all high MDR-TB burden countries, while ensuring that robust systems are sustained in all countries to prevent emergence and spread of drug resistance. Rapidly scaling up access to patient-centred, integrated TB and HIV services and collaborative activities to end preventable deaths due to TB among people living with HIV/AIDS.^h
- Achieving synergies in managing TB, co-infections and relevant non-communicable diseases, undernutrition, mental health and harmful use of alcohol and other substance abuse, including drug injection.

- Working to increase, when relevant, access to new and effective tuberculosis drugs under strict programmatic monitoring and follow-up.
- Ensuring, as appropriate, adequate human resources for TB prevention, treatment and care.
- Reducing stigma, discrimination and community isolation, and promoting patient-centred care including community-based treatment options, as well as psychosocial and socioeconomic support.

We call upon

- WHO, other UN agencies, the Global Fund to Fight AIDS, TB and Malaria, the Stop TB Partnership, UNITAID, donors and partners, including from the private sector, academia and philanthropic foundations, and civil society to support the implementation of this Declaration.
- WHO, bilateral and multilateral funding agencies and other partners to urgently support high MDR-TB burden countries in their national emergency response.
- WHO, other UN agencies, bilateral and multilateral funding agencies and technical partners to address MDR-TB as a major threat to public health security by supporting implementation of the Global Action Plan on AMR in all countries,

while we reaffirm the political declaration of the high-level meeting of the UN General Assembly on antimicrobial resistance.

2. Ensuring sufficient and sustainable financing

We commit to

- Working with heads of state and across ministries and sectors, as appropriate, to mobilize the domestic financing needed for health systems strengthening with the ultimate goal of reaching universal health coverage, in keeping with national legislative frameworks, and with the Addis Ababa Action Agenda of the Third International Conference on Financing for Development.^k
- Developing and implementing, as appropriate, more ambitious, fully-funded national TB policies and strategic plans, including for TB research, that are aligned with national health plans, frameworks and the End TB Strategy and in keeping with national legislative frameworks.
- Identifying and implementing, as appropriate, the actions required to address issues that cause catastrophic costs to patients and their households, to ensure social protection measures, while ensuring that actions are in line with human rights obligations.

We call upon

- Global health financing partners including the Global Fund to Fight AIDS, TB and Malaria, the Global Financing Facility, bilateral agencies, the World Bank, and regional development banks to pursue and advocate for additional financing including through blended and/or other forms of innovative financing, with adequate safeguards for ensuring public health impact and attention to key populations.
- WHO to continue providing strategic and technical leadership, advice and support to Member States as well as to international institutions.
- Academic, technical, civil society, private sector and other relevant partners to continue their efforts to help countries develop and pursue investment cases while supporting health systems strengthening and increased absorption capacity.^o

3. Pursuing science, research and innovation

We commit to

- Increasing national and/or regional capacity and funding, as needed, to urgently expand multidisciplinary TB research and innovation, as well as applied health research, by establishing and/or strengthening national TB research networks including civil soci-

ety and community-based mechanisms, considering TB research as a central element of national TB and R&D strategies, expanding existing networks to integrate TB research, and reducing research- and implementation-related regulatory impediments.

- Working, when relevant, across ministries, donors, the scientific community and the private sector, academia, and other key stakeholders for the purpose of research: (a) for development and evaluation of (i) rapid point of care diagnostics, (ii) new and more effective drugs, and shorter, high-quality and cost-effective treatment regimens for all forms of TB (including latent TB infection and drug-resistant TB), and (iii) safe and effective TB vaccines by 2025; and (b) on environmental and social determinants of TB and effective interventions strategies.
- Improving, as appropriate, the coordination of research efforts nationally and globally, and ensuring that the emerging knowledge is promptly put into action, including by putting in place appropriate policy frameworks and implementing new medical technologies. Strengthening, as appropriate, surveillance systems, improving data collection and reporting at all levels, utilising innovative approaches and including surveillance in TB research agendas.

