

# Charité Berlin World Health Summit

RESEARCH FOR HEALTH AND SUSTAINABLE DEVELOPMENT

Berlin | October 2012

A JOINT PUBLICATION OF THE  
WORLD HEALTH SUMMIT 2012 AND

**THE GRADUATE INSTITUTE** | GENEVA

INSTITUT DE HAUTES ÉTUDES  
INTERNATIONALES ET DU DÉVELOPPEMENT

GRADUATE INSTITUTE OF INTERNATIONAL  
AND DEVELOPMENT STUDIES

**GLOBAL HEALTH PROGRAMME**





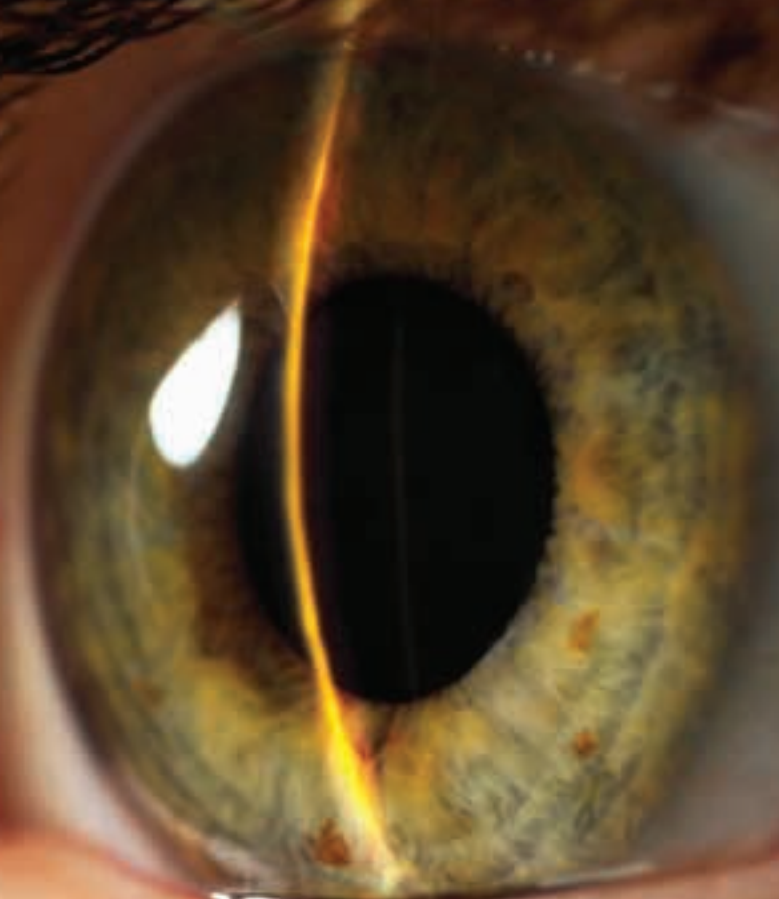
*cutting through complexity*

# A new vision for healthcare

In healthcare, every patient is unique yet many of the challenges facing their healthcare systems are similar.

KPMG practitioners spanning 150 countries in our global network help clients see their biggest issues clearly, delivering solutions that help change the face of health.

**Take a closer look at  
[kpmg.com/healthcare](http://kpmg.com/healthcare)**



# Charité Berlin World Health Summit

RESEARCH FOR HEALTH AND SUSTAINABLE DEVELOPMENT Berlin | October 2012

Editors  
Managing editors

Detlev Ganten, Ilona Kickbusch  
Mathias Bonk, Michaela Told

## Newsdesk Media

Editor-in-chief  
Sub-editors

Barry Davies  
Chloé Elliott, Emily Eastman

Art director  
Art editor

Jean-Philippe Stanway  
James White

Production and distribution manager  
Editorial production assistant

Malcolm Green  
Elizabeth Heuchan

Sales director  
Sales executives

Martin Cousins  
Peter DeVries, David Friel, Tom Kennedy, Geraldine Roux

Managing director  
Chief executive  
Chairman

Andrew Howard  
Alan Spence  
Paul Duffen

Pictures: Demotix, Getty

ISBN: 978-1-906940-62-1  
Printed by Buxton Press

Published by

**newsdeskmedia**  
www.newsdeskmedia.com

130 City Road, London EC1V 2NW, UK  
Tel: +44 (0) 20 7650 1600 Fax: +44 (0) 20 7650 1609

700 12th Street, NW, Washington DC 20005, US  
Tel: +1 (202) 904 2423 Fax: +1 (202) 904 2424

Newsdesk Media publishes a wide range of business and customer publications. For further information, please contact Alan Spence, chief executive, or Paul Duffen, chairman.



A joint publication of



**THE GRADUATE INSTITUTE | GENEVA**  
**INSTITUT DE HAUTES ÉTUDES**  
**INTERNATIONALES ET DU DÉVELOPPEMENT**  
**GRADUATE INSTITUTE OF INTERNATIONAL**  
**AND DEVELOPMENT STUDIES**

## GLOBAL HEALTH PROGRAMME

**World Health Summit**  
Charité – Universitätsmedizin Berlin  
Charitéplatz 1  
10117 Berlin, Germany  
[www.worldhealthsummit.org](http://www.worldhealthsummit.org)

© 2012. The entire contents of this publication are protected by copyright. All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form or by any means: electronic, mechanical, photocopying, recording or otherwise, without the prior permission of the publisher. The views and opinions expressed by independent authors and contributors in this publication are provided in the writers' personal capacities and are their sole responsibility. Their publication does not imply that they represent the views or opinions of the World Health Summit 2012, the Graduate Institute Geneva or Newsdesk Media and must neither be regarded as constituting advice on any matter whatsoever, nor be interpreted as such. The reproduction of advertisements in this publication does not in any way imply endorsement by the World Health Summit 2012, the Graduate Institute Geneva or Newsdesk Media of products or services referred to therein.

# Contents



## Welcome messages

- 07 **Working together in response to global healthcare challenges**  
Angela Merkel, Chancellor of Germany and Patron of the 2012 World Health Summit
- 11 **International cooperation is vital to shaping the future of health**  
François Hollande, President of France and Patron of the 2012 World Health Summit

## Introductions

- 14 **World Health Summit 2012 and the M8 Alliance**  
Detlev Ganten, Founding President, World Health Summit, Charité – Universitätsmedizin Berlin
- 16 **Research for health and sustainable development**  
Michael J Klag, Dean, John Hopkins Bloomberg School of Public Health

- 20 **The new dynamics of health**  
Ilona Kickbusch, Global Health Programme, The Graduate Institute | Geneva

## Challenges of modern environments

- 24 **Non-communicable diseases – challenges in high-income countries**  
Susan B Shurin, MD, Acting Director, NHLBI, NIH, Bethesda MD
- 27 **Reducing tobacco use around the world – policies for public health**  
Judith Mackay, Senior Advisor, World Lung Foundation

## Translating research into policy

- 32 **National Centres for Health Research: translating results into patient care**  
Annette Schavan, Federal Minister of Education and Research, Germany, and Member of the German Bundestag
- 35 **Looking towards Horizon 2020**  
Robert-Jan Smits, Director-General, Research and Innovation, European Commission
- 40 **Vaccines for neglected diseases – which way forward?**  
Peter Seeberger, Director, Max Planck Institute of Colloids and Interfaces, Department of Biomolecular Systems
- 42 **Overcoming innovation challenges to improve health and the economy**  
Christopher A Viehbacher, CEO Sanofi, Chairman Genzyme
- 46 **Beyond Aid: research and innovation for health, equity and development**  
Carel IJsselmuiden, Executive Director, Council on Health Research for Development
- 50 **Funding research and development for diseases in the developing world**  
Mario Ottiglio, Associate Director, Public Affairs and Global Health Policy, International Federation of Pharmaceutical Manufacturers & Associations

## Health and economics

- 53 **Health-system financing – the path to universal coverage**  
Daniel Bahr, Federal Minister of Health, Germany
- 58 **Health 2020: the new European policy framework and strategy for health**  
Zsuzsanna Jakab, WHO Regional Director for Europe
- 60 **Public-private partnerships for neglected diseases**  
Bernard Pécoul, MD, MPH, Executive Director, Drugs for Neglected Diseases initiative

## Educating health professionals

- 62 **Scientists in the 21st century**  
Jean-François Girard, President, PRES Paris Sorbonne Cité



- 68 **Higher education and a needs-based pharmacy workforce**  
Michel Buchmann, President, Henri R Manasse Jr, Education Initiatives Steering Committee Chair, and Diane Gal, Project Manager, The International Pharmaceutical Federation
- 70 **Balancing public and private roles in the education of health professionals**  
Julio Frenk, Dean, Harvard School of Public Health, Lincoln C Chen, President, China Medical Board of Cambridge, and Catherine Michaud, Research Coordinator, Health Professionals 21 Follow-up
- 73 **Empowered patients – new health professionals?**  
Anders Olauson, President, European Patients' Forum
- 76 **Young Physician Leaders Programme – educating the leaders of tomorrow**  
Jo Ivey Boufford, Lai-Meng Looi, Lucilla Spini and Muthoni Kareithi, InterAcademy Medical Panel
- 79 **A medical student's perspective: taking on the social determinants of health**  
Christopher Pleyer, President, and Roopa Dhatt, Vice President for External Affairs, International Federation of Medical Students' Associations

## Information technology for health

- 82 **Innovative information technologies for health**  
Agnes Binagwaho, Minister of Health, Rwanda

## Regional challenges – Singapore 2013

- 86 **For a sustainable future: developments in Southeast Asia**  
Kishore Mahbubani, Dean; Tikki Pang, Visiting Professor; Phua Kai Hong, Associate Professor – Lee Kuan Yew School of Public Policy, National University of Singapore
- 90 **Sponsors' index**



Leopoldina  
Nationale Akademie  
der Wissenschaften

# Leopoldina

NATIONALE AKADEMIE  
DER WISSENSCHAFTEN

GERMAN NATIONAL  
ACADEMY OF SCIENCES

The Deutsche Akademie der Naturforscher Leopoldina is Germany's National Academy of Sciences. It addresses key issues of particular significance for the future of society from a scientific perspective and independently of economic or political interests. The academy shares its findings with policymakers and the public, and puts these issues up for discussion on a national and international level.

The Leopoldina has a long and treasured tradition of maintaining and promoting international scientific exchange. More than 1,400 members from all over the world, including the G8 countries, China and India, form the basis of Leopoldina's international scientific network. The Leopoldina is also active in Africa, helping the young academies there to access international science networks and to actively participate in worldwide academic dialogue.

Health is high on the Leopoldina's agenda. Founded in Schweinfurt, Germany, in 1652, the Leopoldina is the world's oldest continuously existing academy for medicine and the natural sciences. With a strong background in these subjects, the academy engages in a number of health-related activities. The academy has produced statements, for example, on vaccination, predictive genetic diagnostics, the health impacts of policies to mitigate climate change, preimplantation genetic diagnosis, and direct-to-consumer genetic testing.

[www.leopoldina.org](http://www.leopoldina.org)



# Working together in response to today's global health challenges

**Cooperation to ensure improved health and sustainable development is crucial, writes German chancellor Angela Merkel**

**A**rthur Schopenhauer captured a deeply felt human need when he wrote that “health is not everything, but without health everything is nothing”. People everywhere rightly expect businesses, researchers and policymakers to come up with viable concepts for well-functioning health services that deliver good healthcare as well as effective disease prevention and control. This will remain a major global challenge in the years ahead, and responding to this challenge calls for a special kind of symbiosis that combines research and medical excellence with a pioneering spirit, responsibility

and ethical integrity. In this respect, the World Health Summit is a truly ideal forum. Now in its fourth edition, this unique gathering brings together experts from all over the world. I bid them all a very warm welcome to Berlin.

In the year 2012, sustainability is very much in the spotlight. In particular, Rio+20 – the United Nations Conference on Sustainable Development – has highlighted the importance of sustainable lifestyles and economic stewardship, so it makes excellent sense for this year's World Health Summit to focus on the nexus between health and sustainable development. In a world in which ever more people are living, this is an increasingly critical factor. That is why international cooperation is so important here, for it can play a crucial role in generating new hope and new prospects for people all over the world. Everyone has the right to a life lived in dignity, after all – and that also means in the best possible health.

As patron of the 2012 World Health Summit, I hope the conference will be a resounding success.■

# Action against cancer



**Dr. Andreas Penk**  
President  
Oncology Europe  
Country Lead  
Pfizer Germany

Dr. Andreas Penk is a manager and medical doctor. He studied and practiced medicine at the university clinic in his hometown of Leipzig. Having headed up Pfizer's Austrian organization until 2007, today he is President of Oncology in Europe and CEO of Pfizer Germany. An eternal optimist at heart, Dr. Penk sees his hopeful outlook confirmed by research-driven advances that lead to increasingly better treatment possibilities for patients.

Cancer is one of the major medical challenges of the 21st century, but thankfully, new treatment advances offer reasons for optimism. Nevertheless, further research and increased global coordination are essential to ensure continuous medical progress.

The treatment of cancer is one of the world's most urgent and important medical challenges. Just a few decades ago, cancer was still seen as a disease that tended to primarily affect the wealthier, more industrial nations. Health policies in poorer parts of the world focused on the battle against widespread infectious diseases through vaccinations and improvements in hygiene. At the same time, the number of cancer patients increased throughout the world – not only in the industrial nations but also in the emerging and developing countries.

Currently, cancer remains one of the most frequent causes of death worldwide. In 2008, approximately 7.6 million deaths could be attributed to this disease, and 70 percent of these deaths occurred in emerging and developing countries. According to a World Health Organization (WHO) forecast, the number of cancer deaths will almost double to 13.1 million by the year 2030. In the same period, the number of cancer sufferers worldwide is anticipated to significantly increase from 29 million in 2008 to 80 million in 2030.

For affected individuals, the diagnosis of cancer has an enormous impact on their lives, although in many cases, the medical prognosis today is substantially

better than just a few years ago. When treated with the best therapies available, around half of all cancer patients can be cured, and in many other cases, the disease can at least be controlled. Chemotherapy, radiotherapy, and surgical removal of the tumor have established themselves as the standard treatment methods, but the range of treatment options has expanded over the last years. In addition, existing treatments have been further developed and improved. Chemotherapies today, for example, are often more tolerable for the patients than in the past.

## Targeted therapies

Intensive research has brought knowledge about the disease, its causes, and mechanisms for growth, thus paving the way for the development of new treatments. Molecular cell biology has most recently provided the means to examine signaling pathways – so-called signal transduction – and enhanced our understanding of cancer. It has now become possible to specifically align drug treatment to specific cancer cells. These targeted therapies are characterised by their ability to influence cancer cell metabolism, interrupt growth impulses, and block cancer cell proliferation.

## Each type of cancer has its own profile that often necessitates an individual therapeutic approach

Modern cancer medicine today has more therapeutic possibilities than ever before. Nevertheless, in certain cases, the treating physician still faces difficult decisions. In the fight against cancer, there are no miracle weapons that can help everyone. Each type of cancer has its own profile that often necessitates an individual therapeutic approach.

It is been known for many years that oncology treatments can have very different effects and response rates in patients. The reasons for the variations can generally be explained by genetic heterogeneity of the patients' tumor cells. Today we know that the key to an effective cancer treatment often depends on the

genetic makeup of the tumor cell. Modern medicine is now familiar with many gene mutations and gene changes that can trigger cancer or influence the course of the disease.

In this context, the decoding of the human genome was a major step forward for cancer research. It provided scientists with the foundation for examining the genetic changes associated with cancer and tumor growth. These discoveries facilitated the development of a new generation of drugs that could target tumors based on their genetic profile, and opened the door to further advancement in personalised medicine or stratified medicine.

## Comprehensive testing

For patients today with particular forms of breast and lung cancer or leukemia, personalized medicine is already common practice, which signals a change in the approach to cancer therapy. Whereas surgery, radiology, and chemotherapy were predominately targeted at the organs affected and the stage of the disease, the therapies of the 21st century act where cancer develops: on the metabolic products resulting from genetic changes or "driver mutations" in the cancer cell.

For personalised medicine to have a greater impact on patient therapy, early diagnosis and comprehensive testing is necessary. Special diagnostic procedures based on molecular biology are used so that molecular alterations can be detected in the patient's tumor cells. In order to provide patients access to the most effective treatments, comprehensive therapy networks have to be in place where molecular diagnostics can be carried out on a routine basis.

In some European countries, diagnostic testing networks already exist or are under development – for example in France under the umbrella of the Institut National du Cancer (INCa) or in the United Kingdom, where the research organisation Cancer Research UK has initiated a "stratified medicine programme". In both countries, the goal is to make molecular testing of tumor cells a diagnostic standard for all cancer patients.

Pfizer supports these diagnostic testing projects because we are convinced of the exceptional therapeutic potential they offer for the advancement of personalised cancer medicine. We are

committed to personalised medicine, and it continues to be a main area of focus in our research activities.

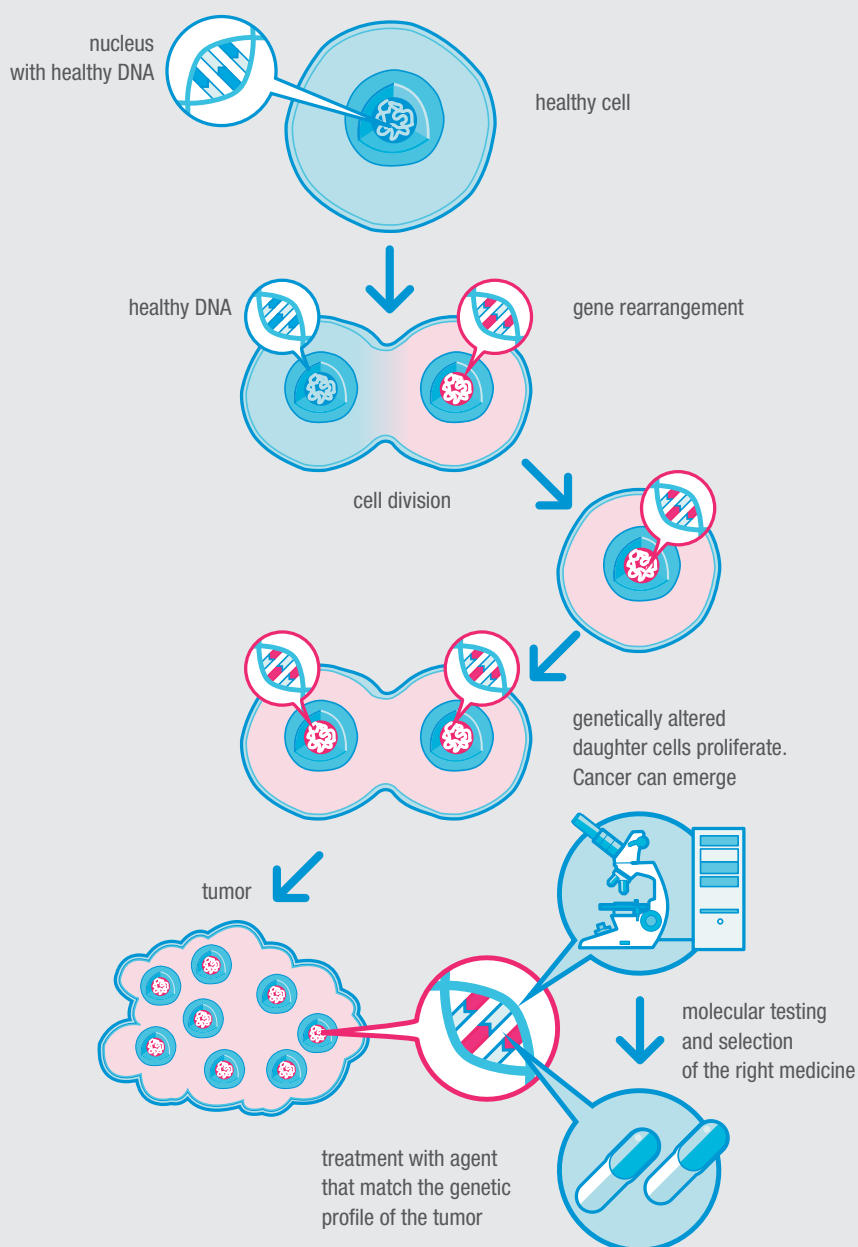
There are still many types of cancer with limited treatment options. Unlike other industries, pharmaceutical companies like Pfizer invest in research because without research there can be no medical progress. Research, however, does not always lead to success. The path from an active substance to an approved medicine is littered with setbacks and lengthy development times. Nevertheless, I think we can look to the future with optimism. The therapeutic progress achieved in the last few years is the best evidence that investments in research are well invested and bring important medical advancements.

### Investing in research

The development of personalised cancer medicine is also a good example of when optimism is justified. After the decoding of the human genome, it took a few years for the new insights of genetic research to be translated into therapeutic innovations. Today, however, an increasing number of patients can benefit from those advancements, but these innovations did not come without a price. They are the result of many years of research, and it is essential for this research to continue in the future. Pharmaceutical companies have a special responsibility to invest in research, along with health policy institutions in the developed countries. Together, they need to make resources available and create an environment supporting medical research.

For medical progress to truly be successful, treatment methods need to be made available to people all over the world. As early as May 2005, in a resolution on cancer prevention control, the World Health Organization called for national health programs to be launched that would improve the prevention, early detection, and treatment of cancer, especially in low and middle-income countries. However, it is also clear that no country and no pharmaceutical company in the world can win the battle against cancer on its own. Instead, a broad alliance against cancer is needed, or, as WHO recommends, “global action against cancer”. This means a coordinated effort between international organisations and governments, along with institutions of the public and private sector.

Researching pharmaceutical companies, such as Pfizer, can and should play their part in the battle against cancer.



Modern cancer research focuses on the genetic triggers of cancer growth, such as specific gene rearrangements or mutations. If scientists are able to identify the genetic profile of a tumor, the tumor can potentially be targeted with drugs that act specifically on the cellular metabolic processes caused by gene alterations. To date, personalized medicine is already used for the treatment of several cancer types – for example, for melanoma, breast, blood, and lung cancer

Our company is not only active in the development of new pharmaceuticals, but also in medical campaigns and private-public partnerships to improve access to medical care worldwide. The company's declared goal in oncology is to cure or control cancer with breakthrough medicines. We will continue working together with partners in the health sector and scientific community, to deliver the right drug for the right person at the right time.

Contact details for further information:

**Pfizer**  
**Linkstraße 10**  
**10785 Berlin**  
**Germany**  
[www.pfizer.com](http://www.pfizer.com) | [www.pfizer.de](http://www.pfizer.de)





Universidade de São Paulo  
Faculdade de Medicina

# The School at a Glance



The **Faculdade de Medicina of Universidade de São Paulo (FMUSP)** aims at educating individuals to provide exemplary patient care and qualifying graduate and post-graduate students, medical residents, physicians, physical therapists, speech therapists and occupational therapists who are aware of their leadership roles in the areas of practice. The main mission of the FMUSP is to provide assistance to education, teaching, research and extramural extension with emphasis on a multidisciplinary and multi-institutional approach, contributing to the quality of the Brazilian public health system

**Founded:** 1912 by Arnaldo Vieira de Carvalho

**Dean:** Giovanni Guido Cerri

**Vice-Dean:** José Otávio Costa Auler Jr.

**Faculty\*:** 355 Professors  
1,374 Graduate Students  
1,381 Medical Residents in all specialties  
1,504 Post-Graduate Students

**Research:** 14% of the Brazilian Research in Medical Sciences  
4% of the Brazilian Scientific Production  
200 Research Cores  
62 Clinical Investigation Laboratories

**Total Budget:** US\$3,030,371\*\* in 2012

**Funding Agencies:** FAPESP (State of São Paulo Research Support Foundation) and CNPq (National Council for Scientific and Technological Development).

**Alumni:** 13,180

**Highlights:** FMUSP figures among the top 100 Medical Colleges in the world and is the only medical school in Latin America to join the M8 Alliance.

**Departments:** Cardiopneumology ■ Surgery ■ Internal Medicine ■ Dermatology ■ Physical Therapy, Speech Therapy and Occupational Therapy ■ Gastroenterology ■ Legal Medicine, Medical Ethics and Social and Occupational Medicine ■ Preventive Medicine ■ Infectious Diseases ■ Neurology ■ Obstetrics and Gynecology ■ Ophthalmology and Otorhinolaryngology ■ Orthopedics and Traumatology ■ Pathology ■ Pediatrics ■ Psychiatry ■ Radiology

**Institutes:** Eight institutes and a large corporative tertiary teaching Hospital – Hospital das Clínicas (HC) with 3,000 beds, 18,000 employees and a budget of US\$550,000,000\*\*\* in 2011.

**University Hospital:** Secondary teaching hospital – 280 beds.

**Auxiliary Hospitals:** 3 Auxiliary Hospitals (Cotoxó, Suzano and Local Sapopemba) and an outpatient care facility for HIV/AIDS patients.

**Centers for Primary Care:** Centro de Saúde Escola Butantã - USP and Projeto Região Oeste.

*\*From 2011*

*\*\*From the Universidade de São Paulo*

*\*\*\*From the State Government of São Paulo*

The activities developed at FMUSP are characterized by a combination of education, research and health care

## FMUSP-HC Complex Structure and Composition

- Cancer Institute
- Central Institute
- Heart Institute
- Orthopedics and Traumatology Institute
- Pediatrics Institute
- Physical Therapy and Rehabilitation Institute – Lucy Montoro
- Primary Care Center – Projeto Região Oeste
- Psychiatry Institute
- Radiology Institute
- Treatment Center in Santarém (Pará)
- University Hospital



Universidade de São Paulo - Faculdade de Medicina

Av. Dr. Arnaldo, 455 - CEP: 01246-903 - São Paulo - Brasil • Telefone: +55 11 3061-7256

[www.fm.usp.br](http://www.fm.usp.br)



## International cooperation is vital to shaping the future of health

**We must address challenges at a global level to ensure better and sustainable healthcare, writes French president François Hollande**

**A**s patron of the 2012 World Health Summit, I would firstly like to express the simple idea that although health is essentially the most private, indeed the most personal, of issues, it is also a matter of public concern. It is actually one of the primary state responsibilities.

In my role as joint patron, together with Chancellor Angela Merkel, I intend emphasising that nothing can be achieved long-term with regard to health matters without international cooperation – in particular at the European level.

The challenges facing us are considerable. They are urgent. We should accept them together.

The first challenge is universal access to healthcare. Inequality in health treatment is one of the worst offences against humanity. Everything possible should be done to rectify this injustice. This must be one of our joint priorities.

The second challenge is research, which can only develop further if adequate means are available and a coherent organisation based on coordinated public decisions exists.

The third challenge concerns essential modifications to our way of thinking and handling, in order to ensure sustainable development. This is about the future of our planet, the quality of our air and water: virtually everything is dependent on this prerequisite in some way. It is imperative that every world conference dealing with health issues takes this vital dimension into consideration.

