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JÃ¼rg Utzinger, Director of the Swiss Tropical and Public Health Institute (Swiss TPH), addresses global health challenges, the significance of partnerships and the impact of new technologies on health outcomes. He states, â??Our mission is to make the world a healthier place, focusing on topics such as climate change, infectious and non-communicable diseases, as well as health systems and policies,â?• underscoring the instituteâ??s commitment to sustainable and impactful solutions.

How would you evaluate the current appetite for collaboration with low- and middle-income countries (LMICs) in addressing global health challenges, especially in the context of recent crises like COVID-19 or the spread of dengue fever?

Reflecting on the COVID-19 pandemic, we witnessed both the strengths and weaknesses of our global response. On one hand, the rapid innovation and development of vaccines through public-private partnerships were truly remarkable. This exemplified the best of what global cooperation can achieve. However, the unequal distribution of the new vaccines highlighted a significant shortcomingâ??access to an essential public good was not equitably shared, an issue we must urgently address in future global health strategies.

When looking at dengue fever, this disease has emerged as a rapidly spreading threat, not only in Latin America but also in Africa and Europe. Although current cases in Switzerland are limited and all imported, the presence of mosquitos that are capable of transmitting dengue suggests that itâ??s only a matter of time before the disease becomes a more significant concern. The risk is further exacerbated by factors like increased travel, migration and climate change, underscoring the need for vigilant monitoring of infectious diseases.

At Swiss TPH, collaboration with LMICs is at the core of our missionâ??since the founding in 1943. We work in close partnership with these countries to address global health challenges, which can only be effectively tackled through collaboration that is based on mutual trust. A pertinent example is the recent partnership between Basel and Yopougon, the most populous commune in Abidjan, the economic capital of CÃ´te dâ??Ivoire. Over the past four years, Basel fostered a social, cultural and health engagement with Yopougon. This collaboration culminated in the opening of a new health centre, supported by the Canton of Basel-Stadt and facilitated by Swiss TPH through our long-standing partnership with the Centre Suisse de Recherche Scientifique en CÃ´te dâ??Ivoire (CSRS). This health centre not only provides essential primary healthcare but also serves as a hub for research, including a recent project on sickle cell disease initiated by Novartis.

The enthusiasm for such collaborations is clear, particularly as pharmaceutical companies recognize the significant potential in Africa, where a rapidly growing and young population demands increased access to healthcare, medicines and vaccines. However, securing funding for these initiatives is increasingly challenging. The global landscape is fraught with concurrent crisesâ??wars, climate change and food insecurityâ??all of which compete for limited resources. Despite these challenges, it is imperative to maintain strong, long-term partnerships with LMICs. Only through sustained cooperation can we effectively address the profound health challenges that these regions face.

How have these emerging barriers in global health impacted your ability to secure funding? Have they compelled you to prioritize certain areas over others?

In the realm of global health, our overarching goal is to enhance peopleâ??s health and well-being. However, the presence of these barriers necessitates strategic decision-making. We must determine whether to prioritize research funding through targeted grants, focus on development and cooperation or engage in public-private partnerships. For example, during the COVID-19 pandemic, it was somewhat easier to secure funding for viral diseases and for the development of novel diagnostics. Despite this, it was essential not to lose sight of our core mission, which includes combating other infectious diseases like malaria, maintaining and building up new cohort studies and biobanks, and health promotion and systems strengtening. While the allure of immediate opportunities was strong, we remained steadfast in advancing our mission, ensuring that our focus did not shift away from these critical areas.

What are your expectations for the future development of vaccines and other therapeutic technologies in enhancing population health, particularly in light of recent advancements?

The advent of the mRNA technology in developing vaccines for SARS-CoV-2 represents a remarkable achievement. While the technology made significant strides before the COVID-19 pandemic, the urgency of the situation catalyzed its rapid advancement, supported by unprecedented funding and research efforts. This environment allowed for swift testing, deployment and scale up, demonstrating the extraordinary potential of mRNA vaccines. Looking ahead, I am confident that mRNA technology will extend its impact beyond viral infectious diseases. For instance,

BioNTech is currently exploring its application in developing a malaria vaccine, with a Phase I trial already underway in the United States. The results, expected by the end of the year, could signal a significant breakthrough in addressing parasitic diseases as well.