We call upon

- WHO in collaboration with global partners, research organizations, donors, the scientific community and countries to consider developing a Global Strategy for TB Research taking into consideration ongoing and new efforts, such as the TB Research Network started in the BRICS Leaders Xiamen Declaration.
- WHO in collaboration with global health and research partners and countries to make further progress in enhancing cooperation and coordination of TB research and development, considering where possible drawing on existing research networks to integrate TB research, such as the new AMR Research and Development Collaboration Hub proposed in the 2017 G20 Leaders' Declaration, notably to facilitate rapid scale up of innovative approaches and tools for TB prevention, diagnosis, treatment and care.

4. Developing a multisectoral accountability framework

To end TB by 2030, we will need reliable data to ensure that our collective knowledge is transformed into effective and timely action, both globally and domestically, and that we deliver on the commitments made in this Declaration. A new multisectoral accountability framework should enable the review and monitoring of

implementation and provide a systematic approach to determine additional actions required to achieve the SDG and End TB Strategy milestones and targets. The accountability framework should build upon evidence, independent analysis and constructive collaboration among all relevant partners, with an emphasis on high-burden countries, and should avoid duplication and increased reporting burden. To maximize impact, a multisectoral accountability framework that is based on approaches protecting and promoting equity, gender equality, human rights and ethics could, according to needs, include:

- a) The convening of national inter-ministerial commissions on TB, or their equivalent, by Ministries of Health in partnership with civil society and, where appropriate, with the direct engagement of the Heads of State, and the consideration of expanding existing intersectoral fora to include actions against TB in consultation with existing entities the goals of which include combatting TB so as to avoid duplication of efforts;
- b) Mechanisms for strengthening advocacy at all levels within all relevant sectors;
- c) Well-defined reporting, including sex- and age-disaggregated data, and review processes to monitor progress toward clear goals; and

- d) Opportunities for active engagement, monitoring, reporting and/or audits by civil society, as well as other key stakeholders.

We commit to

- Supporting the development of a multisectoral accountability framework in advance of the 2018 UNGA High-Level Meeting on TB, to track progress towards the SDG target of ending TB using relevant SDG indicators and the End TB Strategy operational indicators, and applying financing benchmarks set by the Stop TB Partnership Global Plan to Stop TB 2016-2020.

We call upon

- WHO, working in close cooperation with the UN Special Envoy on TB, Member States, including, where applicable, regional economic integration organizations, civil society representatives, UN Organizations, the World Bank and other multilateral development banks, UNITAID, the Stop TB Partnership, the Global Fund to Fight AIDS, TB and Malaria, research institutes and other partners, to develop the multisectoral accountability framework for the consideration of the WHO Governing Bodies, while taking into account existing multisectoral and multi-stakeholder frameworks, that enables measuring progress both globally and nationally through an independent, constructive and po-

sitive approach, especially in the highest burden countries, and an independent review of progress by those countries.

- WHO, in collaboration with Member States and key stakeholders, to develop a reporting framework and periodicity for a multisectoral global progress report on TB, subject to independent review.

Way forward

- We conclude with a commitment to act immediately on this Declaration in coordination with the WHO, and to engage with leaders and all relevant sectors of Government, UN agencies, bilateral and multilateral funding agencies and donors, academia, research organizations, scientific community, civil society and the private sector to prepare for and follow-up on the UNGA High-Level Meeting on Tuberculosis in 2018 in New York.