I am very grateful to the forum participants for their work, their determination and their devotion to the common good. I hope you will have rewarding discussions and fruitful exchanges. ■

# Challenges of modern environments



One of the Buildings Housing WAHO Offices in Bobo-Dioulasso, Burkina Faso

The West African Health Organisation (WAHO) is a specialised agency of the Economic Community of West African States (ECOWAS) and a leading regional health institution. The creation of WAHO in 1987 was hinged on the recognition of health as an important component of the sub-region's socioeconomic development by ECOWAS heads of state and governments.

WAHO was born out of the merger of the anglophone West African Health Community (WAHC), and the francophone Organisation de Coordination et de Coopération pour la Lutte contre les Grandes Endémies (OCCGE).

In line with the protocol that created the organisation, WAHO's mission is to offer the highest possible standard

of healthcare to populations of the West African sub-region through the harmonisation of policies by member states, the pooling of resources, cooperation between member states and others with a view to collectively and strategically finding solutions to health challenges facing the region.

A living testimony to the organisation's sense of purpose is best captured by the Director of the US Agency for International Development's Action for West Africa II project (USAID AWARE II), Professor Issakha Diallo, who said: "We have learned from WAHO, its effective methods of engaging other implementing partners both at the regional level and within the countries, their leadership style and commitment to the region".

For reasons connected to the high mobility of its population, the nearly 300 million inhabitants of the West African region have had to contend with rapid propagation of diseases between countries. With an average life expectancy of just 51 years, the health landscape of the sub-region is characterised by a myriad of challenges. These include many diseases, such as HIV/AIDS, tuberculosis, meningitis and cholera. Besides the challenge of high disease burden are issues of financial constraints and shortage of adequate human resources that need to be addressed by national health systems within the region.

Towards meeting these challenges, since its inception WAHO has supported ECOWAS Member States in key

programmatic areas of its mandate, notably through the coordination and harmonisation of policies, development of health information systems, research, promotion and dissemination of best practices, medicines and vaccines, traditional medicine, alternative health-financing mechanisms, and institutional capacity-building, including monitoring and evaluation.

With an effective staff strength of 80 persons, comprised of 41 senior professionals and 39 support staff, 90 per cent of WAHO's programmes are funded by ECOWAS, while the remaining 10 per cent is provided by other technical partners.

WAHO's ability to position itself as a leading sub-regional health institution is greatly facilitated by its unique access to heads of states and ministers of health within the sub-region. The ease with which WAHO collects, maintains and shares health related data and the lessons learned at all levels from this, has further enhanced its credibility among its technical and financial partners. Peter Arin, Director of Traditional and Alternative Medicine Directorate in

## With an average life expectancy of just 51 years, the health landscape of the West African region is characterised by a myriad of challenges

Ghana, could not agree any less when he opined that "with the help of WAHO, we have the opportunity to meet and exchange experiences, thus facilitating the harmonisation of policies to determine the strengths and weaknesses of each other and share best practices, thereby improving the health of our communities".

To date, the organisation's singular strength lies in its ability to effectively network across the ECOWAS sub-region: a fact that has enabled it to influence the development of strategic advocacy, marketing and information management systems needed to hasten progress toward health achievements.

WAHO is the New Partnership for Africa's Development's (NEPAD's) Focal Point for Health and the



Group Photograph at the end of an Annual Meeting of West African Ministers of Health



WAHO Deputy Director General, Dr. Jeannetta Johnson & the Director General, Dr. Placido Cardoso during an Interview

Millennium Development Goals (MDGs) in ECOWAS sub-region. Apart from the states, several international development agencies, the private sector (pharmaceutical industries), civil society and grassroots communities constitute the bulk of WAHO's partners.

In the pursuit of its mission, WAHO actively solicits collaboration with other entities and is willing to enter into fruitful partnerships with similarly minded organisations in order to increase the impact of its health interventions in favour of vulnerable populations within the West African sub-region.

**West African Health Organisation**  
01 BP 153 Bobo-Dioulasso 01  
Burkina Faso  
T: +226 2097 0097, +226 2097 5775  
[www.wahooas.org](http://www.wahooas.org)



# World Health Summit 2012 and the M8 Alliance



The M8 Alliance's World Health Summit has become one of the foremost meetings of key decision-makers

## Looking to a healthier future, the vision of the M8 Alliance is to improve global wellbeing by harnessing academic excellence on both the international and regional level

By Detlev Ganten, Founding President, World Health Summit, Charité – Universitätsmedizin Berlin

**T**he initial idea for a World Health Summit arose on the occasion of the 300th anniversary of the Charité – Universitätsmedizin Berlin. Around 1870, Rudolf Virchow, one of the giants of modern medicine, initiated the concept of public health and “medicine as a social science”. We partnered with our colleagues in France and the Université Paris Descartes (now Sorbonne Paris Cité) to organise a major international Public Health Forum. The first World Health Summit was held on 15-18 October 2009, under the theme ‘The Evolution of Medicine’, and received an overwhelmingly positive response.

### An annual forum for dialogue

Since then, the World Health Summit has been held annually as a healthcare dialogue forum of the M8 Alliance of Academic Health Centers, Universities and National Academies. It has evolved to become one of the world's foremost meetings of

decision-makers from academia, politics, industry and civil society, to develop joint strategies and take action to address key challenges in medical research, global health and healthcare delivery, with the aim of shaping the political, academic and social agendas.

Charité Berlin has united major scientific institutions behind the Summit, both from Germany and globally, including the Helmholtz Association, Max Planck Society, Fraunhofer Society, US National Institutes of Health (NIH), the Institute of Medicine, Collège de France, the European Space Agency (ESA), funding institutions from various countries and a number of renowned medical universities.

### The M8 Alliance

The M8 Alliance is a collaboration of academic institutions of educational and research excellence, committed to improving global health by developing science-based solutions to health challenges worldwide. Members of the M8 Alliance originate from countries of the political G8 group. German Chancellor Angela Merkel and French President François Hollande are the patrons of the World Health Summit.

The M8 Alliance's vision is to improve global health through harnessing academic excellence. To achieve this it promotes the translation of research progress from the laboratory bench to the bedside; the transformation of our present medical-care approach of treating sick people into a true healthcare system with effective prevention of disease; and the adaptation of health-related solutions to our rapidly changing living

## Members of the M8 Alliance

**Charité – Universitätsmedizin Berlin**  
Germany



**Chinese Academy of Medical Sciences  
and Peking Union Medical College**  
China



**Imperial College London**  
United Kingdom



**London School of Hygiene  
& Tropical Medicine**  
United Kingdom



**Johns Hopkins Bloomberg School  
of Public Health, Baltimore**  
United States



**Kyoto University Graduate  
School Medicine**  
Japan



**Monash University, Melbourne**  
Australia



**National University of Singapore (NUS)**  
Singapore



**Sorbonne Paris Cité**  
France



**Russian Academy of Medical Sciences**  
Russian Federation



**University of Sao Paulo**  
Brazil



**InterAcademy Medical Panel (IAMP)**



**International Association of  
Academic Health Centers (AAHC)**



conditions through research in priority areas such as demographic shift, urbanisation and climate.

This international network provides an outstanding academic foundation for the World Health Summit, acting as a permanent platform for framing future considerations of global medical developments and health challenges in an equitable way. The foundation of the M8 Alliance of Academic Health Centers, Universities and National Academies marks a milestone in international cooperation for academic medicine.

The principal purpose of the M8 Alliance is not only to create a forum and build a network for discussing state-of-the-art scientific topics, but more importantly to generate solutions to healthcare issues at both international and regional level, and to explore concrete political, economic and scientific implications. Advances in medical science can only support the healthcare sustainability of our society if all parties involved focus jointly on prioritised issues.

The World Health Summit aims to set tomorrow's agenda for fruitful research, education, healthcare and policy outcomes, and to improve healthcare worldwide, catalysed through open dialogue and collaboration. Its mission is to bring together researchers, physicians, leading government officials and representatives from industry, as well as from non-governmental organisations (NGOs) and healthcare systems worldwide, to address the most pressing issues that medicine and healthcare systems will face over the next decade and beyond.

### Furthering international cooperation

Only an international effort can succeed in tackling this global challenge. In order to further this process, the universities of McGill (Canada) and Makerere (Uganda) and scientific institutions from Africa and the Indian subcontinent will join the M8 Alliance as new members of this international network of prestigious medical faculties within the next two years.

Under the co-presidency of Johns Hopkins University and Michael J Klag, co-president of the World Health Summit, the

## The five strategic goals of the M8 Alliance

**The M8 Alliance is improving global health through the pursuit of five strategic goals:**

1. Developing a network of academic health science centres worldwide, bringing together universities and healthcare providers.
2. Facilitating dialogue through the World Health Summit across a global network of stakeholders engaged with academic health science centres.
3. Setting an agenda for global health improvement through addressing issues of interest to academic health science centres, and by generating key statements to convey findings and recommendations based upon scientific evidence.
4. Positioning the M8 Alliance as an authoritative, credible and respected influence upon global health decision-making.
5. Creating a knowledge base among M8 Alliance members, promoting mutual learning, research collaboration, enrichment of educational capabilities and enhanced clinical outcomes.

2012 Summit will take place with the theme of 'Research for Health and Sustainable Development'. The event will focus on the issues of, and possible solutions to, non-communicable diseases (NCDs) and conditions of global concern.

Following the success of the previous meetings in Berlin, an initial major regional meeting will be held on 8-10 April 2013 in Singapore. This meeting, hosted by the Ministry of Health and the National University of Singapore, aims to focus on regional aspects and challenges, such as megacities, environmental hazards, and fast-growing and ageing societies.

Further regional meetings under the patronage of the World Health Summit in Berlin are planned and will be organised by an institution of the M8 Alliance. They will aim to discuss geopolitical health topics, with a particular emphasis on the region in which the meeting is held. Tackling healthcare issues at a regional level is a key component of ensuring global sustainability. ■

# Research for health and sustainable development

**Since its foundation, the M8 Alliance has dedicated itself to solving the most pressing issues of global health by harnessing the power of academic health centres and medical universities. In 2012, this effort continues with the fourth annual World Health Summit and its theme: research for health and sustainable development**

by Michael J Klag, Dean, Johns Hopkins  
Bloomberg School of Public Health

A great portion of the world is experiencing an immense epidemiologic transition. As national economies across the globe have developed, we have seen dramatic changes in life expectancy, quality of life, urbanisation, access to healthcare and consumption habits. These changes have brought an equally dramatic transformation in the patterns of disease and disability, resulting in a new and burgeoning epidemic: non-communicable diseases (NCDs). Throughout the world, the threat of pneumonia, malaria and tuberculosis is being joined, and sometimes replaced, by the menace of cardiovascular disease, cancer and mental illness. Understanding and addressing this transition is one of the great challenges of this century. It is only appropriate that this year's Summit focuses on finding novel solutions to these epidemics and creating the necessary awareness of the dangers they pose.

NCDs are now the leading cause of mortality and disability worldwide. According to the World Health Organization (WHO), out of 57 million global deaths in 2008, 36 million, or

63 per cent, were due to NCDs, with the main culprits being cardiovascular disease, cancer, chronic lung disease and diabetes. And while low- and middle-income countries suffer the overwhelming majority of the burden of infectious disease, the data shows that these nations also disproportionately endure the burden of NCDs. The WHO 2008 figures document that 80 per cent (29 million) of NCD deaths that year occurred in low- and middle-income countries, with about 29 per cent of those deaths occurring before the age of 60. Likewise, NCDs now account for

nearly half of the burden of disease in low- and middle-income countries. The gravity of the rise in prevalence of NCDs was evidenced late in 2011, when the United Nations (UN) convened a

High Level Meeting of member states to address this new reality and the world's current lack of preparation to respond to it. This was only the second such UN meeting that convened heads of state to address a serious health issue; the first concerned HIV/AIDS in 2001.

Beyond the immense human suffering represented by these data, the figures also point to the tremendous



threat of NCDs to building economic development in low-income countries and sustaining it among middle-income nations. NCDs present a particular risk to national economies because they predominantly affect individuals in the working-age population.

In addition to productivity losses, NCDs place major burdens on individuals and governments due to the high costs of healthcare and treatment. Indeed, the economic impact of NCDs is particularly significant in developing countries. To cite two examples, statistics show that in 1995, diet-related NCDs accounted for 22.6 per cent of healthcare costs in China, with a resultant



The Johns Hopkins Bloomberg School of Public Health aims to improve health and help prevent disease and disability around the world

discovering cures and treatments, as well as building the foundation of good policy and effective prevention strategies. Finally, these academic health centres and medical universities are especially qualified to advocate for fair and equitable systems that promote access to care, especially primary care.

This year's Summit is organised into five tracks that, taken together, form a framework for understanding the nexus between the epidemic of NCDs, health research and sustainable development. These five tracks are:

- Diseases of modern environments;
- Translating research into policy;
- Health and economy;
- Educating health professionals; and
- Information technology for health.

By organising the Summit in this way, we seek to answer the important questions and lay the evidence-based foundations to support governments, healthcare providers, civil society and other stakeholders in the fight against NCDs. Likewise, the five tracks attest that the effort against NCDs must inherently involve every aspect of government and be multisectoral if they are to be effective.

The Johns Hopkins Bloomberg School of Public Health is proud to share the presidency of the 2012 World Health Summit. We are active in more than 120 countries worldwide and our mission is the education of a diverse group of research scientists and public health professionals. This process is inseparably linked to the discovery and application of new knowledge and, through these activities, to the improvement of health and prevention of disease and disability around the world. "Protecting Health, Saving Lives – Millions at a Time" is held as our motto, and the 2012 World Health Summit stands as a great emissary of our mission. I look forward to a successful and productive Summit. ■

estimated cost of lost productivity at 0.5 per cent of gross domestic product (GDP). In India, they accounted for 13.9 per cent of healthcare costs, with 0.7 per cent of GDP in lost productivity.

Perhaps the greater challenge is the fact that many low- and middle-income nations face the double burden of NCDs and infectious diseases. Such realities raise the spectre of unproductive competition between initiatives to control communicable diseases and NCDs, rather than pursuit of integrated models that utilise novel interventions to address both threats.

Awareness of the global economic risks and human suffering related to

the epidemiologic transition needs to improve, and sustainable solutions for healthcare systems are required urgently. Academic institutions play a crucial role in this effort. The M8 Alliance is based on the premise that academic health centres and medical universities have a unique responsibility in solving the most important global health problems. First, they build the healthcare infrastructure. Second, they provide essential training of leaders across entire health systems, including providers, administrators, health-system planners and researchers.

Third, these institutions produce the research that is responsible for



# Indian Council of Medical Research

## Pioneer in Biomedical & Health Research



100 Years in the Service of the Nation  
(1911-2011)

- Set up in 1911 as Indian Research Fund Association (IRFA) and renamed in 1949 as Indian Council of Medical Research (ICMR).
- Apex body in India for the formulation, coordination and promotion of biomedical research.
- For more than one hundred years, the ICMR has been working towards just one goal: improving the health of the people.
- It is now one of the constituent bodies of the newly created Department of Health Research (DHR), whose vision is “to bring modern health technology to the people through innovations related to diagnostics, treatment methods and vaccines for prevention; to translate them into products and processes and in synergy with concerned organisations introduce these innovations into public health systems”.
- While ICMR, as an autonomous organisation, under DHR continues to strengthen the process of knowledge generation through its intramural and extramural research, nine new functions of DHR empower ICMR and other science agencies in the translation and implementation process by strengthening the infrastructure and human resource in medical institutions and other state institutions, improving the research network to deal with epidemics and outbreaks, intersectoral coordination for studies focused on translational and implementation research.
- Serves as the fulcrum for DHR, conduct and support research and development for the benefit of the Indian public. The seamless integration between the ICMR (generation of new knowledge) and the DHR (putting this new knowledge to public good) has started in earnest.
- Pursues research in thrust areas through a countrywide network of 32 permanent institutes/centres, including six Regional Medical Research Centres and over 70 field stations, which address regional health problems.
- Pursues the national health objectives and channelizes its research endeavours towards control and management of communicable diseases, fertility control, maternal and child health, control of nutritional disorders, developing alternative strategies for healthcare delivery, research on major non-communicable diseases such as cancer, cardiovascular disease, diabetes and other metabolic and haematological disorders, environmental health, and research in mental health and drugs.
- Extramural research is promoted basically to strengthen the biomedical expertise and infrastructure, especially in medical colleges and the university system, aimed at developing and fostering a culture of research in academia. On average, about 500 new extramural studies are funded by ICMR annually. Almost same number of PhD/MD/post-doctoral student based fellowships are supported by ICMR.
- More than a dozen bilateral and multilateral agreements with various countries have been signed by ICMR. Under these agreements, visits and Indian components of international projects are funded by ICMR.



Network of ICMR Institutes/Centers

### CONTACT

Dr VM Katoch  
Secretary, Department of Health  
Research and Director General  
Indian Council of Medical Research  
Ministry of Health and Family Welfare  
V.Ramalingaswamy Bhavan  
Ansari Nagar, New Delhi-110029, India  
[www.icmr.nic.in](http://www.icmr.nic.in)  
[www.dhr.gov.in](http://www.dhr.gov.in)

## Functions of the Department of Health Research

- Promotion and coordination of basic, applied and clinical research including clinical trials and operational research and education through development of infrastructure, manpower and skills in cutting-edge areas.
- Promote and provide guidance on research governance issues, including ethical issues in medical and health research.
- Intersectoral coordination and promotion of public-private partnerships.
- Advanced training in research areas concerning medicine and health.
- International cooperation in medical and health research.
- Technical support for dealing with epidemics and natural calamities.
- Investigation of outbreaks due to new and exotic agents and development of tools for prevention.
- Matters relating to scientific societies and associations, charitable and religious endowments.
- Coordination between organisations and institutes under the central and state governments.
- Administering and monitoring of Indian Council of Medical Research.

## Some Major Achievements of ICMR in Recent Years

- Development of indigenous reagents and facilitation of development of indigenous H1N1 vaccines.
- Partner with the International Vaccine Institute for the development and evaluation of the cholera vaccine, now being introduced in a public health programme in Odisha.
- Indigenous production of monoclonal antibodies PfHRP2 and pLDH for improved diagnosis of malaria.
- A real-time RT-PCR for early diagnosis of dengue.
- New rapid molecular methods for detection of rifampicin, isoniazid and ethambutol resistance in tuberculosis (TB).
- New DNA fingerprinting method for diagnosis of TB and other mycobacterial infections.
- Immune-chromatographic dipstick kit for the rapid diagnosis of cholera.
- Monoclonal antibody-based indigenous diagnostic assay for diagnosis of chlamydia infection.
- Rapid IgM ELISA and latex agglutination test for leptospirosis.
- Bivalent rapid diagnostic malaria kits tested, approved and being introduced into the national programme.
- ELISA kit for identification of paragonimiasis (lung fluke) after characterisation of paragonimus species in NE India.
- Developed and proved the usefulness of concept of common regimen for treatment of leprosy, now adopted as Uniform Multi-drug Therapy Regimen (UMDT) by the World Health Organization (WHO).
- Showed that co-administration of albendazole with DEC is operationally feasible, safe for community use and has an edge over DEC alone for the lymphatic filariasis (LF).
- Flagship programmes launched include Tribal Health Research Forum, Vector Science Forum, special support to medical colleges and translational research.
- Over 100 technologies for the diagnosis of severe communicable diseases, genetic diseases, vector control, cancer control and vaccines.
- Control and prevention of various nutritional diseases.
- Double fortification of cooking salt with iron and iodine.
- DOTS strategy for tuberculosis treatment.
- Many guidelines have been set, for example, for ART, stem-cell research and therapy, GM foods and ethics for biomedical research.

## Future Plans

1. Bring modern health technology to the people through innovations related to diagnostics, treatment methods and vaccines for disease prevention.
2. Strengthening of health infrastructure at periphery level in the country.
3. Establishment of efficient mechanisms for the selection, promotion, development, assessment and evaluation of affordable technologies and their judicious application.
4. Tribal health is to remain major concern.
5. Research on population stabilisation to be geared up.
6. Special focus be given on geriatrics/mental health/bone health/oral health/reproductive health and social behavioural research.
7. Impact of climate change on human health - Particularly in vector borne diseases, diarrhoea and non-communicable diseases to be studied.
8. Efforts be made to deal with emerging and re-emerging infectious diseases.
9. Studies on drug resistant organisms be given more emphasis.
10. Urban health, including accidents and injuries, to be a major area of research.

# The new dynamics of health

**Global politics and economics are changing and evolving, and the emerging political and commercial determinants of health must be analysed alongside environments and behaviours to develop new approaches to health governance**

By Ilona Kickbusch, Director, Global Health Programme,  
The Graduate Institute | Geneva

A different positioning of health is emerging within government and society, and the challenges for ministries of health have grown and changed considerably. The political and economic environment, the new dynamics of health and a different constellation of determinants of health call for new responses, and a number of key driving forces need to be taken into account as new approaches to governance for health are developed. These include globalisation, the power of markets and business – in particular, transnational companies and their marketing, the strong voice of civil society, major ideological differences regarding the role of the state, the increase of inequalities and financial pressures.

The impact of these forces on health is both direct and indirect, both positive and negative, and the debate on the social determinants of health turned a

Commission on the Social Determinants of Health has proposed – then we must find better ways to explicitly address and systematically analyse the political and commercial determinants of health.

Health – as in healthy populations and the healthcare sector – is on today's political agenda because it has become politically and economically relevant in new ways. In the US, it is symbolic of the ideological divide in the country, and has major implications for the quality of life of the most disadvantaged groups in the population, as well as for the millions of uninsured people.

## Political importance of health

In countries within Europe, the equitable provision of health services is a critical factor in opposition to austerity measures. In emerging economies, providing access to primary healthcare services is a key factor in ensuring social stability, regime loyalty or votes.

solutions have been developed, they frequently do not survive the political decision-making process, and often result in 'non-decisions'.

One key defining factor of the politics of health is increased interest and actors in the health arena – particularly as the health sector addresses determinants through 'Health in All Policies' (HiAP) approaches. For example, tobacco regulation is no longer an issue between government and tobacco companies, but includes many civil-society groups on both sides of the spectrum. Public-health supporters need to pay attention to the politics of health and how they have changed in the context of the driving forces mentioned above.

## Ensuring effective spending

The increased commercial relevance of health has also changed politicians' perspective: in many European countries, health now constitutes 10-15 per cent of gross national product. Within the Organisation for Economic Cooperation and Development, there is a consensus that healthcare spending needs to be more effective, otherwise it will undermine public finances. The level of population health will greatly influence retirement policies and affordability of care. Health is a major dimension of the demographic change that most countries are experiencing, and additional healthy life years have become a key factor of competitiveness.

Health is no longer just a sector of social policy – it is a major business sector that encompasses both emerging and traditional areas in the rapidly growing global market. It is also a major employer, in some countries responsible for between 10-15 per cent of workforces.

Increasingly, therefore, health is also seen as a dimension of foreign policy, as well as part of security policy and commercial diplomacy. The business of health is part of the economic rivalry between countries, and affects agreements over the import and export of goods, services and brainpower. Witness the negotiations

**Health is no longer just a sector of social policy – it is a major business sector that encompasses both emerging and traditional areas, and is a rapidly growing global market**

spotlight on inequalities in health, both within and between countries. This was a significant breakthrough in the health discourse and allowed for a better understanding of the social stratification of the environmental and behavioural determinants of health. Yet if we want to address the "causes of the causes" and the distribution of power and resources – as the report of the

Health policy as a sectoral challenge has long been subject to much analysis regarding goals, implementation and results. Healthcare costs are, at present, the priority policy issue and, in general, the pressure has mounted to simultaneously achieve a "Triple Aim": better health, better healthcare and lower healthcare costs. Yet while many sensible, evidence-based policy

The healthcare implications of increased life expectancy are important factors for governments around the world



over trade rules and patents in relation to medicines between, for example, India, the EU and the US.

In Europe, health is subject to the significant impact of European integration processes which favour the unrestricted flow of goods and services – despite the EU commitment to HiAP. Public-health priorities recurrently suffer in such an economic environment, as their positive economic impact tends to be long-term and frequently requires interventions that restrict or tax health-damaging products, or call for counter-cyclical investments – often in sectors other than health.

### Exploring new approaches

Negotiating for health in the face of other interests is one of the most critical challenges in addressing both the political and commercial determinants of health. The initial exclusive focus was on the health outcome, but today the focus needs to be on co-benefits of a broader nature. This implies that different approaches to governance must be explored and applied, which take all determinants fully into account and move forward in a strategic manner. In a recent study on governance for health, five such approaches were identified

and described in more detail: governing through collaboration, through citizen engagement, through a mix of regulation and persuasion, through independent agencies and expert bodies and through adaptive policies, resilient structures and foresight.

Over the past decades, the health sector has gained experiences in outreach approaches, such as through inter-sectoral action, healthy public policy and HiAP. While regulation remains a key tool of 21st-century governance for health, it is complemented by many other approaches. Often it is based on non-health rationales in the ‘policy space’ of other sectors. For example, a proposal to restrict alcohol in football stadiums in Switzerland is based on the increasing cost of policing inebriated fans – not on the health costs. In times of a fiscal squeeze, countries are also exploring new sources of income through fiscal measures, such as the ‘fat tax’ in Denmark and Hungary.

Whole-of-government and whole-of-society approaches require an investment in platforms, coordination bodies and mechanisms for joint dialogue. One example is Sweden’s policy in Alcohol, Narcotics, Doping and Tobacco, which brings together

12 agencies supported by a 20-Member Council, where the leadership and secretariat lie with the Ministry of Health. Mechanisms are increasingly being explored that bring stakeholders together – for example, platforms such as on diet and physical activity and the constituency model of HIV/AIDS.

### Advancing the health agenda

Only through the involvement of many stakeholders throughout society can complex issues such as social inclusion strategies for disadvantaged groups, active ageing strategies or HIV/AIDS strategies be taken forward. Strong support from civil society is often required to move the health agenda forward, and non-governmental organisations (NGOs) can also be critical watchdogs of implementation. As health becomes increasingly political and commercial, democratically elected bodies and representatives become more important. Because health is at the intersection of values and ideology, it is essential that parliamentarians – who make many of the laws in relation to health – are fully aware of the consequences of their decisions and non-decisions. Their health literacy and independence are vital in achieving better global health. ■

# Healthcare needs innovation



Bayer researchers Diana Dutcher and Mark Hilse demonstrate on a model of blood vessels how thrombi and deposits can be removed by a minimally invasive procedure using a catheter



**Jörg Reinhardt**  
Chairman of the  
Board of Management,  
Bayer HealthCare AG

Health systems are one of the greatest success stories of the 20th century. Thanks to progress in healthcare and medical innovation, people can now expect to live up to 30 years longer than they did just a century ago.

