Merck KGaA
Darmstadt, Germany

Charter on Access to Health in Developing Countries

R&D for Infectious Diseases

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Our Promise

As a leading science and technology company, we discover and develop for life in all its vibrancy, drawing on our unique expertise in healthcare, life science and performance materials. At Merck KGaA, Darmstadt, Germany, we work to achieve progress for people, communities, populations and society. Our global network of scientists, experts and thought leaders is driven by the passion to explore and the prospect of making a meaningful difference in the world. As the oldest pharmaceutical and chemical company in the world, founded in 1668, we have developed countless innovations that improve people's lives.

Unfortunately, millions of people still lack access to the benefits of modern health care innovations in developing countries.[1] We are committed to improving the health of underserved populations who lack access to health solutions, including prevention diagnostics and treatments. By enhancing the availability, accessibility and affordability of our products, and by raising awareness in communities, we work to provide quality, safe health solutions for all.

In an effort to improve access to health, we recognize the importance of Research and Development (R&D) into infectious diseases, such as schistosomiasis, malaria and bacterial infections. We are committed to making a positive impact in the lives of those suffering from these diseases in developing countries through dedicating part of our R&D efforts to finding solutions for these unmet medical needs.

[1] For a full list of developing countries, refer to Merck KGaA, Darmstadt, Germany's Access to Health Charter, Our Approach.

Access to Health in Developing Countries

Across the globe, two billion people do not have access to medicines. At least half of the world's population lacks access to essential health services and 100 million people are pushed into poverty due to health expenses.[2] Developing countries bear 87% of the world's disease burden,[3] yet only account for 32% of global health spending.[4] Providing access to health in these countries is a complex challenge. Improving access involves researching, developing and refining health solutions, creating efficient health systems and distribution channels, offering products at affordable prices, and empowering health workers and patients. All health stakeholders, both public and private, must pool their efforts to overcome health access barriers.

In contributing to providing access to health in developing countries, we work at the interface of medicines, diagnostics, medical solutions including devices, and digital approaches utilizing our local and global presence, expertise and core competencies. For instance, we produce a range of essential medicines that are included in the World Health Organization (WHO) Essential Medicines List. 67% of Merck KGaA, Darmstadt, Germany's medicines and products are listed on the WHO Essential Medicines List and/or as 1st line treatments.[5] Our products are available in over half of Least Developed Countries (LDCs) including countries such as Afghanistan, Benin, Burkina Faso, Ethiopia, Haiti, Mali, Myanmar, Nepal, Senegal, and Sudan.

Why Investments in Innovation are needed

R&D efforts and access to affordable medicines from the global community are currently limited[6] in the area of poverty-related diseases, e.g. Neglected Tropical Diseases (NTDs) and priority infectious diseases, like malaria and bacterial infections. As a result, it is important to invest in innovative solutions to fight these diseases, especially considering the health burden they create.

NTDs are a group of parasitic and bacterial tropical infections. These diseases are responsible for a large health burden in developing countries, and they often disproportionally affect the poorest groups in society. The WHO has highlighted 18 NTDs that particularly impact poor and politically marginalized populations and that cause significant morbidity and/or mortality. More than 1 billion people are infected with one or more NTDs. An additional two billion individuals are at risk of infection, and half a million people die every year from NTDs.

The scale of malaria is unprecedented, with nearly half of the world's population at risk, and with the large majority of malaria cases and deaths occurring in sub-Saharan Africa.[7]

In addition, the global health threat caused by bacterial infections deserves targeted efforts to address the increasing emergence of resistance to existing antimicrobial treatments. In low-resource settings, antibiotic stewardship, access and care are still crucially needed. Lack of policies as well as use of falsified medicines are amongst the causes leading to uncontrolled use of treatments and increased antimicrobial resistance.