Explanatory Notes

- a) Please see the 2016 WHO Global TB Report: <http://apps.who.int/medicinedocs/en/d/Js23098en/>.
- b) TB determinants and/or risk factors: Conditions that favour transmission of TB or make people vulnerable to get TB are called TB determinants. The important social determinants of TB include poverty, and poor living and working conditions. Communicable and noncommunicable disease and other conditions that increase individual risk of getting TB are called risk factors. These include HIV/AIDS and other conditions that weaken the immune system, diabetes, silicosis, tobacco smoking, undernutrition, harmful use of alcohol and other substance abuse.
- c) Multisectoral approach: Preventing TB or minimizing the risk of TB certainly requires not only actions by the health sector (such as achieving universal health coverage and control of communicable and noncommunicable diseases that are major risk factors for TB) but also by other development sectors (such as poverty reduction, improved food security, better living and working conditions).
- d) As recommended in the WHO guidance on implementing the End TB Strategy: http://www.who.int/tb/publications/2015/end_tb_essential.pdf?ua=1.

tb/publications/2015/end_tb_essential.pdf?ua=1.

- e) Standards of care: WHO-recommended standards for optimum delivery of TB care and prevention, presented in the Compendium of WHO guidelines and associated standards: ensuring optimum delivery of the cascade of care for patients with TB.
- f) Please see the document, WHO Digital health for the End TB Strategy - an agenda for action <http://www.who.int/tb/publications/digitalhealth-TB-agenda/en/>.
- g) Eliminating preventable deaths among people living with HIV: This is in line with the target of reducing TB-related deaths among people living with HIV by 75 per cent by 2020, adopted by the UN General Assembly in the Political Declaration on HIV and AIDS: On the Fast Track to Accelerating the Fight against HIV and to Ending the AIDS Epidemic by 2030.
- h) Please see the document, WHO policy on collaborative TB/HIV activities http://www.who.int/tb/publications/2012/tb_hiv_policy_9789241503006/en/.
- i) As stated in WHA Resolution 62.15 from 2009: "Concerned that the highest levels of multidrug-resistance reported in WHO's fourth global report on anti-tuberculosis

drug resistance – an estimated half a million multidrug-resistant cases occurring globally, including 50 000 cases of extensively drug-resistant tuberculosis – pose a threat to global public health security” http://apps.who.int/gb/ebwha/pdf_files/WHA62-REC1/WHA62_REC1-en-P2.pdf.

- j) Please see the documents WHO Global Action Plan on AMR <http://www.who.int/antimicrobial-resistance/global-action-plan/en/> (adopted by the 68th WHA http://apps.who.int/gb/ebwha/pdf_files/WHA68/A68_R7-en.pdf?ua=1), and the Political declaration of the high-level meeting of the UN General Assembly on AMR http://www.un.org/pga/71/wp-content/uploads/sites/40/2016/09/DGACM_GAEAD_ESCAB-AMR-Draft-Political-Declaration-1616108E.pdf.
- k) Please see the document, Addis Ababa Action Agenda of the Third International Conference on Financing for Development http://www.un.org/esa/ffd/wp-content/uploads/2015/08/AAAA_Outcome.pdf.
- l) Catastrophic costs: The costs due to TB measure the total economic burden on TB patients and their families and are considered catastrophic when they threaten the livelihood of patients and their families. These costs include: payments for care (e.g. diagnostic and treatment services, and medicines), payments associated with care seeking (e.g. travel costs) and the “opportunity costs” associated with care seeking (e.g. lost income). These are determined by undertaking surveys of TB patients in health facilities.
- m) Blended financing: Complementary use of grants (such as from the Global Fund or other donors) and non-grant financing from private and/or public sources (such as a World Bank loan) on terms that would make a programme financially sustainable.
- n) Investment case: The Investment Case is a description of the transformation that a country wants to see to meet the targets and milestones towards ending the TB epidemic, and a prioritized set of investments required to achieve the results.
- o) Absorption capacity: Capacity of a country health system to put a significantly increased flow of resources to efficient use, which depends generally on governance, institutional capacity, ownership, and social and political stability.