In addition to mRNA, monoclonal antibodies represent another promising area of development. The initial studies on malaria have yielded promising results, though there is still progress to be made. These antibodies could prove invaluable for protecting vulnerable populations, such as the immunocompromised or elderly, particularly in outbreak scenarios. Vaccines have unequivocally demonstrated their value as a cornerstone of public health through the Expanded Programme on Immunization (EPI), as well as in the context of a pandemic. However, the rise of the anti-vaccine and broader anti-science movements poses a significant challenge. During the COVID-19 pandemic, we saw how these movements can undermine public trust and hinder progress in global health. Addressing this requires not only robust data and evidence but also effective communication strategies. It is crucial to clearly articulate the benefits and risks of vaccines, ensuring the public receives a balanced and informed perspective.

Peter Hotezâ?? book, ***The Deadly Rise of Anti-Science: A Scientistâ??s Warning***, offers a compelling exploration of these issues, particularly within the U.S., where anti-science sentiments are deeply rooted in mistrust of public institutions and academia. As scientists, it is our responsibility to demonstrate that public funds are used ethically and that our research upholds the highest standards of scientific integrity. Moreover, we must bridge the gap between the scientific community and the public, translating complex scientific concepts into accessible language that resonates with different stakeholders. Effective communication remains a critical area where we must continue to improve.

Intellectual property (IP) is often a delicate balance between fostering innovation and ensuring broad access to new therapies. What is your perspective on this issue, especially in light of the discussions that arose during the COVID-19 pandemic?

Intellectual property rights are indispensable in promoting innovation, particularly in the pharmaceutical industry. The development of new diagnostics, drugs and vaccines demands substantial financial investment and IP protection is crucial to safeguard these investments. Without such protection, it is difficult to envision how large pharmaceutical companies would be incentivized to undertake the extensive research and development necessary to bring new products to market.

However, in extraordinary circumstances, such as the COVID-19 pandemic, alternative approaches may be necessary. The U.S. governmentâ??s Operation Warp Speed is a prime example, where massive public funding enabled rapid vaccine discovery and development through public-private partnerships. This initiative allowed for the swift creation and rigorous testing of novel vaccines, meeting the highest ethical, technical and scientific standards. Without IP protections, similar levels of public investment would be required, though this would pose challenges due to competing demands on public funds.

Furthermore, it is imperative that vaccines undergo testing across diverse genetic populations. Often, clinical trials are conducted predominantly in Europe or the U.S., which may not adequately represent global genetic diversity. Expanding trials to include diverse genetic backgrounds would enhance confidence in the safety and efficacy of vaccines worldwide. This approach would also facilitate a more effective global response to pandemics by ensuring multiple, geographically diverse production and testing sites.

While expanding vaccine production in Africa is a commendable goal, the reality is that such facilities are almost non-existent on the continent today. What are the key actions needed to boost vaccine production in Africa, and how can global partnerships help?

Indeed, vaccine production in Africa is currently limited. However, there has been considerable progress in identifying potential sites for development, with Senegal, Rwanda and South Africa emerging as key candidates. Itâ??s important to update our perception of Africa, as many still hold an outdated view from decades past. Having just returned from duty travels to Abidjan, Iâ??ve seen firsthand the rapid development and innovation taking place in this and many other African cities. In some regions, innovation is not only present but thriving, offering valuable opportunities that can benefit the broader global community. With the right governance, sustained investment and strategic partnerships, establishing vaccine production facilities in Africa is eminently feasible, though it requires a medium-term outlook (say 10 years or so) rather than expecting immediate results.

We must also work to change the narrative surrounding Africa. While there are still areas of poverty, the continent is also home to vibrant life science clusters and significant innovation. For example, Ghanaâ??s and Kenyaâ??s dynamic growth and advancements are surprising to those who still cling to outdated stereotypes. These regions have the potential to play a critical role in global health, including vaccine production.