However, looking ahead, the future direction of our healthcare systems seems uncertain. Growing imbalances in the cost and funding of healthcare, the increasing burden of chronic diseases, a decline in research and development (R&D) productivity and the need to extend (or maintain) health coverage are but a few challenges health systems are facing. If that were not enough, the world economy is currently witnessing severe turbulence. With economies contracting, national debts growing and unemployment rising, resources devoted to both health and innovation are being cut almost everywhere. At the same time,

the pharmaceutical industry's ability to innovate is hampered by soaring R&D costs and increasing regulatory hurdles.

There is no simple fix to these problems, but stakeholders in the healthcare sector should realise that the only way to overcome such complex challenges is to join forces and look together for innovative solutions.

## Stakeholders should realise that the only way to overcome complex challenges is to look together for innovative solutions

The world has changed. The answers of 10 years ago do not work any longer. If we are to develop sustainable healthcare systems, we need new ideas to properly address the key challenges in medical research and global health. We need a thorough, systemic, innovative approach in the way our societies will fund, manage and deliver healthcare in the future, as

well as an environment and mindset that are conducive to that.

### What underpins innovation

As innovation is the lifeblood of my industry, I believe there are some important lessons to be learnt from the research-based pharmaceutical industry. Specifically, let us look at how pharmaceutical companies innovate, and what makes innovation work. What makes some of them successful and others struggle? In other words, what are the key success factors behind innovation?

I believe that there are five core principles underpinning successful company innovation which may also apply to a broader societal context. These five principles, which also reflect some soft factors relating to the question of 'how', include strategy, leadership, people, environment and technology.

Clear priorities and a focused strategy are needed to reach ambitious objectives, whether in business, science or any other field. Leadership with a vision is essential to achieve a shared understanding and the necessary commitment of stakeholders on the way forward. While new technologies can help solve previously intractable problems, it is people's competences and skills that make the difference. A climate

also needs to be created – which enables the different stakeholders to draw from their full resources and to activate their potential – allowing them to work together freely and share experiences and ideas.

Finally, all stakeholders need to be aware that ingenious solutions are not the product of luck and circumstance, but of competence, disciplined work and perseverance. In other words, true innovation can only take place where there is an environment which is equally enabling and demanding.

### The contribution of the pharmaceutical sector

The pharmaceutical industry is making an essential contribution through researching and developing new treatments in therapeutic areas with high unmet medical needs, bringing about cost-effective technologies and improving health outcomes.

According to one study, drugs have contributed to a 45 per cent reduction in the number of deaths caused by heart attack and heart failure between 1999 and 2005<sup>1</sup>. And since only very recently, a new generation of oral anticoagulants has emerged with the promise to further improve outcomes for patients. Another good example for the tremendous impact of pharmaceutical innovation is in oncology. While the number of cases continues to increase, death rates from cancers have steadily decreased over the years, with one major study reporting that new medicines account for between 50 and 60 per cent of survival increases<sup>2</sup>.

Speaking from a broader perspective, we are currently witnessing a significant shift from the traditional business model based on selling drugs, to a value-centric model striving to systematically create better health outcomes, with products and services complementing the traditional pharmaceutical portfolio.

In this context, new partnerships of pharmaceutical companies will emerge, including joint ventures with IT-, retail- and care-focused companies.

### The right framework conditions

In order to continue to innovate, the right framework conditions are needed. Unfortunately, pharmaceutical innovation is all too often perceived as a threat to healthcare systems rather than a driver of improved outcomes and public health.

In order to build a sustainable healthcare system, a new balance between stakeholders' interests needs to be found. Patients need to get quick

and affordable access to state-of-the-art treatments; governments and/or payers have to manage limited budgets and look for new sources of funding; and the pharmaceutical industry needs to get a fair reward for innovation, in order to be able to continue developing medicines.

Governments face difficult choices and priorities to control rising healthcare costs, and the focus is almost always on quick-fix solutions that choke innovation, delivering short-term gain at the expense of long-term pain.

The challenges we face are unprecedented. However, even in these troubled times it is important not to lose sight of the fact that investing in health is an investment in our future, as a healthy population underpins a thriving economy.

## Healthcare innovation is necessary to continue bringing new hope to patients, help contain the costs of healthcare and meet the global challenges of today and tomorrow

Rather, we should be using the current crisis as an opportunity to push through the much-needed structural reforms that can make healthcare systems fit for the 21st century. The focus should not only be in spending less, but also, and perhaps more importantly, in spending better, fighting inefficiencies and striving to deliver improved outcomes with the same or fewer resources.

Governments need to consider pharmaceutical expenditure in the overall context of healthcare, while recognising the benefits medicines bring to the system. They should ensure that the savings generated from a more efficient use of off-patent medicines and generics are reinvested in innovative, value-adding drugs and that unnecessary mark-ups in the supply chain are minimised.

Health priorities and targets should be part of long-term strategic agendas, and subject to a regular dialogue between the industry and authorities. This would make it possible to align expectations, thus creating a more stable and predictable environment and enabling the necessary planning for innovation.

Political commitment is also needed to remove barriers to innovation, including proper incentives for R&D, sound intellectual property rights and their enforcement; simplified and modernised regulatory procedures; transparent and inclusive health technology assessments; more predictable pricing and reimbursement systems that allow for rapid patient access to new and better treatments, as well as appropriate reward for innovation.

Last but not least, healthcare systems should be geared to offer more choice, more personalised care and greater patient empowerment and responsibility, which can in turn lead to healthier behaviours, better compliance and more cost-efficient use of healthcare.

Healthcare innovation is necessary to continue bringing new hope to patients, help contain the costs of healthcare and meet the global health challenges of today and tomorrow. Fostering health must be a shared commitment, for only a concerted multi-stakeholder approach can deliver the high-quality healthcare we all need.

The pharmaceutical industry stands ready to work with policy-makers and all other stakeholders to deliver modern and sustainable healthcare, where patients have rapid access to the fruits of that innovation and investment.

1. Fox et al, "Decline in Rates of Death and Heart Failure in Acute Coronary Syndromes, 1999-2006", *Journal of the American Medical Association* 297, no.17 (2007): 1892-2000

2. Lichtenberg, F.R. "The Expanding Pharmaceutical Arsenal in the War on Cancer". National Bureau of Economic Research Working Paper No.10328 (Cambridge, MA: NBER, February 2004)



**Bayer HealthCare AG**  
51368 Leverkusen, Germany  
T: +49 214 30-1  
[www.healthcare.bayer.com](http://www.healthcare.bayer.com)

# Non-communicable diseases – challenges in high-income countries



Increased physical activity is one of the factors that can reduce the impact of non-communicable diseases

**While the burden of non-communicable diseases is spread across society in high-income countries, the impact is greater in vulnerable populations that are limited in their education and healthcare choices by status, ethnicity and geography**

By Susan B Shurin, MD, Acting Director, NHLBI, NIH, Bethesda MD

**B**iological change, driven by environmental pressure, takes place over generations and centuries, not decades. The transformative changes in the environment in which the majority of humans live in the early 21st century, compared to how our great-great-grandparents lived a century ago, have created major challenges to our adaptive potential.

Before the First World War, there were no antibiotics or vaccines; few people had electricity or indoor plumbing; drought meant hunger for most; and caloric expenditure from physical activity in daily life greatly exceeded current levels. Because life was short for most people, chronic ailments, such as heart and lung disease, obesity and type 2 diabetes, were largely afflictions of plenty,

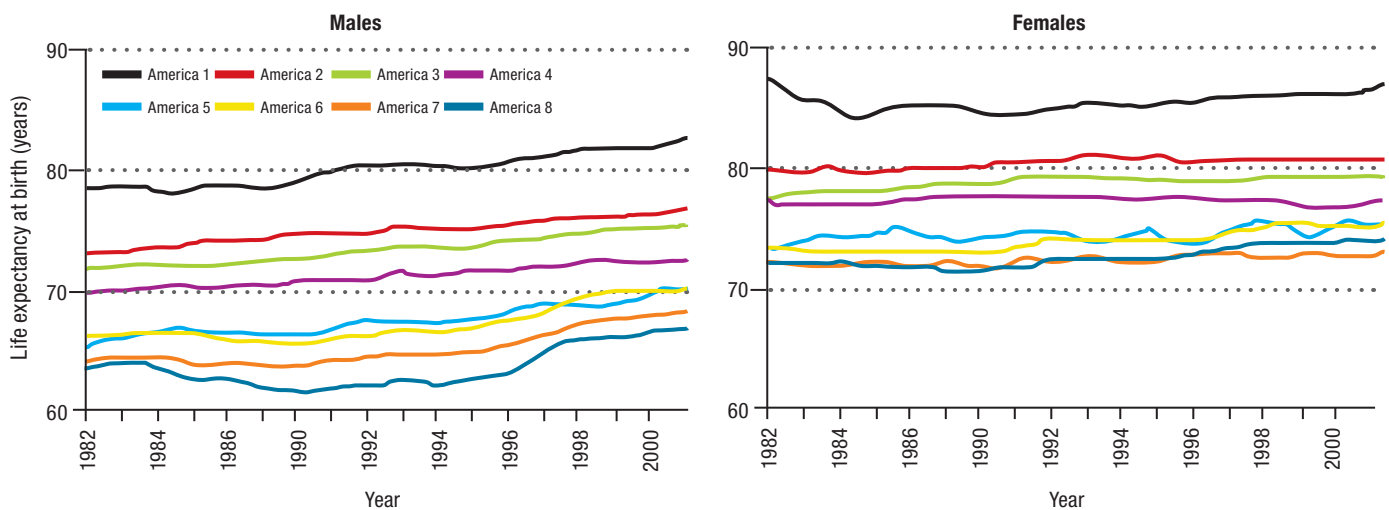
affecting those fortunate enough to live into middle age and beyond.

As hygiene, nutrition, transportation and basic healthcare services have improved in most parts of the world, life expectancy has increased and the populations at risk of non-communicable diseases (NCDs) have risen worldwide.

## The burden of NCDs

In high-income countries, the burden of NCDs affects entire populations across classes, with the differential impact highly dependent upon socioeconomic status, ethnicity and geography.

The highest rates of morbidity and mortality as a result of NCDs are seen in vulnerable populations in which environments limit the choice of, as well as access to, education and healthcare facilities. Cultural factors

**Figure 1: Life expectancy at birth in the 'eight Americas' (1982-2001) (from Murray et al)**

also contribute by creating social pressures that affect health.

However, approaches to addressing diseases of plenty differ depending upon the extent to which communities and individuals are able to control the factors that affect their situation. High-income countries must address two sets of challenges: the increasingly costly impact of poor health and chronic conditions in people who have access to medical care, and the extreme disparities in health between those who have resources and those of a lower social, economic and educational status who will have benefited much less from advances in healthcare.

In both cases, failure to address these problems renders affluent societies less competitive in the global economy, as well as nationally, by pulling people from the workforce in their most productive years and diverting scarce resources to less productive investments rather than economic growth.

Improvements in mean and average health statistics fail to capture the extent to which communities and subgroups in high-income nations have lagged behind their fellow citizens.

As demographic analyses become more granular, one can appreciate the profound disparities afflicting many citizens of wealthy nations. A common feature of surveys of the health of most high-income countries is the wide standard deviation of most statistical measures.

Despite disparities, the majority of citizens of high-income countries have benefited from improvements in nutrition and healthcare. These

alcohol and tobacco, improved nutrition, increased physical activity and better preventative healthcare. Interventions to improve the health of most citizens require policy and legislative efforts, inter-sectoral collaboration, and individual and communal commitment. Political concern for these trends, focused heavily upon the economic impact of the considerable cost of providing medical care, is forcing attention on these issues.

**The majority of citizens of high-income countries have benefited from improvements in nutrition and healthcare. However, the improvement trends are now flattening as rates of obesity and type 2 diabetes are increasing dramatically, especially in the youth population**

have decreased the rate of age-adjusted mortality from cardiovascular diseases by as much as 60 per cent over the past half-century. However, the improvement trends are now flattening as rates of obesity and type 2 diabetes are increasing dramatically, especially in the youth population.

Further improvement in the burden of NCDs requires lowered exposure to

In contrast to the relatively good health of the majority, vulnerable populations in high-income countries have NCD morbidity and mortality levels approaching those of low- and middle-income nations. Life expectancy is lower, and morbidity from chronic disease at a younger age is much greater than for more privileged citizens. These include: Native Americans indigenous

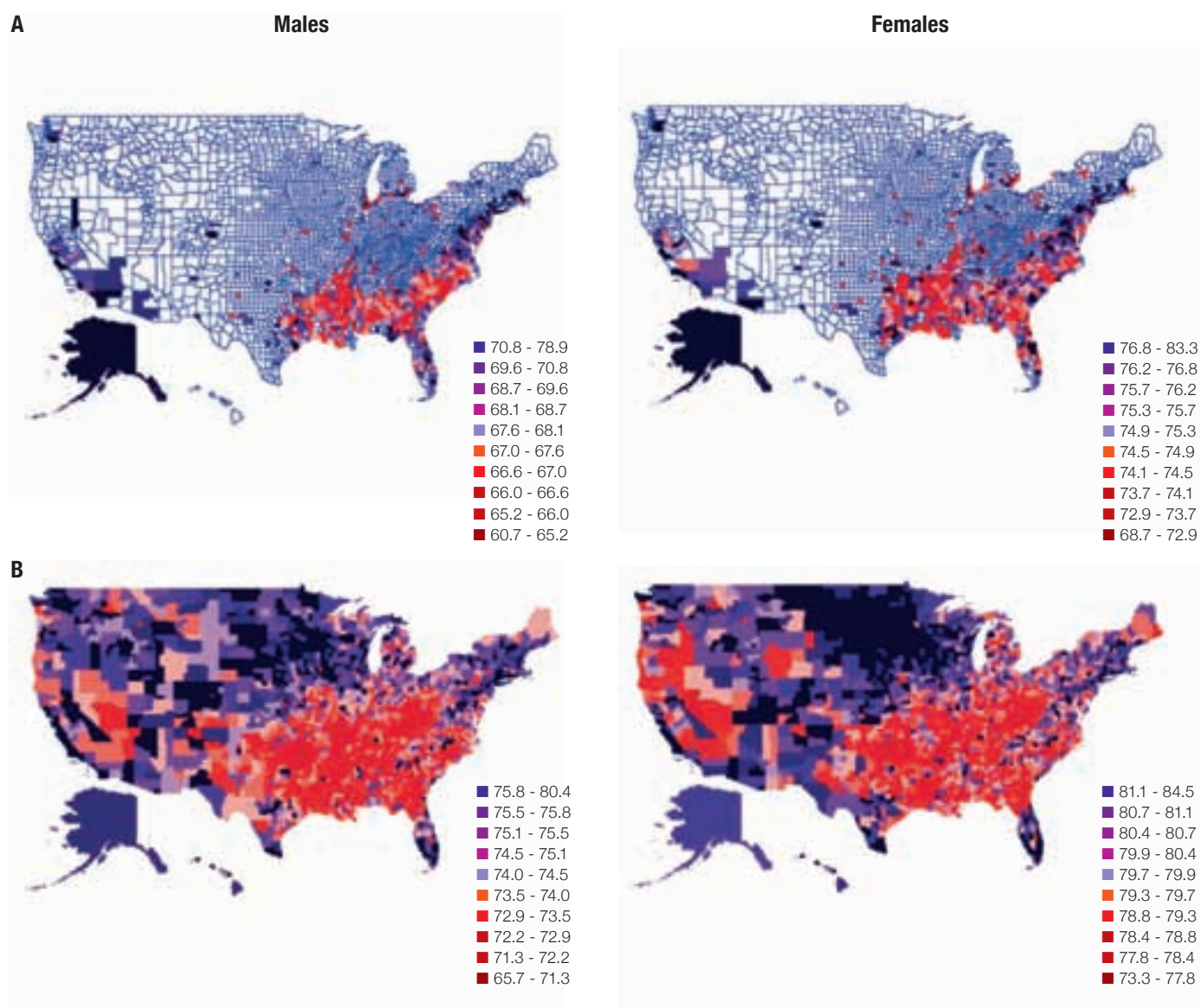


Figure 2: County life expectancies by race in the United States  
(A) Life expectancy at birth for black males and females; (B) Life expectancy at birth for white males and females

to the Americas; persons of African descent brought to the New World as slaves; the aboriginal peoples of Australia; the Maori in New Zealand; and many immigrant populations in most high-income countries.

### Analysing the 'eight Americas'

In 2006, Dr Christopher Murray and colleagues analysed detailed demographic data across the US, and described what they termed the 'eight Americas'.

Factors that were found to correlate with life expectancy include race, location of the county of residence, population density, race-specific county-level per capita income, and the cumulative homicide rate (see Figure 1, previous page).

Geographic location and certain characteristics of the local area correlate with a gap of over 35 years between the highest and lowest life expectancies (see Figure 2). Virtually all of these differences are due to chronic diseases and injury.

These trends affect both the economic competitiveness of high-income countries in a global economy and their social stability. These substantial inequities have continued and, in some instances, increased over time.

High-income countries generally have the resources, but often lack the political will or ability to address multifactorial conditions underlining the health and productivity of segments of the populace.

Effective intervention is complex and difficult, requiring cultural change,

social and economic reform, and multi-pronged approaches to reducing the risk factors for NCDs. Improvements in preventive care, public health systems, healthcare delivery and community engagement, along with the concerted efforts of multiple segments of society and political and economic leaders, are needed in order to address these issues.

Failure to do so undermines global stability and economic growth, and perpetuates injustices, which violate the fundamental principles on which most high-income countries are based. For an effective impact on these global issues, high-income countries must exercise effective leadership and create models for the rest of the world to emulate. ■

# Reducing tobacco use around the world – policies for public health



The regulation of smoking in public places is one way in which governments can reduce issues relating to the global tobacco epidemic

**The cost of inaction on tobacco outweighs investment in prevention. Clear, effective strategies and progress in policy development and public awareness are needed to tackle the global tobacco epidemic**

Judith Mackay, Senior Advisor, World Lung Foundation

**T**he global tobacco epidemic has persisted in spite of centuries of knowledge and decades of action, as well as: progress in policy development and public awareness; multiple World Health Assembly resolutions; 15 World Conferences since 1967; many regional, national and sub-national meetings; regional action plans; the World Health

Organization Framework Convention on Tobacco Control (WHO FCTC), which came into effect in 2005; and the 2011 United Nations (UN) High-Level Meeting Summit on non-communicable diseases (NCDs). This should perhaps not surprise us as, historically, it has taken at least a century from identification to eradication of other epidemics – smallpox and polio, for example.

Tobacco consumption affects both the wealth and the health of nations, with substantial direct and indirect costs to governments, employers, and smokers and their families. There are medical and healthcare costs, higher sickness and absence rates, premature deaths, increased early retirement due to ill health, time away from work for 'cigarette breaks', reduced productivity, and the additional issue of second-hand smoke. There are costs from fires caused by careless smoking, damage to building fabric and the daily litter of billions of discarded cigarettes, matches, packets and lighters. In addition, deforestation incurs costs as trees are cut down to cure tobacco, and there is a loss of foreign exchange if cigarettes are imported.

**Table 1: Obstacles to implementing tobacco-control policies**

1. Tobacco industry: promotion, distortion of health and economic evidence, financial might, challenge/threats to governments and to tobacco control policy, use of neo-libertarian front groups, tobacco-industry funded research and buying undue influence
2. Lack of awareness of the risk, or magnitude of the risk, of tobacco use
3. Preoccupation with diseases that may have much less serious consequences, or with war, natural disasters or the financial crises
4. Comparative lack of active involvement by health professionals in tobacco control
5. Tobacco may not yet cause many deaths in some places where life expectancy is low
6. Misplaced focus on curative medicine, not prevention
7. Smoking may be seen as personal behaviour and a human right
8. Tobacco tax revenue (but not debit) seen by governments
9. Misconceptions about economic losses to the country, farmers and manufacturers if tobacco control measures are taken
10. Insufficient resources for research, surveillance and evaluation, implementation of laws, or to combat smuggling
11. Difficulty for some governments to work with civil society, non-government organisations and academia
12. Media may be uninformed or even offer 'equal time' to the industry
13. No understanding of environmental consequences – fires, cutting down wood to cure tobacco, and billions of cigarette ends, matches, lighters discarded daily
14. The Millennium Development Goals make no mention of non-communicable diseases
15. No targets to reduce consumption at national or international level

**Table 2: MPOWER**

- **Monitor** tobacco use and prevention policies
- **Protect** people from tobacco smoke
- **Offer** help to quit use of tobacco
- **Warn** about the dangers of tobacco
- **Enforce** bans on tobacco advertising, promotion and sponsorship
- **Raise** taxes on tobacco

The cost of inaction on tobacco outweighs investment in prevention today. The economic burden of tobacco is having an increasing impact on low- and middle-income countries.

### Research for health

Although there has been increased funding for tobacco research and control in recent years, notably from Bloomberg Philanthropies, the Bill & Melinda Gates Foundation and the International Tobacco Control Policy Evaluation Projects, government funding remains woefully inadequate for the enormity of the epidemic.

The Global Tobacco Surveillance System is conducting standardised global surveys on youth, adults, health professionals and school personnel, covering over half the world population.

The next challenge is to translate this research data into a tobacco-control policy. Many governments do not instinctively reach for data

when designing government policy, and scientific knowledge is needed to interpret the validity of the evidence. Governments also believe that, aside from scientific evidence, they must listen to all opinion, including that of the tobacco industry and public opinion (which may be misinformed, particularly after decades of pro-tobacco marketing).

Research is needed on the tobacco industry itself – investigating how it secretly hired consultants; sponsored symposia; financed research; issued claims that tobacco control would harm the economy; engaged in lobbying; funded ineffective youth smoking prevention campaigns, smokers' rights organisations, and front groups, such as neo-libertarian think tanks; engaged in a range of promotion strategies; opposed effective tobacco-control measures; and, recently, challenged governments with transnational litigation and trade-based threats.

The main lesson learnt over the past 50 years is that the traditional medical model is not enough to deal with the tobacco epidemic. Any reduction in tobacco use will be achieved in the corridors of power, involving government, politics, legislation, litigation, taxation, trade, the media; tackling big business, crime and corruption; and forming hitherto unusual partnerships, such as with customs officials, lawyers, women's rights, human rights and environmental groups.

### Reducing the epidemic

We have proven, effective strategies to reduce the epidemic – it only requires political will to implement these:

1. Many international treaties contain clauses on the rights to health, but the 2005 WHO FCTC is the first attempt to utilise international law to further public health (Table 1). By 2012, the WHO FCTC was ratified by 176 countries, making it one of the most swiftly adopted UN conventions of all time. The first protocol (on illicit trade) is under negotiation.
2. The WHO MPOWER (Table 2) offers proven, practical interventions to support the WHO FCTC. Global Tobacco Control Reports show that, in the past two years, more than one billion people around the world have been newly protected by tobacco-control interventions, including mass media campaigns, graphic health warnings and smoke-free policies.
3. The 2011 UN High-Level Summit on NCDs offered further opportunity to place tobacco firmly on the global health and development agenda. It recommended a target of a "40 per cent relative reduction in the prevalence of current daily tobacco smoking among persons aged 15+ years by 2025". Some countries have suggested 'end-game' targets of prevalence rates of under five per cent.
4. Other global achievements include the strengthening of the international

Health warnings on packaging to discourage smoking are becoming increasingly prominent



non-governmental movements against tobacco, including the Framework Convention Alliance (FCA) in 1999, and the International Network of Women Against Tobacco (INWAT) in 1990; increased research on tobacco or health; expanded world conferences on tobacco or health; WHO five-year regional action plans on tobacco or health; and financial contributions from major international donors.

The obstacles to tobacco control have surprising global unity (Table 3). The tobacco epidemic is expanding, and this is likely to continue for several decades. Even if prevalence rates are reduced, any benefits will be offset by the increased numbers of smokers, due to population expansion in low- and middle-income countries.

The tobacco epidemic has shown that the curative-based medical model is insufficient in reducing

**Table 3: WHO FCTC**

**Protection against**

- tobacco industry interference with public health policy.

**Regulation of**

- contents, packaging and labelling of tobacco products;
- prohibition of sales to and by minors;
- illicit trade in tobacco products; and
- smoking at work and in public places.

**Reduction in consumer demand by**

- price and tax measures;
- comprehensive ban on tobacco advertising, promotion and sponsorship; and
- education, training, raising public awareness and assistance with quitting.

**Protection of**

- the environment and health of tobacco workers.

**Support for**

- economically viable alternative activities;
- support for legislative action to deal with liability; and
- research, surveillance and exchange of information.

**The tobacco epidemic has shown that the curative-based medical model is insufficient in reducing the use of tobacco, and that the epidemics of the 21st century require a new policy-centric paradigm**

- At national level, there are government measures best supported by civil society:
  - Mandating health legislation;
  - Implementing a tobacco-taxation policy (the most effective way of reducing smoking among the youth);
  - Ratifying and implementing UN conventions; and
  - Airing regular mass media campaigns to prompt changes in knowledge, attitudes and behaviour.

the use of tobacco, and that the epidemics of the 21st century require a new policy-centric paradigm.

The magnitude of the health risks and the economic costs of tobacco means that there need to be hard-hitting, well-funded campaigns in all countries, and at all levels, to reverse decades of industry misinformation, and eventually avert initiation, decrease consumption, assist with cessation and protect non-smokers. ■

# GE's resolve to tackle the rise of non-communicable and chronic disease



**Douglas Hansell,**  
Chief Medical  
Officer,  
GE Healthcare

At GE, we work on things that matter to our employees, our customers and their patients, and the communities we live in. We take on tough projects and partner with others to help communities today and for decades to come. We aren't perfect. We set goals, work towards them and evaluate how we are doing along the way. We make changes and strive to do better. We do this not because we have to or because someone asked, but because we believe it's the right thing to do.

It was in this belief that in 2009 GE committed to tackling the global healthcare issue through a business initiative called *healthymagination*. Our commitment is to take the best of what GE has to offer and apply its innovation and smart processes to a sector that is overstretched on an international scale. Revolutionizing health around the world, the \$6 billion global strategy aims to bring better health to more people by reducing costs, improving quality and increasing access to healthcare.

Our vision for the future of global healthcare includes collaboratively tackling industry issues from end to end, with a strong emphasis on early detection. According to the World Health Organization (WHO), 80 percent of premature deaths caused by heart attacks and strokes are preventable, and 40 percent of cancers can be prevented.

More than 60 percent of deaths worldwide are due to non-communicable diseases, which kill 36 million people each year, with low- and middle-income countries disproportionately affected. Economically speaking, according to the WHO, non-communicable diseases will cost \$47 trillion by 2030. With a growing, ageing population, people are living longer, and therefore chronic disease is becoming more pronounced due a variety of factors, including poor diet, excessive eating and lack of exercise. Appropriate

preventative action to reduce the initial risk of developing diseases, whether contagious or non-communicable, will reduce the societal and economic burden of chronic disease.

Innovation is key. Getting diagnoses early and accurately is critical in allowing therapies to deliver better value, enabling earlier and appropriate interventions. This is true whether it is medical imaging, physiologic monitoring, pathology or the emerging field of genomics. It all starts with innovation.