Conference website

<http://www.who.int/tb/endtb-sdg-ministerial-conference/en/>

Foundation of the Research Institute in International Assistance at Akkon University

Crisis, catastrophe and conflict situations increase globally, both in frequency and intensity. Crises become more and more complex, be it acute situations like earthquakes or outbreaks/epidemics or chronic catastrophes like tuberculosis or drought. To ensure the development of short-term and long-term answers and solutions to the increasing and imminent questions of humanitarian and development aid, Akkon University will found a research institute dedicated to further interdisciplinary and collaborative research in this neglected field.

The “Institute for Research in International Assistance” (IRIA) at Akkon University will focus on general questions in humanitarian and development aid and thus provide scientific basis for respective political and social debates. In particular, the institute will focus on the following urgent research questions in health:

- Restructuring global health to reach the sustainable development goal 3
- Civil-military collaboration in humanitarian and development aid
- Global health security
- Health care systems in transition, especially in Eastern Europe and Central Asia
- One Health approaches in fighting zoonoses
- Fighting (re-)emerging infectious diseases

The first projects were already started and are currently financed by third-party funding. However, IRIA will have to be co-financed by additional partners, and thus we invite you to join and support the basic idea of improving research in humanitarian and development aid!



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„The Institute for Research in International Assistance will be officially founded on the occasion of a scientific symposium in global health which will take place at Akkon University May 14, 2018, and will be funded by the German Research Foundation, DFG.”

2. International One Health Day 2017 Transdisciplinary Workshop

Paulin Dettmann, Clara Schubert, Fabienne Eichler



Would you be surprised if someone told you that the environment has a great impact on your health? And have you ever wondered if you can transmit your cold to your beloved pet? As volunteers for the Non-Governmental Organisation Vétérinaires Sans Frontières e.V. Germany we care about these kinds of questions. The correlation between environment and our status of health sounds logical and significant to us. In combination with learning about diseases, which can be spread between humans and animals, so-called zoonosis, we are finding ourselves in the middle of the One Health approach. One Health's catchphrase by the American Veterinary Medical Association goes as the following: "One Health is the collaborative effort of multiple disciplines – working locally, nationally and globally – to attain optimal health for people, animals and the environment." [1] We, the volunteers, are fascinated by the One Health approach and have made it our goal to

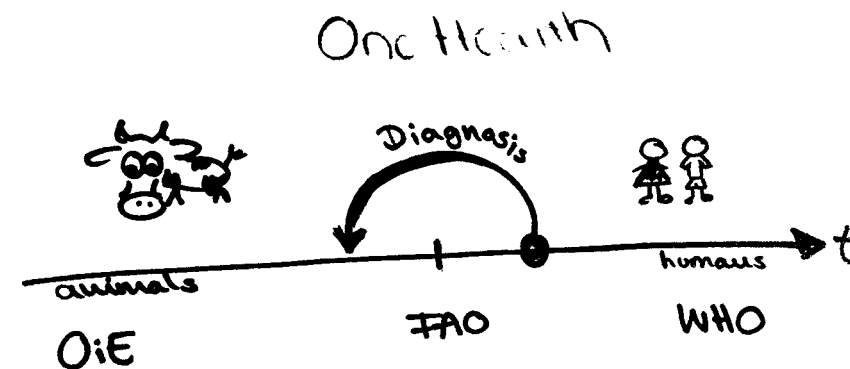
▲ *One Health Workshop
Participants and speaker of the
workshop 2017 (c) Reers*

spread its message. Consequently, we organised once more a transdisciplinary workshop on behalf of the international One Health Day 2017. It was funded by Engagement Global and the Federal Ministry for Economic Cooperation and Development [3], and for this project's implementation, students of medicine and veterinary medicine worked together. As last year's event was taking place at the Free University Berlin, the university for future veterinarians, the latest workshop was held at the Charité-Universitätsmedizin Berlin, the medical