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[2] Please see: http://www.who.int/news-room/detail/13-12-2017-world-bank-and-who-half-the-world-lacks-access-to-essential-health-services-100-million-still-pushed-into-extreme-poverty-because-of-health-expenses
[3] Dalberg analysis (2018) based on DALYs lost across the World Bank's Low Income, Lower Middle Income and Upper Middle-Income country brackets in 2015, relative to losses across all income country brackets. Source: http://ghdx.healthdata.org/
[4] Dalberg analysis (2018). Global health spending figure based on the population of the World Bank's Low Income, Lower Middle Income and Upper Middle-Income country brackets in 2015, multiplied by the 2015 health expenditure per capita (PPP, current international $) and as a proportion of total health expenditure across all income country brackets. Source: https://data.worldbank.org/
[5] Based on 2018 ATM Index analysis
[6] Lancet Global Health, 2013; 1e371-379.
[7] http://www.who.int/news-room/fact-sheets/detail/malaria
[8] https://www.who.int/antimicrobial-resistance/en/ ; https://www.who.int/en/news-room/fact-sheets/detail/antimicrobial-resistance

Our Commitment

The Merck KGaA, Darmstadt, Germany Global Health Institute (MGHI) houses our R&D efforts to address key unmet medical needs of vulnerable populations in developing countries suffering from infectious diseases.

We abide by the following guiding principles for our R&D activities in this area:

- We realize that infectious diseases create a substantial burden on socioeconomic development in developing countries. We are committed to pursuing R&D and access efforts in this field through the development of health solutions, including new or adapted medicines (e.g. pediatric formulations), diagnostics and vector control methods, in order to improve the lives of the millions of patients in developing countries.

- We believe that the most effective way to advance and develop new approaches is to work through robust public-private partnerships and innovative alliances, and to adopt cross-cutting approaches in health and development. We strive to ensure equitable access to our products resulting from those partnerships.

- We comply with the requirements of the World Medical Association's Declaration of Helsinki, the International Conference on Harmonization (ICH) Guideline for Good Clinical Practice and the European Clinical Trials Directive. We select contract research organizations (CROs) relevant for clinical trials in developing countries.

- We commit to undertake clinical trials only in countries where we intend to register and ensure access to our medicines.

- We support R&D-related capacity building programs in developing countries by awarding grants to scientists for their continued education and training.

- We contribute to continuous dialogue and raise awareness within the scientific community in the global health arena.

Our R&D activities

Merck KGaA, Darmstadt, Germany is currently involved in several areas of R&D for infectious diseases with a focus on schistosomiasis, malaria and bacterial infections/anti-microbial resistance (AMR). Specifically, the MGHI is mandated to improve the health of underserved populations by developing transformative health solutions to support and control elimination programs for infectious diseases, and thus contributing to the United Nations Sustainable Development Goals (SDGs). The Institute's mission is achieved not only through its R&D engine to deliver integrated health solutions, but also through its access path to ensure sustainable availability and affordability of the treatments. Its efforts are also targeted to strengthen capacity building and health systems in developing countries. Its model is based on public-private partnerships and collaborations with leading Global Health institutions and organizations in both developed and developing countries. The model allows to advocate and leverage expertises and know-how from the different partners reducing costs and synergizing with already existing external programs. The Institute also applies a social business approach which operates through a non-maximizing profit model to increase impact; it adopts the shared value concept which combines focus on both societal and economic progress.

Innovating to Fight Schistosomiasis

Schistosomiasis, also known as bilharzia, is one of the most prevalent parasitic diseases in Africa, and a very important one in terms of public health burden and economic impact. The disease affects over 200 million people worldwide with over 90% of cases occurring in sub-Saharan Africa. An estimated 200,000 people die every year from the effects of schistosomiasis such as liver and kidney infections, bladder cancer, and blood loss. Other health issues associated with schistosomiasis include malnutrition, anemia, growth retardation and cognitive impairment. A growing body of evidence indicates that infection with schistosomes resulting, in particular, in female genital schistosomiasis (FGS), increases susceptibility to infections such as HIV/AIDS.