It is more than just great technology. You need to encourage behavior changes for health and well-being. We are working on this with our 300,000 employees worldwide. We know employers can have a significant, positive impact on employee behavior in relation to eating and exercising, and that employers should encourage a healthy working lifestyle.

## Our commitment is to take the best of what GE has to offer and apply its innovation to a sector that is overstretched on an international scale

For inspiration and guidance, companies should look to nations where both private- and public-sector employers routinely adopt and implement wellness programs. Not only are these programs beneficial for our employees' health, they are good business. Where there is a strong correlation between participation in the programs and high employee morale in the workplace, there is a notable drop in working days lost as a direct result of stress, depression and anxiety-related illnesses. Other measurable benefits of implementing wellness programs include increased productivity, which in turn has a positive impact on the economic stance of a business. Social benefits are also becoming evident as more companies adopt wellness programs, and benefits to the employer are tangible. In addition to

improvements in employee well-being and work productivity, employers can expect financial benefits, too. Absenteeism is costly to a company, so by reducing the regularity of absences employers are set to save money, and reduce mounting insurance costs.

### Lead by example: HealthAhead

HealthAhead is GE's culture of health. It's a comprehensive program focused on providing employees with the resources they need to get and stay healthy, and become active consumers of healthcare. By partnering with GE employees and their families around the world, we strive to live and work in the healthiest way possible, decrease health-related absences, and endeavour to limit the growing cost of healthcare.

As a means of implementing the program across GE's major business locations around the world, Site Certification is a cornerstone of HealthAhead. The model outlines a framework for workplace health and wellness, and is focused on engaging employees in healthy activities and behaviors. To achieve certification, GE business sites need to meet more than 50 requirements and pass a rigorous on-site audit. At the end of 2011, 350 of GE's largest sites were HealthAhead certified, half of which were outside the United States. By the end of 2012, GE plans to have all large sites — and some small and remote sites — certified.

Notably, company benefit programs also serve as a fundamental portal to healthcare access for employees and can further be designed to drive preventative care and healthy behaviors. That's why benefits are an important part of GE's HealthAhead in the United States. Because healthcare costs come from the business's bottom line and have a direct impact on their competitiveness, GE has taken a number of steps to improve quality and reduce costs. These include investment in education and tools to help employees become better healthcare consumers, which can save money for both employees and GE in the long-term. Early results have been encouraging, and the positive effects of HealthAhead are clear: 200,000 GE employees currently

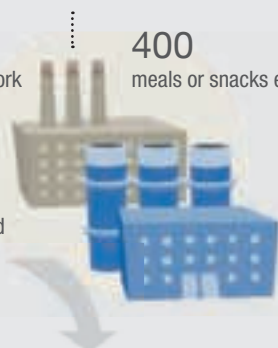
## HealthAhead: building a culture of health at GE

### IN GENERAL, PEOPLE AT WORK EACH YEAR

2,000  
hours spent at work

400  
meals or snacks eaten

50  
packs of  
cigarettes smoked  
(smokers)



### IN THE US ALONE

Over \$2 billion  
for healthcare benefits to 500,000 GE  
employees, retirees and dependents



### EVERY HOUR OF EVERY DAY

200  
visits to doctors by GE plan members



### There are 400 GE sites HealthAhead certified globally



100% GE sites that  
are tobacco free

1,100 tobacco cessation  
products used in the US

Healthy meals served at GE cafeterias in 2011  
12,800,000



Approximately  
5,000  
global education programs  
offered between 2010 and 2011



Workouts in 2011, more than  
3,000,000

Employees with access to free or  
reduced cost gyms  
200,000

Approximately  
30,000  
participants in GE-provided  
lifestyle programs

Employees touched by HealthAhead  
70% of all GE employees  
globally



\$50 Million  
spent on health and  
wellness programs annually



have access to free or reduced-cost gyms, approximately 30,000 are participating in GE-provided lifestyle programs, and \$50 million is annually spent on health and wellness programs.

Health Coach is another critical element to GE's HealthAhead initiative. The resource, available to U.S.-based employees 24 hours a day, seven days a week, is meant to guide employees to the appropriate level of care when they need it most. For example, the average emergency room visit can cost \$1,000 or more, while going to an urgent care center for minor illness or injuries can cost around \$200. Helping employees become better consumers of healthcare saves cost at all ends of the spectrum and provides our employees with better healthcare.

Employers the world over must embrace their role as champions of their employees' and their employees' families' health and well-being, and realise the concomitant impact they can make on significant numbers of the world population. GE's long-term goal is

to continue promotion of its 'culture of health' to employees and their families around the world, helping them to live and work in the healthiest way possible. GE aims to decrease health-related absences, and is striving limit the growing cost of healthcare while empowering employees and maintaining choice.

### Collaboration is key

No one entity can do it alone. Collaboration among businesses, governments and communities is the only way to truly move the needle in healthcare. One way the company is extending its mission to improve population health broadly is by engaging with communities to impact health, and by dedicating itself to regional health transformations. In Cincinnati, Ohio, for example, GE spent two years collaborating with 10 major employers, at least 19 hospitals and health systems, 500 physicians, five health insurers, and community and public health officials to improve the health of the city's two million people. Early results of this

collaborative approach are showing fewer ER visits, fewer hospital admissions and fewer avoidable conditions.

It will take robust partnerships across all levels of business, government and community to truly reform healthcare and make it sustainable for generations to come. We are committed to fostering these partnerships, and are continuing to innovate in an effort to bring better health to more people.

Contact details for further information:

**Denise Kruzikas**  
Director of healthymagination  
GE Healthcare  
T: +1-757-961-3171  
E: [Denise.Kruzikas@ge.com](mailto:Denise.Kruzikas@ge.com)



# National Centres for Health Research: translating results into patient care

**The damaging economic and social effects of non-communicable diseases on both developed and emerging countries have been recognised at an international level, leading to global agreement on a fresh set of policies for tackling this silent, widespread pandemic**

**By** Annette Schavan, Federal Minister of Education and Research, Germany, and Member of the German Bundestag

**T**oday, an increasing number of people can lead healthy and self-determined lives well into old age, as diagnosis and treatment have considerably improved through numerous major breakthroughs in research.

Improved diagnostics and a better understanding of diseases are prerequisites for successful treatment. Nowadays, for example, a simple blood test can be used to diagnose heart attacks easily and quickly. As a result, the number of patients dying from cardiac infarction has decreased by roughly one third. Only a few years ago, patients suffering from a tumor at the base of the skull had little chance of recovery. Now, around 70 to 90 per cent of them can be cured using ion therapy. However, such excellent developments must not make us dwell on our achievements; we must remain actively committed to research.

## Ageing populations

People are growing older, and we are experiencing demographic change. Diseases associated with old age, such as dementia, stroke, osteoporosis, cardiovascular diseases, diabetes and numerous cancerous diseases, will become more frequent in coming years. For example, projections indicate that one in three Germans will be 65 or older in 2050 and, in view of this trend, we urgently need new

methods of prevention, diagnosis and treatment. This is a major challenge for biomedical research, clinical research and patient care.

## Translating results into policies

We felt that pooling expertise, research capacities and healthcare infrastructures in Germany – across and beyond existing networks – was the best way to prepare for this challenge. We wanted to facilitate the translation of research results into healthcare measures and policies by reducing frictions between research cultures within the German system; bridging gaps and overcoming existing hurdles, thereby fostering more interdisciplinary cooperation.

The German health research community is among the most efficient in the world. German researchers are important partners in international projects and have repeatedly received major research awards. Their expertise is an asset of German health research. However, scientists work in a wide range of national research environments, such as universities, university hospitals and non-university research institutions, which often belong to different research associations. In the past, the heterogeneity that is intrinsic to the German research system, as well as historically grown traditions, often kept researchers from different organisations apart.





Researchers from various organisations should work together and pool their ideas in order to develop a research community

Our aim was to bring together the best researchers from universities and their teaching hospitals, from the Max Planck Society, the Helmholtz Association, the Leibniz Association and the Fraunhofer-Gesellschaft, and from departmental research institutions, in order to pool their expertise. We wanted health researchers at universities and non-university institutions to cooperate closely without curtailing their institutions' autonomy.

### Cooperation between institutions

The German Centres for Health Research came about as the result of these considerations. They are the centerpiece of the Health Research Framework Programme, which was adopted by the Federal Government in late 2010. Their aim is to develop health research in Germany with a view to meeting future needs.

A total of six centres were planned initially. Two German Centres for Health Research have been operating since 2009: the German Centre for Neurodegenerative Diseases and the German Centre for Diabetes Research. Another four centres started operating in 2011: the German Centre for Cardiovascular Research, the German Centre for Infection Research, the German Consortium for Translational Cancer Research and the German Centre for Lung Research.

Biomedical research in Germany is carried out by 36 medical departments at universities and their teaching hospitals, as well as by around 90 non-university research institutions that work partly, or exclusively, in the field of health research.

The German Centres for Health Research have a decentralised structure. They include different locations which cooperate on joint research programmes and projects and pool their strengths. Cooperation encourages exchange and makes institutions move closer together, and all participating partners and institutions work together on an equal footing. In this way, innovative findings of basic biomedical research are translated more quickly into relevant preventive, diagnostic and therapeutic measures. The aim is

to accelerate the transfer of new knowledge to medical practice.

The concentration of gifted scientists from renowned national research sites – including medical departments at teaching hospitals, universities and non-university research institutions – within the Centres for Health Research makes it possible to study the most common diseases from new and entirely different perspectives. Gaps in the research chain leading up to commercialisation can be closed. This reduces the time taken to apply research findings.

In short, disease-related suffering can be alleviated considerably for many people. Supporting translational research through centres working on an inter-institutional basis is an approach that is unique. Many countries are taking a keen interest in the efforts that German science is making to position itself in this

worthwhile, not only from a medical point of view, but also in economic terms. Improved prevention and treatment of diseases will increase the quality and duration of life and, in the longer term, it will also help avoid additional financial burdens for individuals and the health system.

As a permanent structure, the German Centres for Health Research will be able to respond dynamically to changed conditions – whether in health research or in the health sector. New developments and challenges can be taken into account by setting fresh research priorities and including new locations.

High-level advisory bodies with international membership support the centres to ensure they work at the frontiers of science. Furthermore, the centres are evaluated at regular intervals by an external panel of international experts, based on the criteria of

scientific excellence and strategic goals.

The centres' start-up phase already focuses on the commercialisation of research results and on cooperation with health companies. New diagnostic methods or therapeutic approaches must be broadly available in order to become fully effective.

Efficient translational research therefore requires the involvement of private companies, and Germany offers highly favourable conditions with its strong health industry.

We are establishing new research structures with the German Centres for Health Research that enable us to fight the most common diseases more effectively. As a result, German health research is becoming even more attractive to the best researchers in Germany, as well as to partners from all over the world.

The concentration of experts from different disciplines and research organisations promotes scientific progress and its immediate translation into healthcare, as experts and researchers are working in an environment with few internal obstacles for cooperation and with sustained budgetary support. In the long-term, it will allow many people to lead full lives in good health. ■

### With participating partners and institutions working together on an equal footing, innovative findings of basic biomedical research are translated more quickly into relevant preventive, diagnostic and therapeutic measures

field. The German Centres for Health Research are also opening up new opportunities for greater involvement in international efforts.

A new funding concept has been introduced for these centres. As it takes time to transfer new findings of basic research to clinical practice, support requires a long-term perspective. This can only be realised by means of institutional funding. The Federal Government provides 90 per cent of funding, and the participating German states (Länder) contribute 10 per cent.

### Establishing new research structures

The Centres for Health Research are strengthening their research in terms of quality and volume, which adds a new structural element to German research funding. The Federal Ministry of Education and Research will support health research in Germany, with funds totalling €5.5 billion between 2011 and 2014. This investment will be

# Looking towards Horizon 2020



Horizon 2020 is implementing a holistic and innovative approach to health research

## Horizon 2020, the European Union's framework for research and innovation, includes an effort to better understand health, well-being and disease in order to deliver better health for all

By Robert-Jan Smits, Director-General,  
Research and Innovation, European Commission

Increases in life expectancy are a cause for celebration, and are largely thanks to increasing excellence in health research and modern innovation. We must, however, avoid complacency, as even more years must be lived healthily and happily.

Demographic change in Europe alone will see the number of Europeans aged over 65 double by 2060, and a tripling of those over 80. A combination of

increases in chronic conditions, such as cardiovascular disease, cancer or diabetes, together with the ongoing effects of the financial crisis, will see the costs to health and social care systems rise, and they will become unsustainable. Similarly, the global burden of infectious disease – and the responsibility of the European Union (EU) to contribute in addressing this – cannot be discounted.

That is why – as shown in the ongoing and previous framework programmes – a holistic approach to health research and innovation forms a significant part of Horizon 2020, the EU's proposed framework programme for research and innovation between 2014 and 2020. Horizon 2020 is itself one of the flagship initiatives of Europe 2020, the EU's headline policy for smart, sustainable and inclusive growth.

Horizon 2020 is divided into three parts: 'excellent science', aiming to reinforce and extend the excellence of the EU's science base, and to consolidate the European Research Area; 'industrial leadership', which aims to speed the development of technologies and innovations that will underpin tomorrow's businesses and help innovative small and medium-sized

enterprises (SMEs) grow into world-leading companies; and 'societal challenges', which respond directly to the policy priorities and challenges identified in Europe 2020. It is in this section that the majority of health research is to be supported, under the specific objective 'health, demographic change and well-being', with the stated aim of improving the lifelong health and well-being of all. As in previous years, the majority of research undertaken will be performed by multinational, multidisciplinary teams, from both academia and the business world, focusing on objectives that can only be addressed, or are better addressed, by working together.

### Disease prevention via health promotion

The Horizon 2020 proposal is, at present, under consideration by the Council and the European Parliament, with final adoption of the relevant legislative acts planned for the end of 2013, and the publication of the first calls for proposals planned immediately after. Though some fine tuning of the proposal is

At the same time, multidisciplinary, advanced and applied research with behavioural, gerontological and digital sciences will be harnessed for the development of cost-effective and user-friendly solutions for active, independent and assisted daily living of older persons.

Further, the application of innovative technologies and approaches in the healthcare sector will be supported, including e-health approaches. Efforts to empower individuals to manage their own health outside of traditional institutions will also be supported by the development of personalised health technologies. Health-technology assessment and the development of tools, methods and statistics for rapid, accurate and predictive assessment of technologies will also be a focus of the programme.

In addition to traditional collaborative research projects, the successful partnerships developed under previous framework programmes will be the vehicles for the delivery of many of objectives. A public consultation is

## Understanding health and disease on a molecular level will open a new world of detection and treatment options, heralding the arrival of stratified and, eventually, personalised medicine

likely, the broad intentions and rationale are discernible. An understanding of the determinants of health at all levels, from genetic to social environment, will allow the development of effective health promotion and disease-prevention policies, and will necessitate large-scale cohort studies.

Understanding health and disease on a molecular level – aiming at a new taxonomy of disease based on actual causation, rather than a classification based on symptoms – will open a new world of detection and treatment options, heralding the arrival of stratified and, eventually, personalised medicine.

Clinical trials will be the primary means by which basic biomedical knowledge is translated for use in the clinic, and these trials will be supported by efforts to improve cross-cutting support technologies for drug and vaccine development.

currently under way to determine if, and how, the Innovative Medicines Initiative (IMI) – a public-private partnership (PPP) between the European Commission (EC) and the European Federation of Pharmaceutical Industries and Associations (EFPIA), with a budget of €2 billion – should be extended. IMI has gained international recognition as a successful health research and development (R&D) PPPs, and is bridging the gap in public health areas that suffer from a lack of incentives for industries to invest in R&D.

### Research into new antibiotics

An example can be found in the recent €220 million IMI, which seeks to accelerate the development of new antibiotics in view of increasing antibiotic resistance worldwide. The resulting projects, in which only the public partners will receive public funding, will build and train networks



of researchers, facilitate and increase the exchange of research data, and improve the efficiency of clinical trials on new antibiotics through better laboratory tests and trial design. In addition to the achievement of scientific objectives, the programme aims to make Europe the location of choice for investment in antibiotic R&D.

The European and Developing Countries Clinical Trials Partnership (EDCTP) has become a true success story, as well as an excellent example of a mutually beneficial EU-Africa PPP. This is helping to tackle the global challenge of poverty-related infectious diseases and to make progress towards the Millennium Development Goals. It is also under review as a potential vehicle for delivering Horizon 2020 health.

Researchers in the 16 participating European countries team up with institutions and researchers from sub-Saharan Africa to coordinate their

As life expectancy is increasing, there is likely to be an increased need for treatment of chronic diseases and further strain on the health and social care sectors



national research programmes, carry out joint projects, and share resources and results. EDCTP has succeeded in establishing a genuine partnership with its African partners, who retain a high degree of ownership and leadership. They coordinate more than half of the clinical trials carried out, and have been awarded three quarters of EDCTP funding (of which €200 million is contributed by the EU). So far, the initiative has supported 57 clinical trials, and has helped train hundreds of African researchers and medical doctors through its fellowship programme and other training schemes.

Finally, the Ambient Assisted Living programme (AAL) – another PPP under review for continuation in Horizon 2020 – seeks to address the challenge of demographic change and an ageing population in Europe, reframing these as opportunities for citizens, the social and healthcare

systems, as well as for industry and the European market.

Health in Horizon 2020 will see a continuation of the European commitment to global cooperation, exemplified not only in the partnerships mentioned above, but also by a variety of other international consortia. The international rare-diseases research consortium, launched jointly by the EC and the US National Institutes of Health (NIH), now counts more than 25 partners, all of whom have pledged to deliver 200 new therapies and the means and resources to diagnose most rare diseases by 2020.

#### **Personalised medicine**

Similar initiatives exist in the domains of traumatic brain injury (TBI), to advanced clinical TBI research, treatment and care, and in epi-, meta- and cancer genomics, each of which provides a foundation for

future developments in stratified and personalised medicine.

The European Research Council will support much of the basic research, which has, in previous years, been underpinned by subsequent applied research. This will be combined with the research on enabling technologies, such as nano- and bio-technology, in the industrial research sector. Health challenges, demographic change and well-being in Horizon 2020 will make a significant contribution to improving health and coordinating the resources available to do so at a global level.

It is my sincere hope that the participants in the 2012 World Health Summit will continue to advocate the key role of health research in promoting sustainable development, and that you will support the EC in its contribution to this goal through the adoption and successful implementation of Horizon 2020. ■

# The Serum Institute of India: rowing against the tide of new, unaffordable vaccines



The Serum Institute of India (SII) is India's top biotech company and the world's fifth-largest vaccine manufacturer (by volume) with an installed annual production capacity of over one billion doses of different vaccines. SII is also one of the largest suppliers of vaccines to UN agencies, thereby supplying to more than 140 countries, and takes pride in the fact that one out of every two children immunised worldwide gets at least one vaccine produced by SII.

Founded in 1966 by a true visionary, Dr Cyrus Poonawalla, with the aim of manufacturing life-saving immunobiologicals, which were in short supply in the country and imported at high prices. Getting the permission to produce vaccines was not easy, but production began and picked up when SII won contracts to supply state governments and hospitals. Thereafter, several life-saving biologicals were manufactured at prices affordable to the common man, with the result that the country became self-sufficient for tetanus anti-toxin and anti-snake venom serum, followed by the diphtheria, tetanus and pertussis (DTP) group of vaccines and then later on the

measles, mumps and rubella (MMR) group of vaccines. Today, the company is recognised as a reliable source of high-quality vaccines and biologicals, and its products have been regularly supplied to international health agencies such as the World Health Organization (WHO), Unicef and the Pan-American Health Organization (PAHO). This impact has been large enough to make international

## Bill Gates lists Serum Institute Chairman Dr Cyrus Poonawalla as one of his seven most influential vaccine heroes

agencies including WHO, the Program for Appropriate Technology in Health (PATH), National Institutes of Health (NIH), the National Institute for Public Health and the Environment and the Netherlands Vaccine Institute (NVI/RIVM), and the Center for Biologics Evaluation and Research and

the US Food and Drug Administration (CDER/USFDA), work with SII to develop affordable vaccines against diseases such as meningococcal A, H1N1 influenza, rotavirus and others. SII's products are WHO-prequalified, and registered in many countries, mainly because of its strong-quality management systems.

Since its inception, the SII's philosophy was to develop new vaccines at affordable prices for the developing world without compromising on quality. This has resulted in developing newer vaccines such as meningococcal A conjugate, haemophilus influenzae (Hib) conjugate and pentavalent vaccines, which have saved the lives of newborn children across the developing.

This approach coherently emerges in two of the most recent and successful cases of needs-driven health innovation produced by SII, recounted here.

**Nasovac™, a new preventive vaccine against H1N1 infection.** Following the 2009 panic due to fears about the H1N1 (swine flu) pandemic, in July 2010, SII announced the launch of its indigenously developed vaccine, Nasovac™ to prevent H1N1. This is a live, monovalent



vaccine containing live attenuated influenza virus (LAIV) propagated in embryonated hen eggs for administration by intranasal spray, a painless prevention method. Priced at 160 Indian Rupees (\$3.42) per dose, the vaccine costs half the price of foreign and domestic swine flu vaccines sold in India, in an effort to encourage more people to take it. With the technology now in place, India is able to make its own seasonal influenza vaccines, by switching the pandemic H1N1 strain with the seasonal flu virus.

**MenAfriVac™, an innovative vaccine collaboration against meningococcal meningitis.** SII's new meningitis vaccine for Sub-Saharan Africa officially launched in Burkina Faso on 6 December 2010, marking a historic event for the part of the world known as the Meningitis Belt, annually stricken by the re-emergence of the epidemic infection.

The meningococcal A conjugate vaccine (MenAfriVac™) is the product of a pioneering vaccine development collaboration, namely a technology transfer alliance between SII and the US NIH. Under the Meningitis Vaccine Project (MVP), first mooted in 2001 (a PATH project for which a grant of \$70 million was received from the Bill & Melinda Gates Foundation in collaboration with WHO), the NIH licensed conjugate vaccine technology to SII, who agreed to produce the vaccine cheaply in exchange for technical know-how.

Indeed, SII has kept the promise made in 2002 of supplying this vaccine at an introductory price of 40 cents a dose. The product has been prequalified by WHO, and in just two years SII has

supplied more than 55 million doses to Unicef. This has transformed the lives of people residing in Sub-Saharan Africa by protecting them from devastating meningitis A epidemics.

A report from the humanitarian medical organisation, Médecins Sans Frontières, and Oxfam, released in May 2010, has highlighted that four factors have been crucial to the project's success pointing towards MenAfriVac™:

- focus on low cost;
- identification of a single supplier for a single product;
- technology transfer from a publicly-funded institute; and
- partnership with an emerging-country supplier.

The Institute is playing a significant role in achieving Millennium Development Goals (MDGs).

- From 1999 until 2005, the SII measles vaccine contributed towards the prevention of nearly 7.5 million deaths.
- Reducing deaths from measles in Africa and the eastern Mediterranean region by a remarkable 90 per cent and by 74 per cent in the world in 2007.
- Preventing over 2.5 million deaths from diphtheria, pertussis and measles yearly.
- Meeting UN goals towards reducing measles deaths by 90 per cent by 2010, three years before schedule.
- Reducing the 8.1 million serious illnesses caused by Hib.

As well as other excellence awards, such as the Sabin Award for global corporate philanthropy, bestowed in 2005, SII Chairman Dr Cyrus Poonawalla was conferred with the "Award for Excellence

in Inter-American Public Health" by PAHO and the Pan-American Health and Education Foundation (PAHEF) in 2010. This was presented for SII's extraordinary contribution to the elimination of rubella and congenital rubella syndrome throughout the Americas. Bill Gates lists Dr Poonawalla as one of his most influential vaccine heroes, saying: "His Serum Institute makes more vaccines than anybody."

SII's core research and development scientists are working hard to contribute further to global health in the near future by developing the following vaccines :

- Rotavirus vaccine
- Meningococcal ACYW vaccine (Polysaccharide/Conjugate)
- Pneumococcal vaccine (Polysaccharide/Conjugate)
- Human papilloma virus vaccine
- Acellular pertussis, containing combination vaccines
- Inactivated polio vaccine, and so on.

**Serum Institute of India Ltd.**  
**Registered Office & Laboratories**  
**212/2, Hadapsar, Pune 411 028, India**  
**T: +91 20 2699 3900/2699 3904**  
**F: +91 20 2699 3921**  
**E: [contact@seruminstitute.com](mailto:contact@seruminstitute.com)**  
**[www.seruminstitute.com](http://www.seruminstitute.com)**



# Vaccines for neglected diseases – which way forward?

**Theoretically, vaccines are the best and most cost-effective method to fight infectious diseases. However, when it comes to vaccines for ‘neglected diseases’, there is a gap between what should be done in a perfect world and the reality**

**By** Peter Seeberger, Director, Max Planck Institute of Colloids and Interfaces, Department of Biomolecular Systems

**D**iseases are defined as ‘neglected’ when there is a lack of effective, affordable, or easy-to-use drug treatments. In effect, all neglected diseases are tropical diseases.

Take malaria, formerly the best example of a neglected disease, where ‘neglected’ is equivalent to ‘not really important’. But how could we ever have called malaria – the deadliest parasite disease on Earth – unimportant? Malaria is an infection that kills about one million children and affects more than 225 million patients each year. It is a clear and present danger to 40 per cent of the world population.

The problem is, of course, that many neglected diseases mainly affect people with extremely low incomes. These people have difficulty purchasing medication at prices that are offset against the ever-increasing development costs incurred by pharmaceutical companies or even, as in the case of malaria, against the mere production costs of known medications.

Over the past two decades, the situation regarding malaria has changed fundamentally. It is now considered one of the ‘big three’ diseases, alongside HIV/AIDS and tuberculosis. Malaria became the first tropical disease no longer neglected, and the ‘big three’ are now tackled by public-private partnership consortiums, such as the Bill & Melinda Gates Foundation, which focus on the fight against them. Within this effort is funding for the

production of the best medication against malaria and the research and testing of a malaria vaccine.

However, the situation in the battle against malaria is still far from satisfactory. This is valid for medication as well as vaccine development.

The main problem in the field of medication is production costs. Currently, Artemisinin Combined Therapies (ACTs), the best available medications against malaria, are

---

**People have difficulty purchasing medication at prices that are offset against the ever-increasing development costs incurred by pharmaceutical companies**

---

subsidised. The gap between production costs and the price in the local pharmacy or hospital remains very high; a difference of at least 300 per cent. New production processes are needed in order to reduce the cost of ACTs. Producing to cheaper costs than market price would be the best-case solution. This would create a true market that is not skewed by (necessary) subsidies and, therefore, is not prone to collapse should the donor or funding situation change for the worse.