students' university. We are drawing closer together. We have not yet answered the question if you can infect your pet with your cold. Luckily, it is unlikely. However, there are many zoonosis, which urgently need a collaborative concept of defence. The workshop's focus lied on tuberculosis as a transmissible disease, for which experts with different scientific and clinical backgrounds were invited as speakers. And, most encouragingly, the varied audience included students and professionals of medical, veterinary, public health, geography, biology and further related fields of studies. Tuberculosis' causing agent in humans is *Mycobacterium tuberculosis*, but the type *Mycobacterium bovis* can be spread between humans and animals, especially cattle. It is unknown, if cattle can be

cases were reported in 2013. In comparison: there were 6000 reported cases of human tuberculosis in 2016 in Germany. First, Ralf Otto-Knapp, an expert of the Central Committee for the Fight against tuberculosis in Germany talked about the history of tuberculosis and the development of testing methods. Do you know the symptoms of tuberculosis in humans? Before we are answering this question, we need to differentiate between two kind of tuberculosis infections. Firstly, the latent tuberculosis, of which an estimated 2 billion people are affected without showing any symptoms as their immune system is strong enough to keep the bacteria wrapped-up in the lung tissue. Secondly, patients with active tuberculosis show the following symptoms: coughing (blood), chest pain,



infected by *M. tuberculosis*, too. Both, bovine and human tuberculosis are mainly spread via air droplets and mainly affect the respiratory system. Should veterinarians be more aware of this disease or the physicists? Since 1997, Germany has gained the bovine tuberculosis free status, but 46 new

▲ *Sketch by one participant
The One Health approach includes
earlier diagnostics and collaboration
of Global Health Actors, which aims
to prevent the spread of diseases*

unintentional loss of weight, chills, fever etc. In addition, the expert also informed

Tuberculosis

EU/EEA 2015



Cases per 100 000 population



TB cases in EU/EEA countries

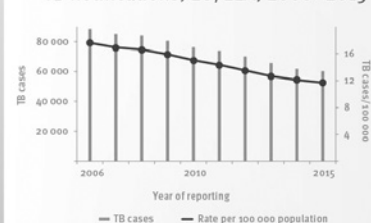
60 195

Notification rate per 100 000 population

11.7



TB notifications, EU/EEA, 2006–2015



Annual average decrease, 2006–2015

5%

Annual decrease needed to end TB by 2030

>10%

Source: ECDC/WHO Regional Office for Europe. Tuberculosis surveillance and monitoring in Europe 2017. More at www.ecdc.europa.eu

about the new webpage dzk-tuberkulose.de, which is newly developed to inform people about the disease and about the chances to fight against it. What, on the other hand, are the symptoms of bovine tuberculosis in the ani-

▲ [2] *Overview of tuberculosis in Europe by the ECDC*

mals? DVM Fischer-Tenhagen of the Free University broadened the minds not only of the medical students, but impres-

sed the audience with her expertise on bovine tuberculosis. In her passionate talk, she explained the spread and the undertaken control measurements in Germany and diagnostic methods in the veterinary clinic. Many affected cows do not show any symptoms, which is named asymptomatic. In symptomatic individuals, the disease can cause a slight fever, the lymph nodes swell and the cows are coughing and appear weak. Next to symptoms which are linked to the respiratory system, the mycobacteria can infect the digestive system and may result in diarrhoea and constipation. Furthermore, the diagnostic is challenging and next to well-known tests with tuberculin, Fischer-Tenhagen referred to another diagnostic method: the so-called Hero- Rats. These rats are trained to identify positive samples and show a high sensitivity and specificity. How relevant is tuberculosis nowadays? Professor Dr. Timo Ulrichs, Head of Department International Emergency and Disaster Relief and Global Health at the Akkon University for Human Science, gave a talk about tuberculosis as a worldwide problem for humans and about the infection itself. He reminded the audience about the 9.6 million new cases (source from the year 2014) and the actual relevance of this nearly forgotten sickness. For sure, it is more relevant for the less wealthy countries, according to Prof. Ulrichs, but because of the globalisation process it is an issue the whole world needs to be aware of. Furthermore, with the new rise of tuberculosis in Eastern European countries, the disease may be associated with refugees. People leaving their countries because of civil wars face many challen-