Our involvement with schistosomiasis began in the 1970s. In collaboration with Bayer, we developed a medicine called Praziquantel (PZQ) under the brand name Cesol® 600. Today, PZQ remains the standard of care for the effective treatment of schistosomiasis around the world.

Since 2007, Merck KGaA, Darmstadt, Germany PZQ donations have been conducted in partnership with WHO. We increased our donation from 25 to 250 million tablets to WHO to contribute to eliminating schistosomiasis by targeting 100 million African school-aged children per year. Since 2014, we have sponsored the 'Global Schistosomiasis Alliance' for a collaborative approach involving partners towards elimination of schistosomiasis. We also optimized our existing product through film coated tablets, child-friendly flavors, and reduced tablet sizes.

Addressing the need for new health solutions to fight schistosomiasis, the MGHI has built up a portfolio of innovative projects, including the development of a pediatric formulation of praziquantel via an international public-private consortium of partners to treat children younger than six; the screening of Merck KGaA, Darmstadt, Germany's compound library through a dedicated schistosomiasis drug discovery platform; the development of innovative schistosomiasis diagnostics; and the set-up of approaches for vector control.
In addition, we have been fostering schistosomiasis R&D, manufacturing capacities and know-how in endemic countries through collaborations with local academic and public institutions. New initiatives and opportunities for partnerships are also being assessed to tackle female genital schistosomiasis and its impact on HIV/AIDS.

Filling the Gaps for Research in Malaria

Malaria remains the most frequent cause of death for children under the age of five in developing countries. Nearly half of the world's population is at risk of malaria. Furthermore, more than 200 million malaria cases and over 400,000 malaria deaths are recorded every year in about 90 different countries. About 90% of these deaths occur in Africa – 78% in children below five years of age. Despite an existing product portfolio and pipeline, there is an urgent need for new products to overcome the problem of increasing drug resistance and to achieve the goal of complete eradication.

In the frame of the 'One Merck KGaA, Darmstadt, Germany for Malaria' program led by the MGHI, we have established a portfolio of innovative projects for:
- the development of the next generation of anti-malarial treatments through the screening of the Merck KGaA, Darmstadt, Germany compound library in a Merck KGaA, Darmstadt, Germany co-sponsored Africa-based drug discovery platform;
- the clinical development of a New Chemical Entity as antimalarial;
- the development of highly sensitive malaria diagnostics;
- the identification of new methods for transmission control;
- the feasibility of new anti-counterfeited medicines technologies;
- the implementation of initiatives to enhance research capabilities in endemic countries through educational programs in and for Africa.

For these programs, we have been establishing and investing into partnerships and collaborations with public and private institutions in both developed and developing

Addressing the global health challenge caused by AMR

AMR is one of the major growing health issues globally. It threatens the effective prevention and treatment of an increasing range of infections caused by bacteria, parasites, viruses and fungi.

Misuse of antibiotics has led to this increased resistance. Lack of proper access to antibiotics, weak stewardship and inexistent policies as well as the spread of falsified medicines are worsening the situation.

As part of the global reaction within the international community to address this emergency, we have been implementing collaborative programs to assess the degree of resistance of identified bacterial pathogens and support Infection Control Programs in Africa. The development of new technological platforms to speed up the assessment of the type of infections is also in our focus to help prevent use of antibiotics or other antimicrobials (such as anti-malarials) when unnecessary.

Glossary / Definitions

Abbreviation	Definition
AMR	Antimicrobial Resistance
CRO	Contract Research Organization
FGS	Female Genital Schistosomiasis
ICH	International Conference for Harmonization (Guideline)
LDC	Least Developed Country
MGHI	Merck KGaA, Darmstadt, Germany Global Health
NTD	Neglected Tropical Disease
PZQ	Praziquantel
R&D	Research and Development
SDG	Sustainable Development Goals
WHO	World Health Organization