A new photochemical flow process has been developed at the Max Planck Institute for Colloids and Interfaces,

which has the potential to reduce the cost of production significantly. This development originated in basic research and was in no way planned or funded by any agency. Currently, the Max Planck Institute, together with different partners, is exploring the possibilities and ramifications of this discovery.

## Extensive costs and timescales

The malaria medication scenario is amplified in the vaccine field. Development times and costs for a marketable product are enormous, even by the economic standards of wealthy nations. Without the public-private partnerships there probably would have been no research and no development of a malaria vaccine.

Positively, GlaxoSmithKline’s RTS,S malaria vaccine candidate is currently at the third clinical phase of field trials. However, the level of protection (56 per cent) is lower than originally expected.

More than 17 other malaria vaccine candidates are currently being pursued, and the question as to which products to focus on, and which will make it to clinical trials, is a hard one to answer.

Glycomics, the scientific field researching the use of carbohydrates in biological entities, is becoming a potential game-changer in the production of vaccines. Glycomics deals with sugars that surround cells. The main reason glycomics was described as “a scientific area changing our future” by the Massachusetts Institute of Technology (MIT) in 2004, and was recently declared “a strategic area of research” by the National Academy of Sciences of the USA, is simple to understand. Sugars are at the outside of all cells and act as antennae, providing communication between cells.

When a sperm enters an egg, it is these sugars that cause fertilisation. In addition, human blood groups are defined by these sugars. But sugars



The vast costs and timescales associated with the development of malaria vaccines make new research an economic challenge for even the wealthiest nations

are not only responsible for positive functions – the malaria parasite enters the red blood cell it is going to destroy with the aid of a sugar. It is therefore clear that sugars are central to the workings of cells.

### Stimulating immune reactions

Since scientists can now build sugars, it is possible to experiment with them. For example, if scientists can discover a sugar structure that only exists at the outside of a specific cell, such as the malaria parasite, there may be the possibility to use it for a vaccine or medication.

Since it is possible to stimulate an immune reaction by combining a specific carbohydrate from the outside of an infectious bacteria, such as a virus or a cancer cell with a protein,

the area of possible vaccines is growing. This is fast becoming a reality.

For example, the Max Planck Institute alone is researching more than 10 new vaccine candidates – among them candidates for neglected diseases. However, the challenge of funding past the research stage in order to take the lead candidates into clinical trial has not changed. While the area of scientific possibilities is growing fast, the realities of pharmaceutical realisation remain the same. The question as to who is going to pay for the development of neglected diseases candidates into marketable products is not answered by scientific innovation.

Looking to the future, things are not truly stagnant. India is already producing 70 per cent of the world's vaccines and, China, having announced

plans in 2011 to become a major force in the field of vaccinations, will soon catch up. The perspective on which diseases can be neglected or not will differ greatly, as this will depend on the location of the institution which is defining and deciding this classification. The forces of globalisation may be working in favour of the victims of currently neglected diseases.

These changes have implications for both the pharmaceutical industry and politics, as well as business implications. The vaccines and pharmaceutical tectonic plates are in motion, and it is vital that these forces are used in a rational manner. They must work to improve conditions in a way that is beneficial in the long-term for all humans, rather than fight the changes that lie ahead. ■

# Overcoming innovation challenges to improve health and the economy

**Innovation in the health sector is vital to enable medical professionals to keep up with the fight against disease. However, there are obstacles that need to be overcome**

By Christopher A Viehbacher, CEO Sanofi, Chairman Genzyme

**T**he economic crisis has been a wake-up call to us all. The concept of innovation is key to every company, every politician and every stakeholder in every industry as a means to recovery and prosperity. But it is on innovation in the sector of healthcare that I believe we can have the most impact.

Firstly, some obvious facts. Economic growth is needed for every economy, to either get out of the crisis or to avoid falling into it. You need a healthy, educated workforce to drive the economy and, therefore to innovate. The biomedical industry is right at the core of this, delivering improved health outcomes and employment – either directly in research and development (R&D) and manufacturing, or indirectly via the provision of services such as delivery of care, capabilities development, infrastructure, and training and development.

It is innovation in healthcare, whether it is incremental or radical, that has changed the demographics of the world today.

In the past 100 years, life expectancy has increased by 30 years in the US, 25 of which can be attributed to public health improvements. Also, more recently, since 1999, there has been a decrease in the rate of death during pregnancy by 34 per cent. Medicines and interventions have contributed to a 45 per cent reduction in heart-attack death and heart-failure rates

between 1999 and 2005. We are living longer; we are healthier.

Most importantly, we are not just treating diseases; we can now actually prevent them. The best way to treat a disease is to prevent it in the first place. The amazing discovery of vaccines has meant that millions of children that would never have grown up in the past century do so today. We have reduced prevalence of polio by 99 per cent and eliminated smallpox. Today, we have vaccines against 26 diseases. However,

**Innovation delivers patient outcomes and improves the health of a nation. A healthy nation drives a country's economic growth and prosperity**

we have nothing yet for the next big public health challenge – dengue. Forty per cent of the world population is at risk from dengue. The World Health Organization (WHO) estimates that the real burden of the disease is probably at least 10 times higher.

Finally, let us not forget that about 50 per cent of the world's economic growth over the past two centuries can be traced back to medical research discoveries. In short, innovation delivers patient outcomes and improves the health of a nation. A healthy nation drives a country's economic growth and prosperity.

If we all know that we need to innovate, what are the main factors stopping us, and how can these be overcome? What has happened?

Firstly, productivity of R&D has dropped by over 50 per cent in the first decade of this century and, secondly, there is less willingness to pay.

The average cost of developing a new product can now be anything up to \$2 billion, and it can take between 10 and 15 years. An average of only three in 10 products will make their investment back. In terms of R&D return on investment, the figure is dismal – a 70-cent return for every dollar invested.

Once you have a product, you have to battle archaic regulatory systems, which are risk averse and have not kept pace with advances in science. Approvals are becoming increasingly difficult and more costly. The innovative medicines of the future are not like those of the past. We are moving towards a much more personalised treatment approach where

we will be able to identify the right patient who will respond best to the treatment. However, this also means that the cost of developing these medicines will increase. The patient pool

will be smaller. If a company cannot get approval because the regulatory system is still based on the need to have huge populations in trials, then biopharmaceutical companies will not be able to afford to continue developing these lifesaving treatments.

In addition, even if the company does get approval for a drug, there remains the other main challenge to address: who will pay in the future? Potential buyers, particularly richer countries, need to be willing to pay for innovation.

There are many factors at play, but no one company or stakeholder can address all the challenges in, and increase access to, innovation. I believe there are seven priority areas that we need to address together to bring innovation back into health:



Advances in technology have led to an era of mobile health (mHealth), where medical staff can access a wealth of information at the touch of a button

### **1 We need new models to make scientific discoveries a priority**

Science has never been more exciting, challenging and yet so expensive. However, funding and venture capital is drying up. On the other hand, big pharma companies have not been doing as well. The answer is in open innovation – in public and private partnerships in addition to new funding models that will share risk and put the best people in research, development and business together.

### **2 There needs to be ongoing support by the government and public actors to fund scientific leadership and multidisciplinary research**

Governments around the world need to improve funding for scientific research. It will help boost the economy and improve the health of the nation. Budgets need to be protected and, in fact, increased significantly.

### **3 Great science starts with great people. We need to invest in education for the future**

If you don't have a skilled, educated population, you will fall behind. We need to ensure continued investment in mathematics, science and

technology if we want to continue to deliver new medicines to patients in need. Countries that invest in education will win in innovation.

### **4 Countries need to attract and retain global talent**

There is global competition among countries on talents that bring value and growth. If you look at the demographics of the best universities in the world, there is a rich diversity of nationalities. But if you don't have the accompanying immigration laws, you will lose on your investment. Take the US, for example, which is experiencing a sort of reverse 'brain drain' as a result of new and too-tight immigration laws.

### **5 We need to think differently and embrace technology**

Besides the amazing advances in technologies used in research, such as imaging and coding techniques, we need to stop thinking of advances in science as only relating to medicines and treatments. The era of mobile health – 'mHealth' – is here and we need to take it on. We need to open up, think wider and embrace the world of technology in all of its forms.

### **6 We need to improve regulatory and policy environments to keep pace with scientific advances**

The current systems to approve new drugs are out of date and are not capable of taking into account the new technologies and scientific advances. We need to work together to improve the systems. We need to trust each other and navigate the new world of innovation together.

### **7 We need new approaches to healthcare**

Curing a disease is one thing, and it is fantastic, but if we really want to have a significant impact on global health, we need to prevent chronic disease first. We need to educate everyone on the benefits of a healthier lifestyle, we need to help them manage their disease better and take ownership of their own well-being. We need to share risks. Our healthcare systems were designed after the Second World War and are targeting sick people, while we all need to start taking care of our health capital earlier.

If we work together instead of separately on these areas, we can improve global health. As we succeed in bettering health through innovation, the world economy will also benefit. ■

# African Development Bank

## Investing in the health of one billion people



**Feng Zhao**  
PhD, MD,  
MPH Manager



**Dr. Agnes Soucat**  
Director, Human  
Development  
Department

There are one billion people in Africa today and 2.3 billion people are projected for 2050. Africa is the youngest region in the world, and the continent accounts for about 15 percent of the world's population. By 2040, Africa will have the largest workforce in the world, surpassing the workforces of China and India. This reservoir of human capital can be an opportunity for change, progress and social dynamism, or could be a risk for the continent. Youth can provide endless opportunities for economic and social development, if their talents are creatively harnessed and channeled towards the productive sectors of the economy.

Health is central to the development agenda in Africa. Investing in health is not only a human rights issue – it is also essential for economic growth: lengthening average life expectancy by one year can raise Gross Domestic Product (GDP) by four percent. Healthy individuals can work longer, and therefore be more productive and earn, save, invest and consume more.

Demography is but one transformation that Africa is undergoing. Economically, African countries have been growing by six percent on average over the past decade, and continue to weather well the effects of the global crises. The private sector has a much larger presence in Africa than ever before. Africa's aid architecture is shifting, with new partners such as China and India emerging. Technologically, Africa has been benefitting from a shift of the technological curve, leapfrogging access to information and communication. Politically, the continent is experiencing the fall of long term dictators giving way to powerful youthful movement.

New challenges for the continent call for new interventions, and the African Development Bank (AfDB) has redefined the way it addresses health issues in Africa. It will focus on governance and value for money in health, developing and modernizing health systems (building on

improved connectivity), mainstreaming gender, building human and material resources and catalyzing private sector growth and job creation.

The AfDB will focus on critical areas that tend to be overlooked, such as providing value for money and accountable service delivery. Interventions in the health sector have often been in disease specific areas (eg. HIV/AIDS, Malaria and Tuberculosis) and program specific (eg. maternal and child health). The AfDB will focus on health system development and strengthening, thus

**The AfDB will focus on critical areas that tend to be overlooked, such as providing value for money**

complementing the efforts of other development partners to improve health outcomes and reaching the Health Millennium Development Goals (MDGs).

An example of strengthening the capacity of political leadership in health care financing is the **African Development Bank and the Harvard School of Public Health (HSPH)** jointly developing a ministerial leadership in

## African Development Bank Human Capital Development Strategy (2013-2017)

Skills for competitiveness and employment opportunities

Working with RMCs, development partners and the private sector

Building the pharmaceutical industry and improving regulation of pharmaceuticals

Public-private partnerships

Insurance

Value for money and accountability in efficient and inclusive service delivery

Ensuring sustainable financing in the health sector

Promoting value for money

Hospital management

eHealth

Human resources for health

Building inclusive financial and social systems

Health insurance

Mainstreaming governance, poverty and gender in health operations

Equity

Climate change

health program for African Ministers of Finance. Similarly, eHealth has become an integral part of the health sector in Africa. Kenya, the birth place of the revolutionary mobile phone banking system M-Pesa, became the first country to develop a national ehealth strategy in 2011. To make the most of the mobile technology revolution in Africa, the AfDB launched an eHealth award, recognizing the best authentic African ICT solutions in health. The goal of the award is to champion existing innovations by documenting what is being done in the field of ehealth and mhealth in Africa. The award encourages the production and sharing of evidence on eHealth solutions and provides added value through sharing lessons learnt.

The new AfDB agenda for health has been recognized and strongly supported by African leaders and the international community. They are expecting leadership from the AfDB, as the continent's premier development institution. Traditional and non-traditional donors (BRICs and the private sector) are also looking for AfDB's leadership. Norway and the Global Alliance for Vaccine Immunisation (GAVI) have, for instance, committed resources to the AfDB to develop a value-for-money program for health in Africa.

In July 2012, the AfDB organized a High-level Dialogue among more than 50 African Ministers of Finance and Health jointly with the Harmonization for Health in Africa (HHA) network. Ministers adopted

the Tunis Declaration, which calls for the support of the AfDB and other partners towards implementing concrete measures to enhance value for money, sustainability and accountability, and enhance the design of effective investments in the health sector, based on evidence-based strategies and the prioritization of high impact interventions.

### Achieving inclusive growth

The AfDB's forthcoming Human Capital Development Strategy (2013-2017) highlights the pivotal role of human development in helping African countries to achieve inclusive growth. The strategy is articulated around three major areas, where the African Development Bank has a comparative advantage in assisting its regional member countries. The first area is focused on increasing competitiveness and employment opportunities for the



The AfDB is strengthening Africa's health system

growing numbers of young labor market entrants. The second major area of the strategy is ensuring value for money and accountability for improved service delivery in the health sector. Finally, the strategy plans to build inclusive financial and social systems, designed to protect the poorest and most vulnerable members of society against catastrophic health expenditures.

**Feng Zhao, PhD, MD, MPH** Manager  
Health Division African Development Bank  
Human Development Department  
Rue de Ghana B.P. 323 – 1002 Tunis  
Belvédère, Tunisia  
T: +216 71 10 2117 | [f.zhao@afdb.org](mailto:f.zhao@afdb.org)

**Agnes Soucat, Director, Human Development**  
ATR Building, Room 612  
B.P. 323 – 1002 Tunis,  
Belvédère, Tunisia  
T: +216 71 10 2046  
[a.soucat@afdb.org](mailto:a.soucat@afdb.org)



# Beyond Aid: research and innovation for health, equity and development



Lower-income countries need to utilise aid to work towards a future in which they are able to become self-sufficient

## The Council on Health Research for Development is committed to realising its vision of a 'world beyond aid' through a broader focus on enabling country development

By Carel IJsselmuiden, Executive Director,  
Council on Health Research for Development

**N**early two years ago, the Council on Health Research for Development (COHRED) decided that the reinvented 14th Global Forum for Health Research (Forum 2012) would focus on a 'world beyond aid'. This was greeted with mixed reactions – some felt that such an approach was too early, others that we were trying to be controversial. Others still felt that we were potentially 'damaging aid' by providing reasons for donors to withhold support.

But we also found support, especially from countries that had moved, or were moving, increasingly on their own, beyond the dynamics of aid. It became clear that there was a growing body of practice in emerging countries and some development circles to operationalise

'country-driven development'. From this, we learnt that we were right to highlight the capacity of countries to be the architects of their own future through research and innovation. When Robert Zoellick, then president of the World Bank, addressed a Georgetown University audience in 2011 on this very same topic, he ensured that the 'beyond aid' idea was becoming mainstream – and Forum 2012 with it.

### Research and innovation

Of course, the theme for Forum 2012 was more nuanced than simply moving beyond aid. Forum 2012 approached 'aid as development', not 'aid as humanitarian relief'. Global solidarity should be a permanent feature of human interaction, but aid should

be a terminal condition. We began with the point of view that the world has changed and is changing very rapidly, and that it is timely, if not overdue, to begin painting a picture of this beyond-aid world. Unless we do that and understand what this world will look like, we cannot help construct it – at least not as efficiently and effectively as if we know where we are going.

A world beyond aid will have research and innovation as key drivers to achieve and optimise health, equity and socioeconomic development. Taking that as a given, we wanted to create the opportunity for Forum 2012 participants to see, share and discuss how investing in research, building networks and creating a supportive environment will help create greater health, equity and development outcomes that can be achieved and sustained.

Business opportunities will also be created. The evidence is everywhere – no country has successfully 'climbed the development ladder' without substantially investing in science and technology, with the possible exception of the oil-rich Gulf states. But even these are now trying to catch up.

Leaving aid behind through research and innovation is a vision that is widely shared. During Forum 2012, this vision was most clearly expressed by Professor MM Mbarawa, minister of communication, science and technology of Tanzania, who remarked in the opening panel that “Tanzania aims to become a middle-income country by 2025, and science and technology will be key in achieving this”.

### The creation of a vision

The world is changing rapidly in terms of economic and scientific power. The influence of donor agencies in lower-income settings is increasingly eclipsed by private-sector activity and the influence of trade. The drop has been staggering – from 70 per cent of capital flows to poor countries in the 1960s to 13 per cent in 2011.

The nature of donors is also changing. China is now the single biggest investor in African infrastructure, eclipsing the World Bank in 2009. According to the UK's department for international development, China has managed to lift 700 million of their population out of poverty – not through aid, but through business. Africa, too, has made staggering progress in the past 10 years.

As noted in *The Economist*, over this period, six of the 10 fastest-growing economies were African, a region where foreign investment has soared tenfold, outperforming East Asia. Infrastructure, confidence, capacity and capability are growing in countries still perceived by many as passive recipients of aid. These countries now need to be supported in how to best use this capacity to increase health and equity for their people.

Encouraging the creation of a vision of a world beyond aid is not the same as an outright call to leave traditional donors and funders behind. Rather, it calls for a conscious effort to redefine development and the critical role that reducing aid budgets should play in maximising the country systems of research and innovation. This will need to carry development forward once aid stops. There will always be a role for emergency relief in times of crisis, but the broader focus of aid needs to shift to enabling development. As Zoellick said, donors need to help lower-income

countries through supporting domestic capacity for science and technology. His voice joins a growing chorus – including the voices of COHRED, the UK Collaboration for Development Sciences (UKCDS), the Organisation for Economic Cooperation and Development (OECD), the Royal Society, the World Health Organization (WHO) and ZEF Bonn to name a few – that highlights the growing scientific strength of the South and the need to invest more deeply in it to leverage this growing capacity further.

Global health is no longer considered a ‘southern problem defined by the north – using northern resources to provide solutions’. This was the basis of the old Global Forum’s ‘closing the 10/90 Gap’. Today, defining global health problems, setting priorities and finding the solutions is increasingly a global matter, with solutions coming from all corners of the world. In response to this,

### Job creation is the essential feature that will draw ministries of finance and of science and technology into the field of health research

donors have to shift from being disease-focused and ‘vertical’ to becoming system-supportive and ‘diagonal’, building on existing increasingly present local capacity. ‘System optimisation’ rather than ‘research capacity building’ is the appropriate approach.

What is the evidence that investment in science and technology drives progress? It seems clear that no country has made significant development progress without this approach. Examples of success are manifold: South Korea, and more recently the rise of the Brazil, Russia, India and China (BRIC) nations.

There are also many examples of what is possible when African infrastructure and innovation is encouraged and supported, such as insecticide-treated bed nets developed and produced in Tanzania, a low-cost medical incinerator in Uganda, low-cost diagnostics for schistosoma, and new uses of mobile technology to monitor counterfeit drugs in Ghana.

African countries are clearly poised for success. On the ‘high-cost and high-return’ end of the spectrum are the

Human Genome Project (how \$3.8 billion investment drove \$796 billion in economic impact, created 310,000 jobs and launched the genomic revolution) and Singapore’s Biopolis.

It is also clear that this sort of approach is more sustainable than an aid-driven avenue to development. Technology developed locally and responding directly to local need is much more likely to be suited to the local context, have people available who are trained to use it, be replicable, scalable and able to be integrated into existing systems.

Furthermore, it comes with the positive knock-on effects of supporting the local economy through job creation. In fact, this job creation is the essential feature that will draw ministries of finance and of science and technology into the field of health research and ‘research and innovation for health’.

In addition, Forum 2012 placed strong emphasis on ‘research for health’ in contrast to ‘health research’; on ‘innovation’ as a core complement of research to create impact and scale; and on generating meeting opportunities for people

from diverse backgrounds to make innovation a reality. Our aim was to create ‘improbable partnerships for action in health, equity and development – through research and innovation’.

### Significant outcomes

We achieved some significant outcomes – the beyond-aid narrative is becoming a reality, taking shape and finding a home. We created ‘improbable partnerships’ between non-government organisations (NGOs) and pharmaceutical companies; between a global group of young scientists – creating space for low- and middle-income countries, ministries and different research agencies to explore and assert themselves, and elicit essential questions that donors could help support. This includes ‘human resources for health research’ strategies, fair research contracting, and much more. At the same time – it is clear that technology and innovation on their own will not reduce inequities, and that continuing challenges lie ahead for all involved in research and innovation for health. It is vital to ensure that everyone benefits. ■

# Healthy ageing and holistic prevention: the role of diagnostics



A holistic approach to prevention and treatment in the healthcare sector is required as longer life expectancy is leading to a rise in the occurrence of chronic diseases

While life expectancy is steadily increasing, this is not synonymous with living healthily in old age. In order to achieve healthy longevity, a reorientation of our healthcare systems towards a holistic form of prevention is required. This includes primary prevention, early diagnosis, early intervention, and proper chronic-disease management. In this context, in-vitro diagnostics will have a key role to play.

## Life expectancy on the rise

In recent years and decades, life expectancy has been rising steadily. According to the World Health Organization (WHO), the number of people aged 60 years and older worldwide has doubled since 1980. This trend is likely to continue, as WHO expects this age-range to reach 2 billion by 2050, compared to 605 million today.

As a result, the elderly will represent 22 per cent of the world's population in

2050, as opposed to 11 per cent in 2000<sup>1</sup>. This development is even more marked in Europe, with the *European Commission's 2012 Ageing report* revealing that those citizens aged 65 and over will represent 30 per cent of the population in 2050, in comparison to 17 per cent today.

## A significant global challenge

Clearly, this is positive news. However, the good news brings about other important considerations regarding patient care. From a medical point of view, an increase in chronic diseases is likely. Already today, WHO has estimated that two thirds of all Europeans will have at least two chronic diseases by the time they reach retirement age<sup>2</sup>.

From a macro-societal point of view, in Europe "population-ageing is posing a major challenge for public finance sustainability<sup>3</sup>", with strictly age-related expenses expected to increase by 4.1 percentage points (pp) by 2060, if

no major developments occur. More precisely, it is expected that the cost of long-term care will increase by 1.5 pp, and the cost of healthcare by 1.1 pp<sup>4</sup>.

As a result of these estimations, it is essential to address the challenges posed by the demographic change in the interests of both healthy longevity of individuals and public finances.

## Maintaining good health with age

In the context of an ageing population, tackling chronic diseases plays a key role. However, it is vital to re-think the way we have been doing this so far.

From a budgetary point of view, continuing the "business as usual" scenario may prove to be challenging. Estimates have shown that between 70 and 80 per cent of European healthcare costs are currently spent on chronic diseases. This figure is expected to rise in the coming years, according to the European Public Health Alliance (EPHA)<sup>5</sup>.

More importantly, from a medical point of view, if we want to achieve healthy ageing, we need to adopt a strategy that ensures that individuals reach old age in good health<sup>6</sup>. Indeed, many chronic diseases are progressive, meaning that by the time an individual ages, it is often too late to significantly increase the number of healthy-life years.

### Understanding comprehensive prevention

When talking about prevention and preventative healthcare, it is important to consider prevention in a holistic and comprehensive way. The combination of all three existing forms of prevention is essential to create a healthcare system which will help achieve healthy ageing:

- **Primary:** Primary prevention has the objective of preventing the development of a condition in healthy people by emphasising the importance of a healthy diet, physical exercise, avoiding tobacco and alcohol, and receiving regular medical check-ups.
- **Secondary:** Once risk factors are found to be present, and/or signs of an illness have actually appeared, secondary prevention consists of screening for illnesses, particularly when risk factors are present, as well as early intervention measures to slow the progress of the disease while it is still in its early stages.
- **Tertiary:** For patients who already have illnesses such as diabetes, heart disease, cancer, or chronic musculoskeletal pain, tertiary prevention consists of measures to slow down physical deterioration<sup>7</sup>.

### Proper prevention can be challenging without diagnostics

As such, preventative healthcare goes way beyond what is traditionally understood as being prevention, since early intervention plays a major role.

Only early screening – which can be targeted towards the general population or specific at-risk groups – will allow for early and appropriate interventions, thereby reducing hospital stays, as well as the general cost of the treatment.

The identification of biological markers will play an important role for patients and treating physicians when deciding which actions to take in order to delay or stop the onset of the disease. Key tools necessary to carry out this secondary prevention include screening and diagnostic devices, for example,



## An increase in chronic diseases is likely. Already today, WHO has stated that two thirds of all Europeans have at least two chronic diseases when they reach retirement age

in-vitro diagnostics. These are tools which are indispensable when it comes to identifying individuals at risk, or showing early signs of diseases.

Furthermore, in the framework of secondary and tertiary prevention, it is critical to ensure that treatment is effective. In-vitro diagnostics allow for the monitoring of the treatment and assessment of its efficacy and the determination of potential adjustments.

Therefore, in order to effectively carry out secondary prevention, including early diagnosis and intervention, as well as tertiary prevention, including limiting and treating the damages caused by chronic diseases, in-vitro diagnostics are critical.

### Increasing focus on prevention

According to the Organisation for Economic Co-operation and Development (OECD), in Europe only 3.0 per cent of health expenditure is invested in prevention<sup>8</sup>. The situation is worse for in-vitro diagnostics, which accounts for only 0.8 per cent of total healthcare expenditures in Europe<sup>9</sup>.

It is clear that prevention will only bring about long-term benefits, while the costs will have to be paid now.

What is certain, however, is that if we want to achieve healthy ageing, both for our fellow citizens and healthcare systems, we must rethink our way of delivering healthcare and not only focus on acute treatment, but also allocate funding to long-term prevention.

In-vitro diagnostics would be an important first step in ensuring that it becomes possible to carry out secondary and tertiary prevention on a larger scale, thereby effectively enhancing the healthy longevity of both individuals and healthcare systems.

1. WHO, *10 facts on ageing and the life course*, [www.who.int/features/factfiles/ageing/en/index.html](http://www.who.int/features/factfiles/ageing/en/index.html)
2. Economist Intelligence Unit, *Never too early: Tackling chronic diseases to extend healthy life years*, 2012
3. European Commission, *The 2012 Ageing report – Economic and budgetary projections for the 27 EU Member States*, 2012
4. Ibid
5. Ibid
6. Ibid
7. Ibid
8. Ibid
9. European Diagnostics Manufacturer Association, *The European in-vitro diagnostic (IVD) market in 2010*, 2011



[www.abbott.com](http://www.abbott.com)

# Funding research and development to fight diseases in the developing world

**There are striking links between good health and wealth, and greater attention and new funding is set to help neglected populations win the fight against diseases disproportionately affecting them**

**By** Mario Ottiglio, Associate Director, Public Affairs and Global Health Policy, International Federation of Pharmaceutical Manufacturers & Associations

**A**s policymakers recognise the links between health and wealth, the past decade has seen the international community give unprecedented attention to the issue of funding for diseases that are disproportionately affecting the developing world.