ges and a long way to safer places. Under these extreme circumstances their health and immune defence suffers and they are at a higher risk contracting infectious diseases. Finally, the audience gained insights on the relevance of tuberculosis for societies relying on pastoralism. Antonia Braus from Vétérinaires Sans Frontières e.V. Germany gave an insight on how animal health is becoming increasingly important, especially to people in the pastoral communities, as their lives directly depend on their animals. In addition, she explained some challenges that tuberculosis presents, such as the difficulty of differentiating types of bacteria. Through insufficient hygiene measures, bacteria from the gastrointestinal tract can reach the outer genital organs and can induce an atypical infection of the urogenital tract, leaving the tuberculosis undiagnosed. Braus stressed the importance of educating and raising awareness around proper hygiene and prevention measures. She also mentioned the need for more research on zoonosis, e.g. All speakers of this event agreed on a collaborative approach to tackle this global challenge. Cooperatively with the expert DVM Baumann, Head of the FAO Reference Centre for Veterinary Public Health, Prof. DVM Doherr of the Faculty of Veterinary Medicine of the Free University Berlin gave the guests an insight into the concept and the veterinarian contribution to the One Health principles. Firstly, the guests were given a general overview of the One Health approach and its national and global development in the last years. They outlined that veterinarians still need to be taken more into consideration for Public Health guidelines and

highlighted that veterinary skills are crucial to tackle Global Health challenges, e.g. control and prevention of outbreaks and especially zoonosis. After a break with snacks, drinks, and friendly conversation, the evening resumed with the interactive part of the workshop: The World Café. The participants divided into groups and visited separate tables, each held by one expert, to exchange opinions and discuss the various topics. With a total of five tables and individual themes, each group got to visit three before the plenum reunited to gather their final thoughts. At the first table, participants reflected on the concept of One Health. They discussed the importance of collaboration and the presence of intergovernmental organisations such as the World Organisation for Animal Health (OIE) and the World Health Organization (WHO). However, some believed this might not be enough, as there is little to no direct contact with national governments, that are far more impactful locally. Some wondered, within Germany, do we need a Federal Ministry to promote and further the One Health movement? Globalisation was also discussed, especially the influence it can have on diseases. For instance, as large migration movements have been entering Europe in recent years, Eastern European countries have witnessed a new rise of tuberculosis. How can we solve this problem without discouraging globalisation? Most emphasis, participants agreed, should be placed on creating a prominent dialogue. Next, bovine tuberculosis and diagnostic procedures were discussed at the second table. Participants agreed that a highly sensitive, primary screening would be best to

minimize patients that go undiagnosed. A second screening to examine patients more closely could follow. Most essential is the applicability of the procedure, especially when imagining is used in newly industrialised and developing countries. It must be mobile and cost efficient. Before such procedures are realised, it is crucial to educate and raise awareness around safe and clean handling of animals. Tuberculosis can be considered as a poverty associated disease. At the third table, participants discussed this correlation using examples learned in the previous presentations. Anti-microbial resistance is more prevalent in Asian countries, where awareness about the correct usage of antibiotics is lacking. What are further explanations for the rising numbers of tuberculosis cases next to poverty? For instance, an HIV infection can enhance the mechanisms of a tuberculosis infection. "Needle sharing" is the most frequent cause for HIV in the Ukraine, proving once more the importance of awareness around hygiene in countries across the map. To achieve a higher level of awareness, and better disease prevention, a strategy needs to be developed. For achieving this, a participant noted, we need to reconcile academia and society, remain pragmatic and realistic. At the fourth table, participants tackled the broad topic of zoonosis. A student summarised the main issue with a simple sketch on the board. She drew a line as a time axis, wrote animals on the left end, humans on the right, and marked the middle. She then explained that diagnostic procedures are only applied once a zoonosis has clinically appeared in human patients and drew an arrow to