What do you see as the key aspects of technology transfer, and how do you prioritize knowledge circulation, given the substantial investment and time it requires?

At Swiss TPH, one of our core strategic goals is mutual learning for sustainable development, and this principle is deeply embedded in our daily work. A prime example is the current Minister of Health in Rwanda and the newly appointed Minister of Health and Social Action in Senegal, both of whom completed part of their education at Swiss TPH and the University of Basel. They have returned to their respective countries, where they are now instrumental in shaping their national health policies. The knowledge and skills they gained during their time in Europe are being adapted and applied in their local contexts, further enriching the global exchange of ideas. This approach to mutual learning emphasizes the importance of partnerships where both parties benefit and grow. Itâ??s not merely about transferring knowledge from one place to another; itâ??s about creating a continuous cycle of learning and development that leads to sustainable progress.

With the rapid advancement of new technologies, how do you perceive their impact on healthcare today, and how is Swiss TPH integrating these innovations?

The impact of new technologies, particularly mRNA technology, has been profound, especially in the development of SARS-CoV-2 vaccines. This breakthrough opens possibilities for applying similar technologies to other viral and non-viral diseases. At Swiss TPH, weâ??ve made significant investments in clinical decision support systems over the past decade. These systems have transformed traditional healthcare practices by digitizing cumbersome paperwork into accessible digital formats. For instance, instead of relying on manual, time-consuming processes, healthcare providers can now use algorithms on tablets to quickly assess symptoms, determine necessary tests and reduce unnecessary treatments.

One notable outcome of this innovation is the significant reduction in antibiotic prescriptionsâ??by as much as 80%. This is particularly crucial in addressing the often-overlooked issue of antimicrobial resistance, a growing yet silent pandemic. In LMICs, where antibiotic overuse is common, these

tools can play a critical role in curbing the development and spread of resistance. Weâ??re also exploring the potential of AI in diagnostics. Traditionally, diagnosing parasitic worm infections requires highly skilled microscopists to examine stool samples for parasite eggs. We see AI as a tool that could enhance the efficiency of this process by rapidly screening microscope slides. However, the success of such innovations depends on rigorous validation in real-world settings. This is where strong partnerships become essential. While start-ups in Switzerland and elsewhere in Europe are pioneering these innovations, ensuring their effectiveness on the ground is key. The entire processâ??from discovery and innovation to validation and scalingâ??must be carefully managed to successfully integrate these technologies into healthcare systems.

As you look to the future, what do you see as the key global health challenges, and how will Swiss TPH prioritize its efforts to address them?

Weâ??ve recently completed a comprehensive review to shape our strategy for the next four years. While our mission remains to make the world a healthier place, weâ??ve identified five strategic priorities. First, we are focusing on the critical link between climate change and health. Climate change represents one of the most significant societal challenges. Hence, itâ??s essential that we develop effective adaptation and mitigation strategies to address its health impacts. Second, our work on infectious diseases remains a cornerstone of Swiss TPH. Despite significant progress, emerging and re-emerging diseases continue to pose a threat. We are increasingly adopting a One Health approach, which considers the interconnectedness of human, animal and environmental health. Antimicrobial resistance (AMR) is also a major concern that demands ongoing attention. Third, we are turning our attention to the rise of non-communicable diseases (NCDs), which have become the leading cause of death globally, including in LMICs. Many regions are undergoing an epidemiological transition, where the burden of disease is shifting from infectious diseases to NCDs. This presents a significant challenge, particularly for health systems already strained by infectious diseases.

Our fourth focus is on the cultural and social context of health interventions. Understanding and integrating cultural and social factors into health strategies is crucial for achieving meaningful and sustainable outcomes. Finally, we are committed to translating scientific research into impactful policies and systems. Swiss TPH is dedicated to scientific excellence, but our ultimate goal is to ensure that our research leads to real-world improvements in public and global health. Among these priorities, the growing impact of climate change on health is particularly urgent, and we will be dedicating increasing resources to this area in the years ahead.

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