Landmark documents, such as the report of the Commission on Macroeconomics and Health and the Global Strategy and Plan of Action on Public Health, Innovation, and Intellectual Property Rights, have harnessed political will into stimulating new sources of funding, which are generating record levels of health investment.

Much remains to be done, and multi-stakeholder efforts will be crucial in maintaining the momentum. Addressing the developing world's unmet needs for medicines, vaccines and diagnostics is a complex challenge. Coordinated efforts in research and development (R&D), health-system strengthening and sustainable access are all necessary conditions.

## Challenges to research

The science behind neglected diseases is like the science for any other disease area: lengthy, complex, and costly. Only a small fraction of potential candidates will turn out to be safe and effective, and neglected diseases bring the additional challenge

of having little or no commercial incentive for private firms to invest in this area of clinical development. Despite this, firms are working in partnership with the philanthropic sector and governments to address the needs of populations affected by these diseases. This collaboration includes leadership sharing, technical expertise, and funding throughout research and clinical development. It also provides commercialisation for developing-world use.

## New funding models bring success

Between 2000 and 2009, 26 products were produced to help combat diseases disproportionately affecting developing countries. Over half of approvals concerned malaria – a disease that kills more than 650,000 people every year. This achievement was largely due to the use of new funding models, such as Product Development Partnerships (PDPs), that in the past 10 years have revolutionised how R&D for neglected diseases is conducted.

The outcome of this model is discernible when looking at the pipeline of the R&D-based pharmaceutical industry for these diseases. The number of R&D programmes by International Federation of Pharmaceutical Manufacturers & Associations (IFPMA) members for diseases in the developing world increased almost threefold over the



The past decade has seen research and development for neglected diseases receive considerable financial resources



past six years: there were 32 programmes in 2005, compared to 93 in 2011.

Additionally, three out of four projects are carried out in partnerships between R&D-based pharmaceutical companies and other organisations, such as Drugs for Neglected Diseases initiative (DNDi) and Medicines for Malaria Venture (MMV). The remaining quarter includes independent efforts that are often conducted in dedicated research facilities; for example, the Novartis Institute for Tropical Diseases, which is situated in Singapore.

### The funding landscape

This progress means that our industry is thinking and acting creatively about how to conduct R&D. For example, IFPMA members are actively contributing to the World Intellectual Property Organization (WIPO) Re:Search initiative – a new global, voluntary database for sharing know-how and intellectual property. Such an initiative aids R&D on medicines and vaccines for tuberculosis, malaria and neglected tropical diseases.

The emergence of PDPs was also possible thanks to the remarkable upsurge in the availability of donor funding for the purchase of medicines and vaccines for some, but not all, diseases of the developing world.

Bodies such as the Global Fund and the GAVI Alliance, as well as growing activity by private philanthropic foundations such as the Bill & Melinda Gates Foundation and the Wellcome Trust, are providing financial and moral support. Such funding helps to ensure that new products emerging from the R&D process can be rolled out in the countries that are most in need of them.

The Global Funding of Innovation for Neglected Diseases (G-FINDER) survey found that \$3.2 billion was allocated to R&D into neglected diseases in 2010 – a stark rise from recent decades. Among the top public, private and philanthropic funders are the US National Institutes of Health, the Bill & Melinda Gates Foundation and the research-based pharmaceutical industry.

Over the past decade, the research-based pharmaceutical industry has directed considerable financial

resources towards R&D for the diseases disproportionately affecting developing countries. Recent estimates position the R&D industry as the second largest single funder, with funding of \$503 million in 2010 – an increase of 28 per cent from last year's estimates. This is encouraging news considering that other entities decreased their funding, largely due to the current economic landscape.

Alongside funding, the R&D industry has positively embraced and fully committed to multi-stakeholder engagement. The industry's donation programmes have continued unabated, as has its involvement in technology transfer. Because access goes beyond the simple provision of medicines to patients in need, these programmes also target systemic issues.

Efforts are being made to strengthen local healthcare capacities and to educate patients and populations at risk. Where appropriate conditions are

## The next 10 years will require even greater resolve from the health sectors in developing countries and emerging markets, at a time when many developed countries are facing an uncertain economic outlook

in place, IFPMA Member Companies license their technologies to quality, generic producers in low- and middle-income countries, while many others commit to expanding their own production and distribution capacities to meet the needs of patients, and further bridge R&D gaps.

### Going forward: increasing funding

The next 10 years will require even greater resolve from the health sectors in developing countries and emerging markets, at a time when many developed countries are facing an uncertain economic outlook.

Looking forward, prioritising investments in multi-stakeholder approaches for R&D and medical access to therapies treating diseases that disproportionately affect developing countries is crucial. Continued work on developing new, innovative financing mechanisms that adequately reward providers of R&D is also fundamental.

Several funding models currently exist, from which we need to extract their strengths and advantages and develop a new model for sustainable, predictable funding. An overall increase in funding will also help to address current drug-development challenges in this area, as most of the R&D projects are in relatively early stages.

### Strengthening capacity

As more projects progress into later development, increased strain will be placed on the clinical trials and regulatory infrastructure in developing countries, as this is where trials and medical approval will take place. To address this gap, some attention and resources could focus on strengthening regulatory capacity, via convergence of governing requirements at regional levels.

Discussions on funding should account for the complexity and ongoing evolution of the current pharmaceutical innovation paradigm.

Evidence indicates that a series of enabling factors should reside at the core of models aimed at stimulating R&D in this area.

Research indicates that these factors include guaranteeing prioritisation, effectiveness, sustainability and access to medicines for

populations in need. New, successful models should be implemented in the short term, and be credible to engage key funding sources and R&D providers. The models must also complement existing efforts. To achieve concrete outcomes, an amalgam of incentives should drive a complete cycle of research, development and access to new medicines.

Funding for neglected diseases requires collaboration among all health players. Besides continued commitment from industry, political willingness from governments can play a significant role in enabling adequate environments for innovation and access, and committing human, financial and infrastructural resources. Generic pharmaceutical companies should also carry out a complementary, critical role through targeted access programmes, which are modelled on those that are initiated and supported by innovative firms. ■

# Health-system financing – the path to universal coverage



Germany's health insurance system has recently been reformed on a new, future-proof foundation

**Universal coverage of sustainable financing in the global healthcare industry is required to improve and stabilise the economic growth of individual nations. Germany is calling for international actors to implement and support this**

By Daniel Bahr, Federal Minister of Health, Germany

**E**fficient healthcare systems are the basis of global prosperity and development, in which fair, sustainable financing structures have a key role to play.

The World Health Report, entitled *Health Systems Financing: the Path to Universal Coverage*, was presented by the World Health Organization (WHO) in Berlin in 2010, and starkly highlights the fact that, every year, the cost of medical

treatment forces more than 150 million people worldwide into financial ruin because they have no health coverage. Another 100 million people are driven into poverty. This is not only critical for the individual affected, but jeopardises wealth and prosperity in the regions involved. None of this is acceptable.

Moreover, the lack of universal health coverage causes substantial macroeconomic expenses and

worsens the prospects for broad-based economic growth.

Conversely, Germany's experience shows that access to affordable healthcare allows effective protection from impoverishment and, at the same time, is a key prerequisite for economic performance and social peace. It is with good reason that securing access to appropriate and affordable medical care features among the central health-policy objectives of the European Union (EU) and its member states.

However, the path to fair global health financing and universal coverage is protracted and challenging for all countries – whether developed, developing or with an economy in transition. Throughout the world, many countries have made remarkable advances in building or extending their

social health-protection systems. These successes are heartening: universal coverage is an attainable goal.

It is true that most countries face myriad challenges and difficulties – not only on their way towards universal coverage, but also in their struggle to retain it.

On the other hand, there is no one fail-safe blueprint for ensuring that all citizens have access to appropriate healthcare services. For social security systems to be successfully established and sustainable, they must accommodate the country's local, historical, cultural and socioeconomic circumstances. Also, reform efforts in the healthcare system must combine socially balanced, sustainable financing structures with the most efficient use of resources possible and a high quality of service.

Universal coverage can only be sustained over the long-term if the jointly raised funds are shared equitably and used efficiently. According to the World Health Report 2010, 20-40 per cent of the resources available for health improvement are currently wasted, undermining efforts towards universal coverage. Efficiency, for that matter, does not only call for cost-effectiveness and the rational use of resources, but also transparency and the control of all kinds of wastage, including corruption. Also, citizens must be aware of the rights and services to which they are entitled.

### High standards in the long term

Germany is home to the oldest social health insurance system worldwide. As early as 1883, the Reichstag adopted, on the initiative of Reich Chancellor Otto von Bismarck, the introduction of a statutory health insurance to provide financial coverage for workers in the event of sickness. Subsequently, the scope of the statutory health insurance was widened to include more groups of people. Ever since, social security and universal coverage have been the cornerstones on which Germany's social cohesion, economic efficiency and prosperity are built.

However, the full implementation of universal coverage may not be understood to mean that the German healthcare system is immune to major challenges. In fact, current debates in Germany frequently revolve around the question of how the high standard

The P4H Initiative has allowed low-income countries to develop health-insurance systems, which has enabled more widespread access to healthcare



of healthcare provision can be ensured over the long term, in view of an ageing population and the advances in medical technology that have so far been mostly known to increase healthcare costs. This also involves the question of how to adjust our care-provision structures, and retain our skills base as increasingly smaller cohorts enter the labour market, and medical and nursing needs will primarily be those of elderly persons.

However, it is at least equally as important to put an appropriate financing structure in place in order to prepare for these challenges. Therefore, we radically reformed the financing of our statutory health-insurance system just short of two years ago, and placed it on a new, future-proof foundation.

Against this background, I welcome the fact that the World Health Report 2010 put healthcare financing at the centre of political discussion.

Germany has a long tradition of supporting other countries in establishing socially equitable and sustainable healthcare systems, and the country also promotes international and multisectoral cooperation projects on health-systems financing. As a result, Germany drafted a resolution entitled *Sustainable Health Financing Structures and Universal Coverage*, which the World Health Assembly adopted in 2011. This resolution has become all the more relevant since, in the wake of the financial and economic crises of recent years,



financing systems on an equitable, transparent and sustainable course.

The task that falls to the diverse international actors is to jointly support the strategies of their partner countries via a harmonised dialogue between the various donors and the partner countries. The Providing for Health (P4H) initiative that includes France, Switzerland, Spain, the World Bank, WHO, the International Labour Organization and the African Development Bank, in addition to Germany, is an excellent example of this type of coordinated support. The open network of bilateral and multilateral donors was founded in Heiligendamm in 2007, and provides a platform for coordination, cooperation and dialogue.

We consider the P4H network to be a model for cross-sectoral cooperation among bilateral and multilateral institutions, both on the global and national level, because it focuses on the various mandates and strengths of the multilateral and bilateral organisations. So far, the P4H network has helped nearly 20 countries develop their own strategies to achieve universal coverage; among them Benin, Kenya, Senegal,

---

### **Reform efforts in the healthcare system must combine socially balanced, sustainable financing structures with the most efficient use of resources possible and a high quality of service**

---

Bangladesh, Indonesia, Nepal, Tanzania and Cambodia. In Uganda, the joint consultations led to the amendment of a bill, to the effect that the planned national health insurance will also be accessible to poorer population groups and the informal sector.

I am convinced that by facilitating the exchange of strategies and practical experience gained on the path towards universal coverage, this year's World Health Summit will also contribute to improving access to healthcare across the globe. Finally, my wish is for the outcome of the Summit to generate political and social support for our healthcare systems in these times of global economic and financial challenges. ■

many healthcare systems have come under major austerity pressure.

Precisely in situations like this, however, it is vital to be able to rely on a functioning healthcare system. After all, over and beyond the health sector's importance in terms of business and employment, high-quality healthcare also brings major macroeconomic benefits. This is because a healthcare system that provides good acute care and well-developed rehabilitative services is instrumental in maintaining people's fitness for work and, in turn, their productivity, and enables them to earn a living.

Consequently, the healthcare system can act as a key contributor to economic recovery. Well-functioning,

well-financed healthcare systems contribute to a healthy workforce and improve prosperity, thus boosting economic recovery.

#### **International support**

Even though developing and newly industrialised countries may yet have to take the decisive steps towards universal coverage themselves, the international community can offer important support. However, support in establishing and maintaining social security systems through international initiatives must go beyond mere additional funding. International cooperation, together with governments and civil society, must help set national health



# The new healthcare industry: Faster, better, cheaper



**Dr. David Levy,**  
Global Leader,  
Healthcare, PwC

The almost unanimous refrain these days in countries all over the world is that healthcare is 'in crisis'. Driven by the tsunami of ageing and chronic illness in developed economies and the skyrocketing demand in rising middle classes for more services accompanied by 'diseases of prosperity' (such as obesity and diabetes) in developing economies, almost no one feels that this industry is under control.

I will assert, however, that instead of being in the midst of uncontrolled chaos, we are really at the dawn of a new era of healthcare—one where our industry is finally joining the rest of the economy, rapidly transforming itself to serve all of its stakeholders faster, better, and cheaper. We are indeed in crisis—but in the truest meaning of the word. We are at a turning point, where the result will undoubtedly yield a generation of new productive longevity and global wealth.

There are three key trends that signal this critical turning point, and which are present in some way in almost all healthcare economies.

The first is a redressing of the balance of the public and private sectors in the financing and delivery of care. No health minister I have met in the past three years has opined that the public sector can go it alone anymore. Instead, the dialogue has shifted where the public sector is reaching out to the private sector for efficiencies and innovation, while preserving and indeed enhancing its social obligations of access and quality. The private sector, in turn, has come to respect the value of the public sector setting a regulatory framework that creates an even playing field where the most agile and innovative will flourish.

Consider some of the new and innovative public-private partnerships that are emerging in a wide variety of jurisdictions, where transfer of assets to the private sector comes with expectations that go beyond the risk of building and operating infrastructure. In places like Alzira, Spain, this new exchange includes the guarantees of access and quality with simultaneous significant cost reduction. In places like Lesotho in Africa, these same types of arrangements have taken the country

from the global basement of maternal mortality to a functioning clinical care centre in fairly short order.

New kinds of public-private collaborations are emerging everywhere. In the U.S., enormous strides have occurred in health information technology, where instead of forcing technology solutions on stakeholders the strategy has been to create common platforms with minimum requirements, accompanied by short-term financial incentives and long-term financial penalties. As a result of this, drug e-prescribing has risen from less than ten per cent to over 50 per cent in just three years (2008-11).<sup>1</sup> Pharmaceutical companies are engaging with governments and insurers in new dialogues. The modern and more sophisticated conversations are no longer about price and volume, but fair exchange of value for patient compliance, chronic disease management and cost reduction for acute care.

## Major developments

The second major global change occurring in the healthcare sector is industrialisation. The industry is finally joining the rest of the economy in addressing waste and poor quality. Healthcare has traditionally grown as a highly fragmented industry with a disconnected and poorly understood

value chain. This has perpetuated for a variety of reasons, not the least of which are the high prices garnered by stakeholders who are resistant to change. However, just like the rest of the economy over the last 30 years, the healthcare industry is finally wiring up. The natural consequences in this new connected healthcare industry are emerging business opportunities that eliminate excess cost and improve quality.

Most other industries have spent the last few decades learning to do things more efficiently at enterprise levels; these days, however, they are additionally being transformed by the disruptive changes being wrought by personal technologies. Healthcare—late to the first game—is now undergoing a double whammy. Enterprise-wide IT systems that address both enterprise and clinical processes (electronic medical records) are becoming a basic necessity in leading delivery systems. At the same time, the empowerment of stakeholders through personal technologies is shaking up the traditional care paradigm between doctors and patients. From the garnering of new knowledge by patients and families to the self-management of chronic illness, and the demand for care anywhere, healthcare is transforming itself just like in other industries, where the solution is now migrating towards the patient, and not the reverse.

## Moving forward

How will this look in the future? One doesn't have to look much further than the banking industry, which was forced to change by consumers who wanted to manage their own money. There is little doubt that we will soon participate in managing our health with doctors and hospitals in the same fashion.

These changes are welcome. The burdens of caring for ageing individuals and chronic illness cannot be borne by old models. India and China will solve their populations' primary care needs not by training more generalist physicians, but by creating access to providers and care through tele-medicine and mobile health. The same can surely be said for developed economies: there are simply not enough people in the workforce to take care of ageing populations through current schemes. Make no mistake about it: emerging economies, where necessity is the mother of invention, are leading the way in these care model transformations. A recent mHealth global survey of doctors, patients, and payers confirmed that in

developing countries such as India, China and Brazil, consumers and clinicians are more engaged in mobile technologies than in developed economies.<sup>2</sup>

The third major evolution in healthcare is its transformation to a precision-based industry. At the very heart of this change is our emerging understanding that the human body is extremely limited in expressing symptoms. What we formerly understood as symptomatic of one disease now applies to many. Behind this new approach is the collapsing cost of gene sequencing and rapid advances in molecular diagnostics, which has helped us understand the precise nature of a growing number of cancers and other illnesses. By understanding precisely what kind of breast cancer a woman suffers from at the genetic level we can not only relieve her from being treated by a drug that has no effect, but target her type of breast cancer more effectively.

## Lower costs

When industries become more precise due to the advancement of science and technology, there is also a tendency towards lower cost. Healthcare is no different. For example, with the discovery of penicillin for syphilis and other infectious diseases, the cost of identification and treatment dropped dramatically, and the site of care migrated to the low cost outpatient setting by a generalist, not a specialist. Consider that in the mid-1980s, HIV (then Acquired Immunodeficiency Syndrome (AIDS)) was extremely complex to diagnose and treat. With today's precise diagnostic technologies and treatments, HIV is no longer the domain of the sub-specialist but the generalist at a fraction of the total cost. Many of these generalists are not even physicians, but nurses and ancillary care providers.

While human genomics is the driving force behind transforming healthcare towards precision and ultimately mass customisation, its effects are also

enlarging the traditional healthcare ecosystem. In the past, the healthcare system was uniquely focused on patients with symptoms—those sufficiently advanced to require active intervention.

Today, and in the future, we will understand as early as conception what disease vulnerabilities exist in each of us, as well as recognise the smallest physiologic changes before active symptoms begin. Thus, wellness and early intervention in chronic illness will become a legitimate focus of healthcare, with all sorts of new industries participating. This is already happening, as food and beverage, beauty and lifestyle companies are beginning to target this new part of the healthcare value chain. They are investing billions into customised products and services for this growing market.

With the crisis in healthcare comes enormous benefit. The optimisation of financing and delivery through new public-private models, and the industrialisation and personalisation of the sector through the inevitable advance of technology and science, will ultimately resolve the 'iron triangle' dilemma of cost, quality and access. Cures will be common, and the focus of the industry will turn to productive longevity. Staying healthy and productive as a contribution to the wealth of nations will replace our present day obsession of measuring the industry's worth simply on the debit side of a national balance sheet.

We should all welcome this new era of healthcare, and leaders should do everything possible to hasten its arrival. Barriers to progress—in policy, financing, delivery, choice, and control—need to be urgently addressed.

The sooner, the better—for all of us.

## Footnotes

1. "The National Progress Report on E-Prescribing and Interoperable Health Care: Year 2011", Surescripts, 2011, p.4.
2. Emerging mHealth: Paths for growth, Economist Intelligence Unit, June 2012.

Contact details for further information:

**David Levy, MD**  
**Global Leader, Healthcare, PwC**  
 T: +1 646 471 1070  
 E: [david.l.levy@us.pwc.com](mailto:david.l.levy@us.pwc.com)



© 2012 PricewaterhouseCoopers LLP, a Delaware limited liability partnership. All rights reserved.

PwC refers to the US member firm, and may sometimes refer to the PwC network. Each member firm is a separate legal entity. Please see [www.pwc.com/structure](http://www.pwc.com/structure) for further details.

This content is for general information purposes only, and should not be used as a substitute for consultation with professional advisors.

# Health 2020: the new European policy framework and strategy for health

**As Europe takes new steps to address global health inequities, the promotion of good health and strong, continuing investment in research and sustainable healthcare systems has never been more important**

By Zsuzsanna Jakab, WHO Regional Director for Europe

**T**he theme of this year's World Health Summit is "Research for Health and Sustainable Development". Innovations and developments have given us extraordinary new opportunities to improve health and healthcare, but new risks to global health have emerged, and the present economic downturn has challenged capacity to continue to strengthen both health and health systems.

The new European health policy framework, Health 2020, recently adopted by the WHO Regional Committee for Europe, is designed to help policymakers face these challenges. It aims to "significantly improve the health and well-being of populations, reduce health inequalities, strengthen public health and ensure people-centred health systems that are universal, equitable, sustainable and of high quality". Health 2020 is a value-informed and evidence-based health-policy framework offering proven policy and practice interventions. It gives policymakers a wealth of new evidence, generating legitimacy for practical action at all levels of society. The policy framework is relevant for low-, middle- and high-income countries.

Health 2020 recommends whole-of-society and whole-of-government approaches to health. Health is a key unique resource for human and societal development, and while health has undoubtedly improved overall, health inequities remain substantial across the WHO European Region and are

worsening in many instances. These inequities are substantially socially determined, arising from differences in life circumstances and inequities in opportunities to lead a full, healthy life.

In order to address these issues, I commissioned the European review of social determinants of health and the health divide, led by Michael Marmot. The findings show clearly that the European Region contains countries with some of the best health and narrowest health inequities globally. These outcomes relate to a long period of improvement in the lives that people lead, through socially cohesive and increasingly affluent societies, developed welfare states, high-quality education and health services.

## **A gradient in health exists across Europe, with significant gaps between countries and members of different social groups**

However, not all countries in the European Region have shared fully in these processes of social, economic and health development. A gradient in health exists across the Region, with significant gaps between countries and between men and women of different social groups. Addressing these health inequities requires dealing with their root causes: "the conditions in which people are born, grow, live, work and

age and the inequities in power, money and resources that are responsible".

Such inequities directly challenge solidarity and social cohesion, and responding requires broadly rethinking current mechanisms, processes, relationships and institutional arrangements across society and all sectors. Local and national health policymakers often lack the authority and instruments to lead a coherent, integrated approach to these key challenges, and current structures and processes are not adequate in this new environment.

## **Promotion and prevention**

Health promotion and disease prevention needs investment and strengthening. Across the Region, significant opportunities are being missed that could improve health, reduce health inequities and aid economic recovery. Immediate, high-priority and evidence-informed actions include ensuring universal healthcare coverage, focusing on socially determined types of behaviour – such as smoking, diet and alcohol – that cause many of the health inequities, and focusing on public health, which will be vital to fully implementing Health 2020.

Prevention works. Evidence from Poland shows that changes in diet and smoking reduce chronic heart disease and premature mortality rates. The most cost-effective tobacco control policy is raising taxes. A price increase of 10 per cent could result in 0.6 million to 1.8 million fewer premature deaths in countries in eastern Europe and central Asia. The tangible benefits of increasing taxes on alcohol in England included a €183 million reduction in health and welfare costs, and €405 million less in labour and productivity losses, and implementation cost less than €0.10 per person (€3.7 million total).

Many national constitutions make local governments and regions



The aims of Health 2020 include ensuring universal healthcare coverage and helping people to improve their health through lifestyle choices

responsible for public health and health-service delivery. In many countries, they have been innovators for health. Many mayors and city parliaments have taken the health agenda forward through 'health in all policies' approaches and new public health acts. Good health requires a combination of governance approaches – hierarchical, dispersed and participatory – to benefit health and well-being for everyone. Such governance anticipates change, fosters innovation and is oriented towards investing in health promotion and disease prevention.

Health 2020 seeks to centre public health in WHO's mission via two strategic objectives: 1) improving health for all and reducing health inequalities; and 2) improving leadership and governance for health.

A European Action Plan for Strengthening Public Health Capacities and Services has been commissioned, which European Member States recently endorsed. The Action Plan, which I regard as essential for implementing Health 2020, shows that the capacity of public health services and systems across the Region varies markedly, and that strengthening this capacity – particularly in countries with weak services – is a priority.

Realising the ambitions of Health 2020 requires fresh skills and expertise

in a variety of complex areas, and leadership and capacity are vital to implement solutions that can make a difference. It is essential to effectively integrate health and health-equity goals into broader country development objectives, and this integration should be reinforced through structural mechanisms, such as financing frameworks and legal and regulatory measures. We must also support intersectoral action and whole-of-government approaches – nationally and locally – to ensure coherence across policies, programmes and delivery systems in order to address commonly agreed equity objectives.

#### **A whole-of-society approach**

Health 2020 is a dynamic document that will be continually updated with new links to implementation tools. Although science is at the core of Health 2020, addressing these questions is also a political endeavour. For this reason, as well as focusing on whole-of-society and whole-of-government approaches to improving health, Health 2020 emphasises engaging professional expertise, civil society and populations. Efforts to promote health and tackle health inequities require strong health ministries, modern public health infrastructure and high-performing, equity-oriented health systems.

Health 2020's policy content is supported by several studies providing new evidence, such as the review of social determinants of health and the health divide, and a study on governance for health in the 21st century that focuses on ways of conducting intersectoral governance for health in the WHO European Region. Health 2020 has been systematically informed by experience, with a focus on solutions that make a difference in addressing public health challenges and create opportunities for health development in the European Region.

We are confident that Health 2020 provides a new opportunity for European countries to work cooperatively in developing and sharing promising practices on solution-focused expertise. This will help make real progress on tackling the social determinants that underpin health inequities. We hope to see the creation of a new movement for health and well-being across Europe, informed by both the vision and values of Health 2020 and its evidence-informed analysis and recommendations. Health 2020 offers us all a collaborative and participatory way forward. ■

*The Health 2020 documentation and relevant studies are available at [www.euro.who.int/en/home](http://www.euro.who.int/en/home)*

# Public-private partnerships for neglected diseases

**Neglected diseases typically affect those populations with low incomes and poor access to adequate healthcare and medical facilities. Public-private partnerships have been established in order to further research and development into tackling these diseases**

By Bernard Pécoul, MD, MPH, Executive Director,  
Drugs for Neglected Diseases initiative

**J**ust over a decade ago, poverty-related neglected diseases, affecting over a billion people in developing countries, suffered both market and policy failure. Neglected diseases mean neglected populations, and these populations commonly lack the purchasing power to buy medicines, and the political voice required to influence policies, even though they represent huge numbers worldwide. These diseases not only include those defined as 'neglected tropical diseases' – a group of 17 infectious diseases listed by the World Health Organization (WHO) – but also entail a larger group of diseases, including paediatric HIV, malaria, tuberculosis, and diarrheal diseases.

What these diseases all have in common is that they disproportionately affect the poor and lack adequate health tools, such as drugs, diagnostics, and vaccines. Adequate health tools are those that are accessible, affordable, and adapted to the needs of their intended patients. This needs-driven approach is where the story begins, and is why the Drugs for Neglected Diseases initiative (DNDi) was created.