the right of the middle mark. Our goal would be to shift the arrow to the left, meaning that we should work on detecting zoonosis before they reach humans, studying the animals more carefully. Here, it would perhaps be useful to have more organisational collaboration. The Food and Agriculture Organization (FAO) sometimes serves as a halfway point between the OIE, associated with animals, and the WHO, associated with humans. However, participants felt that no organisation fully bridges the gap and that this is especially needed to deal with the issue of zoonosis. Public services could be of help, along with further research in epidemiology and the development of vaccines. Finally, to provide some cultural and societal insight, participants at the fifth table learned more about pastoralism. Vétérinaires Sans Frontières e.V. Germany has a long tradition of working with pastoralists in Eastern Africa, and are caring for the animal health and food security of the herds. Participants at the VSF table were talking about cheap and effective ways of preventing diseases like brucellosis and tuberculosis to be spread. They also dived into political issues as they were discussing the role of women in pastoral societies and how strengthening their influence in economic matters can lead to more advanced and thus safer milk production. Lively discussions and new ideas were held and exchanged at all tables, which results were summarised and presented by a student from each group in the end.

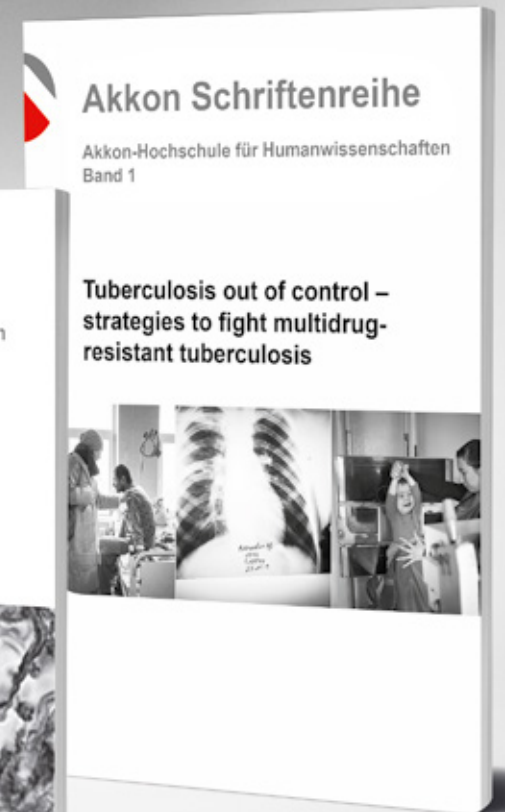
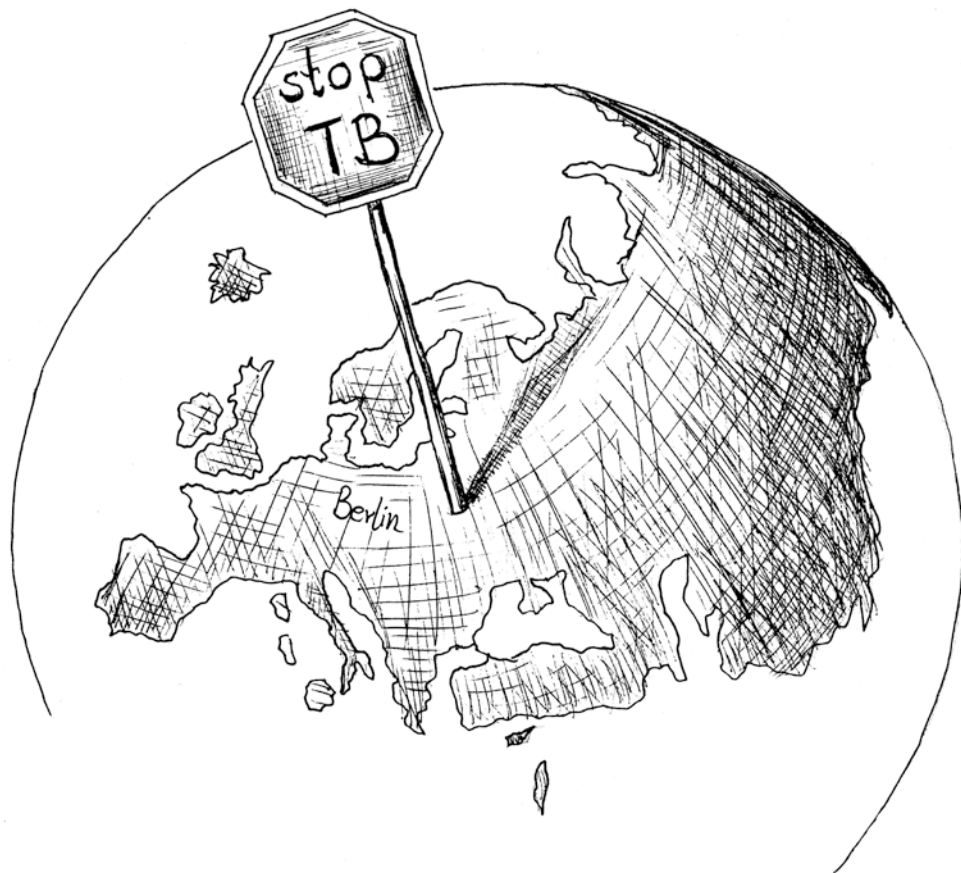
All participants and experts together then drafted demands to politicians and universities, named in the following:


- stronger cooperation between the three Global Health leaders - WHO, FAO and OIE - as well as national organisations and ministries
- more funding into One Health research
- more education of the public about zoonosis
- better connection between universities and study fields, through tandem or shared courses.

A very informative, eye-opening and exciting evening ended. Everyone came together once more for a drink and a snack, and many contact details were exchanged. Highly motivated and full of new ideas, the participants of the transdisciplinary workshop finished the evening and were already promising their return for next year's event!

Sources and Notes:

- [1] „One Health: A New Professional Imperative“ (PDF). American Veterinary Medical Association. 15 July 2008. Retrieved 2017-11-23.
- [2] Source: ECDC/WHO Regional Office of Europe. Tuberculosis surveillance and monitoring in Europe 2017. More at www.ecdc.europa.eu. Retrieved 2017-11-26.
- [3] Funded by Engagement Global with financial support of the Federal Ministry of Economic Cooperation and Development. The editor is responsible for the content of this publication; the described positions do not represent the perspective of Engagement Global gGmbH and the Federal Ministry of Economic Cooperation and Development.





In 2017, several political events took place which supported the fight against tuberculosis worldwide. First, the Global TB Caucus, a global organization of parliamentarians with the aim of supporting TB research and control convened at the 11th TB symposium of the Koch-Mechnikov Forum (KMF) and submitted a joint letter to the German minister of health emphasizing the need to fight especially multidrug-resistant tuberculosis. KMF, together with many other non-governmental organizations, appealed to the G20 Summit to include the fight against TB into their final statement. In their meeting in Hamburg in July 2017, the G20 members adopted a final document which deals with the fight against antimicrobial resistances including the problem of MDR-TB. In November 2017, all health ministers convened in Moscow to jointly discuss current issues of tuberculosis control and adopted a declaration about how to end TB within the sustainable development goals until 2030. The Moscow Declaration together with the G20 statement on TB and the NGOs' statements form the basis for a UN highlevel meeting in New York in 2018.

The special issue of the Akkon Schriftenreihe on tuberculosis is a compendium of the 2017's TB events and their respective outcomes. It is meant as a basis for an active discussion process to review strategies, initiatives and projects in an effort to further join forces and discuss, how technical and scientific work and contributions could foster political support in fighting TB.



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