Just a little over 10 years ago, research and development (R&D) for neglected diseases was virtually non-existent. As recently as 2006, only 1.3 per cent of new drugs approved were specifically for neglected diseases, even though these account for over 11 per cent of the global

disease burden. This 'fatal imbalance' was part of what led to new approaches and alternative models, including the not-for-profit product development partnerships (PDPs), such as DNDi.

These public-private partnerships – 16 of which exist today – were created to fill R&D gaps, and began to mobilise resources and expertise from public and private actors. To date, nearly 20 products have come out of the R&D pipeline to treat patients with malaria, sleeping sickness, cholera,

**The scientific breakthroughs that are needed to fundamentally change the course of certain neglected diseases will take more time, effort, coordination and sustainable financing**

Japanese encephalitis, meningitis, visceral leishmaniasis, Chagas disease, and tuberculosis, and there are more than 150 products in clinical and preclinical development.

## PDPs today – gaps and progress

PDPs have, over the last decade, fostered R&D and access to new health tools for neglected diseases, and have begun to fill three major gaps: the lack of preclinical research, the difficulties in

getting validated drug candidates into clinical development, and the lack of adequate patient access to appropriate health tools. But while PDPs do currently manage over 40 per cent of the global grant funding for R&D for neglected diseases, the products delivered thus far are mainly incremental improvements.

The scientific breakthroughs that are needed to fundamentally change the course of certain neglected diseases will take more time, effort, coordination, and sustainable financing – including new incentives. Appropriate innovations are vital for the control and elimination of neglected diseases.

## A PDP model under the loop

It is important to understand how the PDP model works, in order to gauge what can be learned from this relatively new form of partnership. To take the DNDi example, there are three fundamental drivers that make the model work: keeping patient needs at the centre of each decision, boosting innovation through partnerships to save time and money, and reinforcing research capacities in disease-endemic countries.

The first driver entails starting and finishing with patient needs, rather than market profits, as the guiding principle. By working with networks of partners in endemic countries – from patient representatives, clinicians and researchers, to control programmes, ministries of health, and regulatory agencies – the target for each end-product is carefully profiled at the outset. These aims are designed to meet the needs of patients who are often in remote areas that are without access to hospital facilities. This fundamentally determines the ensuing drug development process that DNDi undertakes.

The second fundamental driver is that DNDi does not have laboratories of its own. It has the agility to capitalise upon existing public- and private-sector



Public-private partnerships should aim to increase the medical research capacity of endemic countries

photo: DNDi

expertise and resources, including biotechnology and pharmaceutical industries, universities, public research institutions, non-governmental organisations, and ministries of health in disease-endemic countries. DNDi has seen a steady increase in pharmaceutical, biotechnology, and academic partners that have joined the initiative on terms that secure access to compound libraries, data, knowledge, and expertise. This jumpstarts the costly and time-consuming R&D process for new drugs.

The third fundamental driver is strengthening the medical research capacity in endemic countries. Research for neglected diseases requires expertise in conducting clinical trials in extremely challenging settings, and requires the training of researchers. It also necessitates building or improving laboratory facilities, sharing scientific knowledge, and transferring technology with a view to sustainability.

DNDi has set up or supported three clinical research platforms for the most neglected diseases – sleeping

sickness, leishmaniasis, and Chagas disease – that respond to these criteria. These networks of excellence build upon existing capacities, and expand with new partners as necessary.

### **The way forward to sustainable change**

There is reason to be optimistic for neglected disease R&D. New actors, including PDPs, the public and private sectors, and new and existing donors are engaging in research and development, and there is an overall increase in momentum for neglected disease R&D. However, there are several risks to bear in mind.

As noted in a DNDi policy brief, “neglected disease R&D still relies too heavily on few Organization for Economic Cooperation and Development (OECD) donors, certain philanthropic actors, and some company corporate social responsibility policies. Financing is guided by individual donors’ priorities, with no overarching identification of needs and objectives”. Another risk is that while progress has been made, there is clearly a

systemic problem underlying what must still be considered a lack of sufficient R&D for neglected diseases.

A global framework for R&D for neglected diseases is currently under discussion among WHO member states. This is based on the recommendations of the Consultative Expert Working Group (CEWG) on Research and Development: Financing and Coordination. The proposal for an R&D convention is currently in the hands of decision-makers around the world, and comprises an integral approach to strengthening global financing and coordination of R&D, in order to address the unmet health needs of developing countries.

If the efforts and investments made in, and by, PDPs are to have a genuine impact, public leadership is critically needed to orient R&D priorities, provide sustainable financing, and coordinate various R&D initiatives. These initiatives should ensure innovation for, and access to, desperately needed health tools in developing countries. ■

# Scientists in the 21st century

**Modern scientists should move away from a single-discipline approach, by linking experimental and social sciences and embracing a system of omnidisciplinary thought between fields, with the vision of uniting strands of information for further scientific advances and discovery**

By Jean-François Girard, President, PRES Paris Sorbonne Cité

**T**he philosopher Karl Popper once said: “We live in an age where humanity, through science, has solved most problems.”

The 20th century was one of the great periods of scientific discovery that changed our perception of the world and called previous knowledge into question. In 1959, for example, philosopher of science Norwood Russell Hanson asked himself whether “Tycho and Kepler had seen the same patterns of discovery”; that is, whether the introduction of the Copernican system – which positioned the sun near the centre of the universe, with the planets rotating around it – had created differences so great that the worlds observed by the two astronomers were diverging. The question has changed since, and we are always right to question the findings of scholars and scientists, which will differ over the ages.

It is not easy to be a scientist today, as we follow a century marked as much by scientific accomplishments as by the transgressions of certain people in their practices. The invention and use of the atom bomb, in around 1945, is a disconcerting example of what science is capable of in its darkest application.

Conflicts between fields of study, and the factions within them, have created a scientific world that is divided and varied. Progress has been accompanied by growing specialisation and a certain amount of isolation between fields. L’Observatoire des Sciences et des Techniques (OST), the French observatory of science and technology, even proposes a calculation of ‘the specialisation

index’ of the players in the sciences, based on measures of isolation between the different disciplines.

It appears that the idea of being omnidisciplinary – a master of all things – should be of interest to 21st century scientists, but a realistic vision needs to take the real world into account. The term *homo sociologicus* was introduced by political scientist Ralf Dahrendorf in 1958, to parody the image of human nature given in some sociological models that attempt to limit the social forces that determine taste and values. Above all else, scientists must work with their peers, and their work has no real impact unless it is connected to the world of business and private enterprise, which are engines of change and progress.

## A multidisciplinary clean-up

Popper said: “Refuse the fragmentation of knowledge, think of everything, do not be drowned by the rise of information since you have the chance to live in the late 20th century.”

This statement reflects the multidisciplinary clean-up that is necessary for all scientific reasoning aimed at a certain type of sufficiency. It reminds us that at the time of specialisation, the avant-garde scientist should aim instead for omnidisciplinarity.

Scientists in the 20th century tended to take a single-discipline approach to study, which yielded spectacular progress. Fields became increasingly independent and instead of evolving at the same time, they developed at varied speeds. The recent discovery of Higgs boson,



the God Particle, at the European Organisation for Nuclear Research (CERN), demonstrated just what specialisation is capable of. The huge expenditure involved also reminds us of the current imbalance that exists between science and the narrow focus of research investments.

The recent discovery of the Higgs boson, the 'God particle', has demonstrated the enormous possibilities of specialisation



The belief in the power of an individual discipline must lessen progressively for the benefit of 'ways of thinking'; not in the sense that all sciences are the same, but rather in an attempt to instigate a dialogue between the different fields of knowledge and to propose a vision that unites them all.

If this sounds like systemic thought, as evoked by philosophers such as Karl Ludwig von Bertalanffy and Norbert Wiener from 1940-50, and later taken up by others including Edgar Morin in France during the 1970s, the proposed idea fits a view of science based on the observation

and experience of reality, rather than theory. The course of knowledge must move in parallel with advances in each field, without impeding their flow.

Some philosophers have tried to connect individual fields of science. Henri Laborit, for example, connected behavioural science with neurobiology in an attempt to understand the biological basis of conduct. Attempts have been made to link the social sciences in MAUSS magazine, founded in 1981 by French academics including Alain Caillé. These attempts are multidisciplinary and often insufficient because they are not perceived as genuine attempts to be omnidisciplinary.

Separations between disciplines continue to be the unfortunate legacy of eugenics – controlled breeding –

**Conflicts between fields of study, and the factions within them, have created a scientific world that is divided and varied, and progress has been accompanied by growing specialisation**

which occurred between the two world wars. Linking experimental and social sciences is an idea that receives little support in the scientific community. Yet it is only by making an effective connection between these sciences in a broad, theoretical field that scientists can become omnidisciplinary. Understanding anthropology in mathematics, mathematics in sociology, and history with physics provides many promising and exciting ideas. Within this system of omnidisciplinary thought, we can all reach our full potential, individually and together.

#### Science in society

"All wealth comes from man," wrote the economist Jean Bodin. The considerations above cannot make sense if we ignore the subject of the role that science plays in society. Once known as

The relationship between science and business is characterised by mutual rights and duties



‘wisdom’, today science has attained a level of ‘utility’ in the economic sense that is unprecedented. Possession of scientific knowledge provides a form of legitimate authority, albeit indirectly, but not less meaningful.

There is a pairing of science and business, characterised by mutual rights and duties. The scientist is, above all, a discoverer of knowledge, which is limitless and serves as a means of understanding the world.

All knowledge is nevertheless useable by men who form businesses

and are meant to put it to effective use. While the path from ignorance to knowledge can appear easy or accidental, it actually involves thorough work. In our century, science will be done by “concrete achievements, which first create a de facto solidarity”, to paraphrase Robert Schuman, one of the founders of modern Europe.

Computer science illustrates how science and society are intrinsically linked. Many collaborators allow, for example, up to 200,000 people to be monitored at the same time, which

was unthinkable a few years ago. This is a major change in the management of knowledge, which is helping to bring science and society together. The social sciences, a pure product of the modern world, connect these two components. The humanities are nonetheless a great catalyst for the hard sciences, and a strong support for the link between scientific knowledge and social structures.

According to professor of political sciences Loïc Blondiaux, the study of social structures in which people evolve



opens up new fields and approaches. Statistical sciences helped to bring about the mathematical analysis of social issues, including the recent misuse of data without any real scientific basis in opinion polls and marketing.

### Improving environments

Reintroducing science into society implies the need to first bring society into science. Social sciences, especially those interested in mankind – sociology, anthropology and history – allow an understanding of the context of the

use of knowledge and how science unfolds within societies. Often criticised for their lack of practical application, the humanities are the only disciplines able to complement scientific knowledge effectively by providing a clear vision of the world. This sense of perspective is vital.

In economics, *homo economicus* is the idea of people being rational and self-interested, focused on economic profit. They are in contrast to *homo reciprocans*, who are motivated by the desire to be cooperative and improve their environment.

For scientists and business to become more sensitive of one another, they need to come together. In the context of international difference and competition, scientists must do this in an effort to benefit economic knowledge. If this development is at the heart of concerns that will preoccupy the next generation, we must be wary of the realities that cover the idea of 'development'. In France, this refers to the precise realities that invite us to look at recent developments, particularly the creation of societies for accelerated technology transfer (SATT), and the reconciliation of the worlds of research and the private sector, which began in 1999.

### Characterising scientific developments

This approach does not reflect the interface between education and professions. For example, how should we characterise the scientific developments brought about by an ambassador or an artist? As President of the Sorbonne in Paris, I see situations where scientific knowledge shapes the future generations brilliantly, but without any effective tool of measuring it.

Scientific development can therefore be seen in many areas other than those under the common definition, which measures mainly the number of patents sold to businesses. Textbooks also illustrate how intangible networks, from an economic point of view, can speak for the capitalisation of knowledge. Blessed is he who can accurately assess the total gain provided by the publication of a particular book.

Scientists in the 21st century must keep in mind that knowledge is meaningful and valuable, intrinsically and permanently.

Companies themselves will have to deal with mixed profiles and scattered knowledge, while depending on a suitable approach, based on the strong principles of a connection between knowledge and practical applications.

Twenty-first century scientists must work against a backdrop of tensions. There are lines dividing scientists and this is not a new invention. We find traces of this specialisation throughout history, although it is sometimes sped up, allowing for questions to arise regarding the relationship between society and business.

The past 30 years have been marked by significant scientific progress. Huge changes have emerged in many diverse fields: medical science; statistics; opinion measurement; theoretical and

### Scientists in the 21st century must keep in mind that knowledge is both meaningful and valuable, intrinsically and permanently

experimental physics; photography; mathematics, including mathematical modelling; and economics – all areas for which it was impossible to predict 30 years ago what the role of science would be in 2012.

Does this mean it is impossible to express relevant thoughts on the role of science in our century? One would be tempted to say yes – it is a work doomed to failure by its short-lived, unsustainable nature. It seems important to continue to reflect on these issues. The volatile and unstable side of such thoughts must not live down the power of philosophical thought that supports, guides and struggles with – and sometimes against – progress. If the progress of society is unpredictable, so is human nature.

Individual finds by a single researcher are becoming increasingly rare, while group discoveries are becoming more common. Wisdom, reflection and philosophy are the last defences against the passage of time, used by some scholars, such as Hartmut Rosa, to describe the modern era. In a world that is moving fast, it is always useful to press 'stop' for a moment. ■



## Our responsibility as a world citizen is not to follow the crowd, but lead by example.

**At Astellas, we are committed to improving the health of people around the world by providing innovative and reliable pharmaceutical products. Guided by this philosophy, we use our core strengths as a research-oriented pharmaceutical company to seek new ways of bringing better medical care to the global community:**

- Global leadership in developing transformative new treatments in the fields of transplantation and urology
- A global sales and marketing network
- A robust pipeline with many “first-in-class” or “best-in-class” compounds that hold the promise of improving patient care in numerous therapeutic areas, including oncology and infectious disease
- Strong drug discovery technologies combining small molecule synthesis, fermentation, antibodies, and proteins

With these core strengths, Astellas is committed to targeting health issues that affect the international community, including child mortality, maternal health, and communicable and noncommunicable diseases. Astellas is working to change tomorrow by rising to the challenge of creating drugs that are truly needed, giving courage and hope to patients afflicted by illness worldwide.

**Changing tomorrow starts with helping people today.**

**Visit [www.astellas.com/worldwide.html](http://www.astellas.com/worldwide.html)  
to learn more about our global reach.**

# Higher education and a needs-based pharmacy workforce

Using available resources, pharmacists can be involved in health promotion and public health messages and programmes



**The education of pharmacists must be based on national and local health needs in order to create and sustain patient-oriented services and expertise in medicines that are tailored to the individual needs of communities**

**By** Michel Buchmann, President, Henri R Manasse Jr, Education Initiatives Steering Committee Chair; and Diane Gal, Project Manager, International Pharmaceutical Federation

**T**he ‘Cradle to Grave’ exhibition at the British Museum is a visual display that stirs our reflections on the number of medicines taken during a British person’s lifetime. With the current epidemiological transition from acute infections towards greater chronic conditions worldwide, a similar level of medicine intake for the global population could equate to 98 trillion doses. To manage and reduce this substantial growth, the core expertise of pharmacists – as experts in medicines – should be complemented by their close relationships with patients, health professionals and the community.

Using the available resources and opportunities, pharmacists can be

involved in health promotion and public health messages and programmes. Innovation in preventing, treating and caring for the growing burden of non-communicable diseases (NCDs) is provided by pharmacists and professional pharmacy bodies. Numerous examples exist of the benefits of services offered by pharmacists, as well as of the approaches taken to support and care for patients with NCDs, such as systematic reviews that demonstrate the economic and quality impact of such care by pharmacists.

Ensuring the responsible use of medicines has been the focus of the 2012 centennial celebrations and recent annual congress of the International Pharmaceutical Federation (FIP), the

global organisation of pharmacists and pharmaceutical scientists.

In conjunction with this event, a Ministerial Summit was organised by the Netherlands’ minister of health, where ‘The Added Value of Responsible Medicines Use’ was discussed, and solutions were presented during stakeholder round tables on the topics of getting the right medicine to the right patient, adherence, the transformative power of shared information within health systems, and innovation.

## Patient-oriented services

FIP is continuously engaged with a multitude of stakeholders to achieve its mission to “improve global health by advancing pharmacy practice and science to enable better discovery, development, and access to and safe use of appropriate, cost-effective, quality medicines worldwide”, alongside one of the three objectives outlined in the 2020 FIP Strategic Plan that focus specifically on education.

The current transition in the profession of pharmacy towards the provision of integrated, patient-oriented services presents opportunities to utilise human resources that are currently available. It also presents challenges to ensure sufficient and capable pharmaceutical human resources in every country around the world. A number of countries worldwide still face a human-resources-for-health crisis, including a lack of pharmaceutical expertise to be able to implement quality pharmaceutical management and access to medicines, as well as appropriate pharmaceutical services to their populations.

The 2012 FIP Global Pharmacy Workforce Report provides an analysis of pharmacy workforce data collected from 90 countries, as well as nine country case studies examining the local human resources challenges faced, and the strategies implemented to tackle

them. The report highlights that the pharmacy workforce per capita varies considerably between countries and regions, and generally correlates with country-level economic development indicators. Countries and territories with lower economic indicators, such as those in Africa, tend to have relatively fewer pharmacists and pharmacy support workers. This has implications for observed inequalities in access to medicines and expertise in medicine.

### A workforce relevant to local needs

In addition, some countries and territories have many times more pharmacies than pharmacists, which may imply a renewed need for the supervision of medicines and their use. There is also wide variation in the areas in which pharmacists practice. On average, the majority of pharmacists were found to work in community and hospital pharmacy environments.

However, in contrast, several countries continue to have a higher proportion of pharmacists working in industry. Since national healthcare demands are diverse and complex, often varying widely within and between regions, a 'one-size-fits-all' workforce does not offer the authenticity needed for full engagement and sustainability at the local level. A needs-based strategy allows local systems to best assess the needs of its community and then develop or adapt the supporting educational system to produce a workforce relevant to these needs.

The joint FIP/World Health Organization (WHO) guidelines on Good Pharmacy Practice (GPP): Standards for Quality of Pharmacy Services, strongly reinforces the needs-based approach, where countries are called upon to set national legal, workforce and economic frameworks. These should outline and facilitate the implementation of quality service provision by pharmacists to improve access to healthcare, health promotion and the use of medicines on behalf of the patients they serve.

Education is a fundamental building block, necessary for the development of an appropriate workforce. As with other organisations, higher education is also being called upon to be socially accountable and ensure that their work benefits society. Education, and more specifically the curricula, should prepare pharmacists for the wide range

of environments in the ever-changing health systems in which they will work. However, educational institutions and leaders in pharmacy education may not be moving quickly enough, and may be resisting change and relying on the traditional academic focus on scientific fields of expertise rather than on a scientifically and clinically integrated curricula. This is directed towards developing professional competencies and implementing outcomes-based education.

The philosophy underlying FIP's work in pharmacy education follows a needs-based concept. Education must be based on national and local health needs. The locally determined needs and services must be identified, and then used to facilitate comprehensive education development and achievement of competencies, which are required to meet local services and needs. To put this concept into practice, FIP has partnered with WHO and the United Nations Education, Social and Cultural Organization (UNESCO) to

Pharmacy Education Practice and Quality Assurance in Pharmacy Education, as well as the Global Framework for Quality Assurance of Pharmacy Education, and a draft Global Competency Framework.

### Collaborations and developments

FIP Education Initiatives will continue to develop its activities in this field, with the FIP-WHO Global Survey of Pharmacy Schools being published in 2013, providing a comprehensive report on the global state of pharmacy education. Further collaborations and developments will inform and lead towards the implementation of a first Global Pharmacy Education Conference. FIP will continue to serve as the platform for global dialogue on pharmacy education, and continue to develop resources and opportunities for stakeholders. This will inform stakeholders, and work to transform pharmacy education towards providing a needs-based pharmacy workforce. In that regard, FIP has formed an Academic

## Investment in transforming and scaling up professional education is crucial, since appropriate education and training provides the foundation for building a capable healthcare workforce

implement an ambitious action plan for the global development of pharmacy education. The global pharmacy community came to a consensus on the most important domains to tackle in this action plan, including competency, quality assurance, academic and institutional capacity building, the pharmacy support workforce, and leadership.

This collaboration has helped to further global advocacy, as well as to provide evidence-based guidance, policy, tools and resources for educational curricula development to meet both present and future workforce needs and societal expectations. The tools developed enable global action through allowing local adaptation and application to ensure that specific country and regional needs are met.

Existing statements and tools can be used by countries and institutions as they seek to transform pharmacy education. FIP has developed and adopted policy statements on Good

Institutional Membership (AIM) programme to give academic pharmacy leaders opportunities for leadership development and strategic planning.

Investment in transforming and scaling up professional education is crucial, since appropriate education and training provides the foundation for building a capable healthcare workforce. The capacity to provide pharmaceutical services in each country is dependent upon having an assured, competent workforce, and having an integrated academic workforce to train sufficient numbers of new pharmacists and other support staff at both foundation and advanced levels. Ongoing effort is needed to ensure that capacity-building of skilled medicines expertise meets the pharmaceutical health needs of populations. With the advancing numbers and complexities of medicines, national planning for a capable pharmacy workforce needs to be a critical element of national health workforce planning. ■

# Balancing public and private roles in the education of health professionals

**Health and education systems are today faced with fresh challenges, as growing global interdependence is threatening each sector's stability. The education of health professionals requires suitable reforms to address the evolving needs of patients and global populations**

**By** Julio Frenk, Dean, Harvard School of Public Health; Lincoln C Chen, President, China Medical Board of Cambridge; and Catherine Michaud, Research Coordinator, Health Professionals 21 Follow-up

**H**ealth-professional education is essential in strengthening health systems. In a changing and interdependent global context, both education and health systems are facing new and complex challenges.

In all countries, the education of health professionals is confronting major challenges in meeting the needs of patients and populations. Neither in richer nor poorer countries is professional education generating sufficient value for money.

Glaring gaps and striking inequities in health have been exposed within and among countries. For those left behind, the dramatic advances are simply an indictment of our collective failure to ensure equitable sharing of good health in a polarised world. The health security of all is being challenged by new infectious, environmental and behavioural threats, superimposed upon epidemiologic and demographic transitions, and costly demands are placed on health workers.

Growing global interdependence in health has intensified these challenges by accelerating the flow of diseases, technology, finance, and trade in health-related services. The increasingly regular international migration of professionals and patients is a further contributing factor, and poor and rich countries alike suffer from workforce

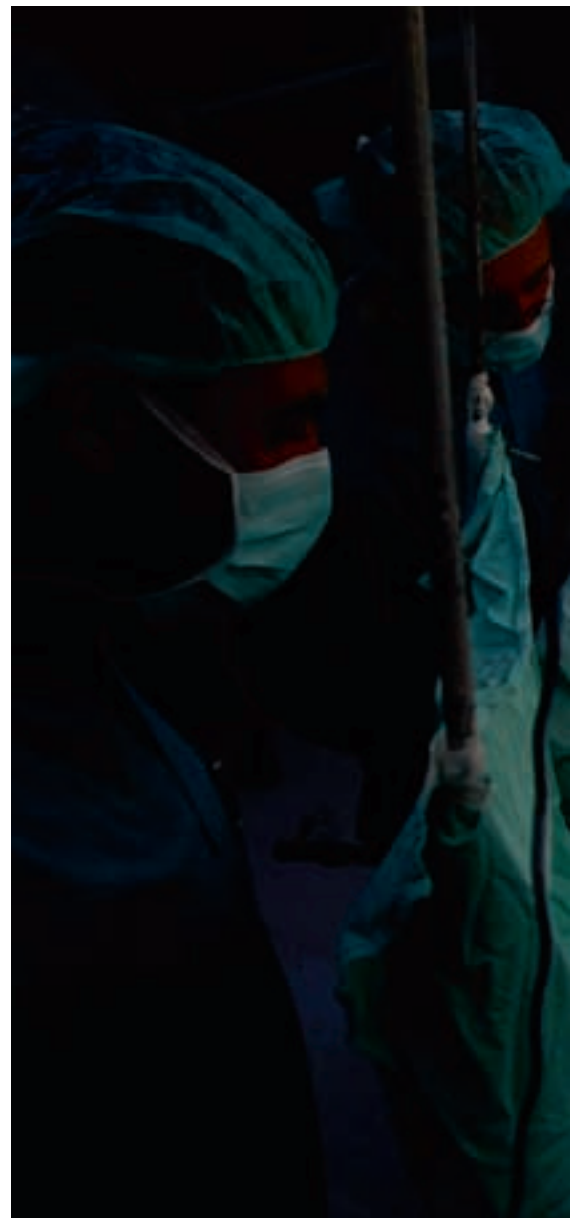
shortages, skill-mix imbalances, and maldistribution of professionals.

These are the reasons why the global Commission on the Education of Health Professionals for the 21st Century embraced the mission of advancing health, both individual- and population-based, to prepare the next generation for addressing frontier health challenges of the current century. The Commission's report adopted a systems approach as the path to understanding and transforming the interactions between health and educational institutions.

## Investment in medical education

The Commission undertook the first ever global study of health-professional education – focusing on medicine, nursing, midwifery and public health, while recognising the importance of pharmacy, dentistry and other disciplines – and moving beyond silos to expand the space for professional collaboration. Key findings underscored a major mismatch between the density of medical schools and the burden of disease. Whereas the world population is weighted towards Asia, the global burden of disease, as measured in disability-adjusted life years (DALYs), is heavily concentrated in Africa.

Medical-school numbers and distribution do not correspond well to either population size or disease burden. There are large numbers of schools in



India, Brazil, North Africa and the Middle East. Total yearly expenditures in health-professional education is estimated at around \$100 billion for medicine, nursing, public health and allied professions. This represents less than two per cent of the \$5.5 trillion spent globally on health. This is an insufficient amount given the crucial

A focus on education of health professionals is crucial, as funding in this area will enhance the effectiveness of the healthcare sector



role played by health professionals in determining the effectiveness and efficiency of those expenditures.

Based on research and deliberations, the Commission proposed two guiding notions to anchor its vision: transformative learning and interdependence in professional education (see table overleaf). The Commission views transformative

learning as the highest of three successive levels, moving from informative to formative to transformative learning. Informative learning involves acquiring knowledge and skills; its purpose is to produce experts. Formative learning concerns socialising students around values, in order to produce professionals.

Transformative learning involves developing leadership attributes to produce enlightened change agents. Effective education builds each level on the previous one. To realise this vision, the commission report proposed 'instructional and institutional reforms'.

Curricular reforms should evolve to a competency-driven approach,

## Transformative learning involves three fundamental shifts:

- Transformation through acquisition of information and knowledge in the learning process to develop competent experts;
- Transformation of education in formative learning to develop professional values of responsibility, accountability, and service orientation; and
- Transformation of learners as change agents and professional leaders to impact on social realities.

## Interdependence in professional education underscores interactions that harmonise six key linkages:

- Between local and global systems;
- Between the health and education systems;
- Between health professionals and their patients and populations;
- Across categories of the health workforce, leading to intra-, inter- and trans-professional collaboration;
- Between context and competencies, so that the latter respond to the former; and
- Between teachers and learners, so that education becomes a proactive, mutually enriching process.

emphasising local adaptation with global awareness, inter-professional and team-based work, harnessing the power of information technology (IT), and developing professional attitudes, values and behaviour. Institutional reforms should include joint planning by education and health authorities, extending learning sites into communities and homes, as well as the development of collaborative networks and consortia.

## Global learning systems

Every country should increase investment in professional education, and development-assistance partners should increase donor financing. However, it is not enough to increase the level of resources available for professional education. Also, financial flows to educational institutions should be reoriented to assure maximum value for money, creating incentives for improved performance.

Accreditation and credential systems should be aligned to national health

goals, and global learning systems should be built to strengthen the knowledge base for steadily advancing professional education around the world.

## A vital role for the private sector

The private sector, both non-profit and commercial, can and should play a vital role in this reform process. The private sector often has the financial and managerial capacity to innovate through the development of public-private partnerships for reform of health professional education. Indeed, the broad engagement of leaders from all sectors will be crucial to energise instructional and institutional reforms. While health-professional education serves societal purposes, the private sector can be an important catalyst and leader in the reform process.

The private sector is obviously critically important for enhancing investments. Public financing is rarely sufficient. The private sector can be engaged across the full spectrum of professional education, although commercial investments are more likely to be forthcoming for those degrees that are linked to well-paying jobs – clinical medicine, for example. Attention should be paid to balanced educational investments, as community-based

of more and better educational institutions. The private sector is involved across the range of learning activities. For example, instruction is being transformed by IT innovations, simulation services, and new learning pedagogy that come mostly from private investments. Similarly, institutional networking recommended by the Commission mostly depends on private-sector provisioning of internet and other connectivity services. Opportunities for private-sector contributions, therefore, extend far beyond the establishment of private schools.

## Guiding solid action

The work of the Commission has opened up many questions that will require more detailed study, addressing the requirements of specific institutions and professions. It has also revealed promising avenues for innovation that will need to be explored in greater depth through experimentation and evaluation, including that carried out by the private sector. Enough information and insights have been generated to guide concrete action along the lines suggested by our recommendations.

Since the publication of the Lancet Commission Report, follow-up activities have revealed widespread interest

## As well as creating incentives for improved performance, accreditation and credential systems should be aligned to national health goals, and global learning systems should be built to strengthen the knowledge base for advancing professional education around the world

workers and certain other professional groups may not be similarly attractive to commercial investors. Here, public financing, non-profit-private funding and donor funding may be deployed to balance commercial investments.

Whatever the source of funding for professional schools, the public sector has a stewardship role to play through accreditation and other mechanisms that can assure the quality of education, including developing the necessary competencies to address the health needs of the population, and the human-resource requirements of the health system.

Finally, private-sector engagement may not simply be the establishment

in innovation and reform of health-professional education. How these activities will eventually generate change depends upon five key forces that will shape both the context of health professional education and the pedagogical process. These forces are: epidemiologic-demographic transitions, explosion of knowledge, market forces, public policy and professional leadership. Reform must begin with a change in mindset that acknowledges problems and seeks to solve them. Educational reform is a long and difficult process that calls for leadership and requires changing perspectives, work styles and relationships among all stakeholders. ■

# Empowered patients – new health professionals?

Patients have expressed a desire to be given more information regarding aspects of health and healthcare procedures



**The European Patients' Forum is advocating the empowerment and involvement of patients in their own healthcare, not only as an essential element in sustaining health systems but as an avenue to better education on maintaining a lifestyle conducive to good health**

By Anders Olauson, President, European Patients' Forum

**T**he European Patients' Forum (EPF) was founded in 2003 as the umbrella organisation of pan-European patient organisations active in the fields of European public health and patient advocacy. We encourage the empowerment and involvement of patients, both as a core value and as an essential element of sustainable

health systems that contribute to our vision of high-quality, patient-centred equitable healthcare for all patients throughout the European Union (EU). Empowered and involved patients can take on the role of equal partner with health professionals in co-managing their own conditions.

In recent years, patients' roles in healthcare have transformed from

passive recipients of services, to active and responsible actors in their own health management and decision-making. This stems from a demand of patients and citizens themselves for more information on many aspects of health and healthcare, and from their need to be empowered in order to take part in a shared decision-making process with health professionals.

## **Empowerment and health literacy**

Promoting health literacy is a key strategy to equip patients with the knowledge and skills needed to take an active role in managing their health and healthcare. Health literacy is a concept that involves the capacity to access and understand information, as well as education on the skills needed to use this information in making good health decisions.

Well-informed, health-literate patients are eager to make better health decisions in all areas of their everyday lives. Their involvement will enhance productive dialogue between the patient and health professional, leading to better and more cost-effective outcomes.

Health-literate patients are also able to take on greater responsibility for their own health, and have better awareness of the use of medicines and new technologies. This contributes to better concordance and adherence to treatment. They are more likely to take preventive measures and seek earlier diagnosis, which can avoid unnecessary complications, complex medical interventions and hospitalisations.

### Driving changes in patient roles

EPF is engaged in a range of EU-funded projects aiming to empower patients through health literacy. For instance, the European Patients' Academy on Therapeutic Innovation (EUPATI) project, which EPF is leading, will create better education and information tools for patients on therapeutic research. It will increase the capacities and capabilities of well-informed patients and patient organisations to be effective advocates and advisors in medicines research, such as in clinical trials, with regulatory authorities and in ethics committees.

Patients' empowerment and involvement will, from our perspective, become even more crucial as innovative forms of care evolve. One key area that illustrates this is personalised medicine, where a more collaborative approach between patients, healthcare professionals and the research community will be a strategic move, addressing the potential of personalised medicine in tackling social challenges.

Finally, the challenges facing healthcare, such as demographic trends and the sustainability of healthcare systems, will also drive changes in patients' roles. In 2012, EPF addressed the rights and needs of older patients with the development of a strategy and by taking an active role in the Innovation Partnership on Active and Healthy Ageing.

As well as ageing patients, EPF aims to empower another under-represented category of patients: youth. Through the Youth Strategy, EPF would like to provide young patients with appropriate

The European Patients' Forum is carrying out 'telehealth' pilot projects, where healthcare services are provided using advances in information technology



tools and avenues through which their specific needs and expectations can be addressed.

### Building trust in the health sector

Growing numbers of patients means that technological innovation now plays a more crucial role than ever before in making healthcare accessible and affordable for everyone. Patients' trust in these services is fundamental, and EPF tackles this trust issue through various EU-funded projects.

The 'Chain of Trust' project, which we are leading, explores how to build

trust and confidence in telehealth solutions among patients and health professionals. Our role in the 'Renewing Health' project examines user requirements in relation to large-scale 'telehealth' – the delivery of health services via technology – pilot projects, and in 'SUSTAINS' (Support Users to Access Information and Services) we are looking at patients' rights and roles in relation to electronic health records. The global aim is to demonstrate that telemedicine-based services can improve quality of life and enable patient empowerment,



resources, still greatly used today, to facilitate such involvement.

The Value+ Toolkit supports patients and patient organisations in getting involved in health-related projects and policy. The Value+ Handbook targets project coordinators and leaders to demonstrate to them how to involve, and work effectively with, patient organisations. Finally, a set of policy recommendations, based on the project findings, identifies areas where further action is needed at different policymaking levels.

Encouraged by the positive outcomes of the Value+ project, EPF engaged in promoting this meaningful involvement and empowerment in all aspects of its work – programmes and policy alike. We are active in a number of policy areas, monitoring new developments to ensure that the patient perspective is incorporated into the EU policy agenda, and developing and implementing campaign and advocacy strategies to positively influence the EU institutions. We participate in the European Commission's consultations and provide regular input on key patient issues. To do so, we have a robust procedure on consulting our membership on all of the strategic and advocacy work that it undertakes, which is supported through a Policy

---

**Patient empowerment and involvement in healthcare should never mean shifting responsibility exclusively onto patients' shoulders as it has to be placed in a context of social solidarity**

---

while optimising the use of resources in healthcare provision.

However, patient empowerment and involvement in healthcare should never mean shifting responsibility exclusively onto patients' shoulders, or developing a 'blame culture' whereby it is the fault of the patient that he acquires a disease because he has not lived a 'good life'. There is an individual responsibility for health, but it has to be placed in a context of social solidarity, taking social and health inequalities into account.

Social and health inequalities that may lead to low-health literacy are

determined by many factors outside of the individual patient's control, such as geography, social and economic status, and family and social support.

**Promoting meaningful involvement**

One of the main goals of EPF is to ensure meaningful patient involvement in EU health-related policymaking, programmes and projects. The project Value+, the first EU co-funded project coordinated by EPF, illustrates this engagement. It developed a model of meaningful patient involvement that included a set of practical

Advisory Group made up of policy experts from the membership. EPF also has extremely good collaboration with fellow health stakeholders and representatives of broader civil society, and work in concert wherever possible.

Empowerment, meaningful involvement, innovation and health literacy are prerequisites to changing the face of healthcare across the EU. Empowered and involved patients assume an active role in the management of their diseases and their health, and are therefore helping to drive better health in Europe. ■

# Young Physician Leaders Programme – educating the leaders of tomorrow

**The InterAcademy Medical Panel recognises that the future of global health requires strong leadership and solid teamwork, and has launched a program to educate, support and sponsor young physicians from around the world**

**By** Jo Ivey Boufford, Lai-Meng Looi, Lucilla Spini and Muthoni Kareithi, InterAcademy Medical Panel

**T**he InterAcademy Medical Panel (IAMP) is committed to improving health around the world, especially in lower-income countries. It works through its member academies and seeks to support their capacity for providing evidence to the government and the public on health and science policy. It also advocates the strengthening of higher education in the health professions, and improving research for health, both nationally and globally.

IAMP occasionally issues policy papers on critical global health issues, when endorsed by a majority of academies, such as the joint G8 science academies' statement on Health of Women and Children (June 2010). IAMP also supports project-specific activities created by member academies.

One important element of IAMP's strategy is the development and support of young physician leaders in research, clinical practice, health-services management and health policy.

The challenge of leadership development in the health sector has long been recognised, but relatively little systematic investment has been made to address the problem. The importance of incorporating leadership-training programmes into the medical curriculum is gradually gaining recognition, but global action is lacking. A recent *Lancet* publication of the Commission on Education of Health Professionals for the 21st Century called for the issue of leadership

and teamwork in future professional training programmes to be addressed.

In 2011, the IAMP launched the IAMP Young Physician Leaders (YPL) Programme, in partnership with the World Health Summit and the M8 Alliance of Academic Health Centers, Universities and National Academies. This inaugural programme was held at the Berlin-Brandenburg Academy of Sciences and Humanities (BBAW), and in conjunction with the 2011 World Health Summit in Berlin.

## Education and development

The ultimate objective of the YPL Programme is to educate and develop future generations of physician leaders in all areas of medicine. This network of learning and action hopes to encourage IAMP member academies to support young physicians, by strengthening their leadership skills and giving them confidence in their work.

The YPL Programme seeks to attract a diverse group of young physician leaders with varied career interests and specialties, including those in research careers. It also seeks to bring together young physicians from all walks of life across the globe. YPL participants are all young physicians – aged 40 or under – who have demonstrated outstanding accomplishments in clinical medicine, medical education, public health, health-services management, health policy and applied research.

These young physicians have significant promise for future



The Youth Physician Leaders brings together high-achieving physicians under the age of 40 from across the globe in order to strengthen their leadership skills



leadership in their fields, and have engaged in wider societal issues in their own countries. All participants are in the process of establishing and developing support for their careers, and the Programme provides them with opportunities for sharing their experiences with physicians around the world.

During the first cycle in 2011, more than 40 nominations were received from 24 academies in all World Health Organization (WHO) regions.

The inaugural class of IAMP's YPL Programme explored their experiences as leaders and their grasp on the qualities of effective leaders, before completing a self-assessment of their own strengths and weaknesses. They were then provided with a framework for developing an action plan to address their own leadership challenges, which they were encouraged to implement following the workshop. Each was partnered with a fellow participant to track their progress on the action plan, and linked with a mentor from the IAMP Executive Committee. In addition, the academies that sponsored the successful applicants were encouraged to support their YPL Programme participant on return to their home country, and to develop opportunities for young physicians to become involved in the activities of their local academies.

The 2011 YPL Programme participants were selected through a tough process, coordinated by world-renowned scholars and leaders affiliated with the IAMP member academies.

## The key elements of the Programme are:

- A specific leadership development curriculum with pre-event assessments, readings, exercises and presentations by a leadership panel, including international physician leaders who serve as trainers, mentors and role models for the YPLs;
- The opportunity to be special guests at the World Health Summit, held annually in Berlin and attended by a diverse group of medical and scientific professionals, government officials and business leaders. This provides programme participants with valuable opportunities for professional networking, and

access to outstanding scientific and policy programmes;

- Opportunities to be mentored by IAMP Executive Committee members, and by designees of the nominating academies following the Programme, as well as gaining access to the YPL Alumni Network.

During sessions, participants from developing countries acknowledged the challenges created by limited resources and poor infrastructure. One participant described being expected to start a centre with funding of just \$30. Common challenges found present in all nations included politics often standing in the way of success, as well as a common preference for seniority over talent.

Participants from all countries shared difficulties in gaining credibility and breaking into established hierarchies. These shared experiences demonstrated to the participants that challenges faced by junior faculty and practitioners often span the globe, despite enormous differences in culture and access to resources.

## All participants are in the process of establishing and developing support for their careers, and the Programme provides them with opportunities for sharing their experiences with physicians globally

At the conclusion of the Summit, a structured evaluation was completed, and a meeting to debrief participants on components of the Programme was held. The aim was to determine the Programme's acceptability to participants, and to gauge their views on its ability to help strengthen their own leadership skills and gain support from their local academies.

One of the strongest messages from the participants was the importance of long-term mentoring by established leaders, as well as mentoring and mutual learning with peers. The hope that a YPL Alumni Network could be established and sustained was advocated by many participants, who supported the proposed extension of the Programme's leadership training section.

In the months after the Programme, a number of the participants were

active in sharing their experiences, and vocal in calling for more efforts of this kind in both national and international publications. They also advocated local efforts of their sponsoring academies.

## Successes of the Programme

Encouragingly, an article by a group of YPLs was accepted for e-publication in *The Lancet*. Another group of YPLs were invited to post on 'Wing of Zock' – an online platform designed for students, residents, faculty, and administrators at medical schools and teaching hospitals, where ideas are exchanged and discussed. Their post highlights the group's involvement with the YPL Programme, and states what they hope to achieve, and the benefits these achievements could have for their institutions.

One of the 2011 YPLs has been invited to edit a Healthcare Management Strategies section in *Current Opinion in Obstetrics and Gynecology*, and a YPL from the Bangladesh Academy of Sciences has initiated the implementation of programmes involving young medical professionals within the academy.

At the time of writing, the candidates for YPL 2012 are being notified of their acceptance into the Programme. More than 40 young physicians have been nominated by 18 academies and participating members of the M8 Alliance, and the Programme will once again

be held in conjunction with the World Health Summit. The Class of 2012 has been asked to host a session for all young physicians attending the Summit, and a group of alumni from the YPL Class of 2011 have been identified – through a competitive process – to be invited back to conduct a formal session on the subject of leadership.

As with all such programmes, fundraising continues to be a challenge. However, the IAMP is committed to this effort. As the number of YPL 'graduates' grows through what we hope will be successive programmes, IAMP will seek to maintain a global alumni network to support their career development, and will continue to support their growth as professionals who can make important contributions to the health of their countries, and of the world. ■

# A medical student's perspective: taking on the social determinants of health



Students are increasingly using tablets, smartphones and other handheld devices during lectures and hospital rounds

## A new generation of medical professionals is receiving training complemented by education on alternative therapies, technology usage and tailored delivery of care

By Christopher Pleyer, President, and Roopa Dhatt, Vice President for External Affairs, International Federation of Medical Students' Associations

In a world of fast-paced, highly connected and interdependent societies, the borders that once created limitations and accentuated the political, economic, cultural and social differences are becoming less significant in determining

the education received and the pathways undertaken by young health professionals. Similarly, the relationship between health professionals and their patients is changing.

Patients are more empowered by the accessibility of tools that increase

their health knowledge and their ability to participate as consumers of health services. The dialogue across many borders has increased and the boundaries are becoming less apparent.

Over the past decade, there has been a change in the approach of health professionals, the tools used, their education and background, and, most importantly, the focus in addressing the health of vulnerable people. This can be seen in the classroom setting, in the doctor's office and even in the political arena.

Today's medical students are taught early on about the importance of a holistic approach to medical

Advances in technology have allowed both medical students and health professionals to research and share knowledge at the bedside



practice and patient care. Many more medical universities are increasing the amount of time and resources they use to prepare students, not only in their technical medical knowledge, but also, in the skills that they use to communicate with patients.

It is a requirement for many medical students to demonstrate that they are able to be compassionate and emphatic toward their patients. Even more importantly, they learn to approach conversations with their patients on difficult topics, such as end-of-life care, delivering bad news, addressing addictions and abuse, as well as other social issues.

"In my medicine rotation, I often spent as much time learning how to address the social issues that challenge the health of patients as I did learning about the pathology and treatment," described Roopa Dhatt, a final-year medical student at Temple University in Philadelphia, US.

As described in the *Kaohsiung Journal of Medical Sciences*, many schools are also focusing on cultivating more culturally sensitive physicians who use a holistic approach to provide the humanistic care people expect. Medical training is being complemented by lectures and training exercises that increase knowledge about cultural practices, traditional Chinese

medicine and topics such as lifestyle, stress management and exercise.

### Major advances in technology

In addition, there have been major technological advances that have led to a variety of tools being utilised in the classroom setting, both for patient-care and to gain public engagement – all things that medical students are learning early on to not only become familiar with, but to become experts on.

Depending on the resources of the institution or society, an increasing number of students are using tablets, smartphones or other handheld devices during lectures and hospital rounds to



evaluation of physicians and the care they receive, or the numerous forums for them to express concerns, raise issues, and share experiences – has reduced the barriers between them and health professionals. Technology is providing more opportunities for patients to participate actively in their care, and be empowered when it comes to addressing health issues.

Technology linked to globalisation has changed the outlook on health issues worldwide and the impact health professionals have in the prevention, detection and treatment of diseases, where there are countless emerging possibilities. Health professionals are learning about these technological advances as this feature of medicine itself is a determinant of health within a population. Public health measures account for more than 80 per cent of the increase in life expectancy. The list of major milestones of public health is long; it reaches from the introduction of family planning, creating safer working conditions, identification of harmful and risky lifestyles, and road safety, to improved sanitation and control of infectious diseases.

Now that these measures are linked to technology, health professionals have a greater reach. To improve reproductive health and understanding of family planning, medical students in Sub-Saharan Africa can use mobile technology such as “Mobile for Reproductive Health” – a service that allows users to receive a set of messages containing family-planning advice via their mobile phones.

What used to be seen as a simple cause-and-effect relationship has emerged to become a multifaceted entity, spanning across our entire society. The subject is still not entirely explored. As borders continue to fade, what impact these technological advances will continue to have in the delivery of care remains unforeseen.

#### Further challenges to overcome

Despite all these technological advances, many of the same challenges and issues in health and healthcare that existed before are still grossly evident, such as the social determinants of health (SDH). SDHs are defined

by the World Health Organization (WHO) as “the conditions in which people are born, grow, live, work and age, including the health system.”

These circumstances are further shaped by the distribution of money, power and resources at global, national and local levels, and are mostly responsible for health inequities – the unfair and avoidable differences in health status seen within and between countries. As future health leaders take on this age-old challenge, they are turning to innovative cross-sectorial approaches in order to address the goal of improving the health of the world’s most vulnerable people. Medical students are approaching this challenge in multiple ways.

#### Developing multidisciplinary education

At the 65th World Health Assembly Side Event, the International Federation of Medical Students’ Associations (IFMSA) reviewed the range of awareness-raising and information-sharing activities that the IFMSA was undertaking in to use education and training to reduce and prevent health inequities. The presentation highlighted the importance of developing multidisciplinary medical education and

**For patients, the advances in technology have brought them even closer to the process of delivering healthcare. The opportunities for patients to be involved in their care has reduced the barriers between them and health professionals**

keep track of patients, look up drug interactions or quickly access standard-of-care recommendations. Similarly, they are learning how to integrate evidence-based medicine into their delivery of care – with a simple tap of a finger, students and health professionals alike are able to access and share this knowledge on internet health forums.

However, for patients the advances in technology have brought them even closer to the process of delivering healthcare. The opportunities for patients to be involved in their care – whether it is their ability to access parts of their medical records online, provide direct feedback and

the range of advocacy and other tools being developed by IFMSA members.

Ultimately, health is largely shaped by societies’ distribution of resources, and can be used as an indicator of human progress – or equally of human failure. As future doctors, the IFMSA is aiming to improve the health of vulnerable people through a people-centered, culturally sensitive approach, utilising technology linked to globalisation, and increasing our multisectoral understanding of the factors that promote disease and illness. We hope that as the future generation of health professionals, our social movement to improve health and address social inequities is realised. ■

# Innovative information technologies for health

**The Rwandan Government is embracing technology to improve healthcare for citizens through its 45,000 community health workers and high-tech schemes such as RapidSMS, TRACnet and OpenMRS, which are bringing benefits to many**

By Agnes Binagwaho, Minister of Health, Rwanda

In Rwanda, pursuing innovative solutions to healthcare delivery has been a cornerstone in the country's development journey. The government and its partners have focused on the early adoption of technology – broadly defined – and research findings. Such technologies range from drug regimens to surgical devices, to information and communication tools.

Given that 80 per cent of Rwandans live in rural areas, it is essential that these technologies are harnessed in a way that ensures all Rwandans can benefit from early adoption of them. This equity approach has been a driving force in efforts to systematise and scale-up certain information technologies in recent years.

## The role of community health workers

In an effort to bring healthcare to the community level and cultivate home-grown solutions to its delivery, the Ministry of Health trains and partners approximately 45,000 community health workers (CHWs) serving in the country's 14,953 villages (each with 50-100 households).

The Ministry of Health provides each CHW with a mobile phone, and specific instructions on when and how to use it for medical-reporting and emergencies. This technology, called RapidSMS, was developed and implemented with the support of UNICEF.

Among their mobile-phone-based responsibilities, CHWs are obliged to report on any pregnant women in

their village by free SMS to the central server, monitor their prenatal visits to the local health centre, call the nearest district hospital for an ambulance if a woman goes into labour, and inform the Ministry of any neonatal or infant medical emergencies.

Such a reporting and urgent-response system not only empowers CHWs to go beyond their role to provide preventive and curative medicine at village level, but also decreases the social and technological distance between the community and central levels, in addition to forming and supporting a speedy and up-to-date information system that is accessible at the central level for monitoring, evaluating and responding.

Furthermore, RapidSMS has begun to pave the way for reducing maternal morbidity and mortality, and improving women's and children's health overall. For example, after the first nine months of initiating RapidSMS in the northern city of Ruhengeri, the district hospital logged a fivefold reduction in mortality associated with childbirth.

## Improving HIV/AIDS data collection

In partnership with mobile health solutions company Voxiva, the Ministry introduced a central server called TRACnet about a decade ago, in order to systematise the collection of data from facilities offering treatment of HIV/AIDS. This server collects data from health centres, district and referral hospitals, and any other clinics or private facilities providing HIV care and treatment.



The method of collection is either by mobile phone or internet, depending on the availability at the facility. Each patient receiving HIV care and treatment is assigned with an identification code; clinical data associated with each code (including gender, age, regimen etc) are aggregated and submitted as a report to the central server each month.

In 2012, there were 295 health facilities equipped to work with the national TRACnet system, and



Community health workers are being provided with mobile phones to aid pre- and postnatal care

1,057 users across those facilities. Furthermore, the national medical technology and drug procurement and surveillance entity, Camerwa, maintains robust interoperability with TRACnet in order to facilitate drug acquisition and to avoid stock-outs.

Another e-health tool was rolled out in 2009, to accelerate HIV test communications between the provider and laboratory. A mobile-phone-based platform reduced the average turnaround

time from infant HIV testing at a site for preventing mother-to-child transmission (PMTCT) to the return of test results to the provider at the originating health facility from 144 to 20 days.

#### **OpenMRS goes nationwide**

Beginning in 2006, the open-source, customisable software platform and reference application OpenMRS was introduced in Rwanda to support electronic medical records. By 2011,

24 clinics had implemented OpenMRS in collaboration with Partners In Health – *Inshuti Mu Buzima*. Following exhaustive reviews of the data of OpenMRS and analyses of electronic medical-record software competitors, the Ministry of Health has opted to implement OpenMRS across the country, with funding from the Global Fund, Centers for Disease Control and Prevention (CDC), International Development Research Centre (IDRC) and the Rockefeller Foundation.

Rwanda did not choose to develop and implement the aforementioned technologies because they were

---

**RapidSMS has begun to pave the way for improving women's and children's health. After the first nine months of initiating the system in Ruhengeri, the district hospital logged a fivefold reduction in mortality associated with childbirth**

---

cutting-edge or high-tech: Rwanda chose them because the benefits to all Rwandans were quantifiable, the results unmistakably positive. In addition, the ability to create a line of communication between Rwanda's 15,000 villages, via 45,000 CHWs, to the policymakers and researchers at the central level, was a tremendous opportunity.

RapidSMS, TRACnet and OpenMRS are examples of what the Rwandan health sector is doing to engage seriously and sustainably with information technologies. The global movement towards incorporating electronic or mobile-based systems to improve clinical response and understanding is crucial. Rwanda aims to be a strong partner and member of that movement. ■

# Using IT to treat disease



**Dr. Andrew Litt,**  
Chief Medical Officer,  
Dell Healthcare  
and Life Sciences

As chief medical officer, Dr. Litt is responsible for providing strategic insight to Dell's healthcare solutions so that healthcare organizations, medical professionals and patients can realize the benefits of information-driven healthcare. Dr. Litt understands firsthand the importance of a connected healthcare ecosystem and the power of information to streamline healthcare administration,

coordinate and improve patient care and to ultimately deliver personalized medicine.

Before he joined Dell, Dr. Litt was the head of Litt Healthcare Ventures. Prior to that, he served as executive vice president/vice dean and chief of staff of New York University Langone Medical Center. Before assuming his EVP role, Dr. Litt was vice chair for financial affairs in the medical center's radiology department.

Dr. Litt is a board-certified neuroradiologist and fellow of the American College of Radiology, with recognized expertise in neurovascular imaging. A graduate of Brown University, Dr. Litt went on to receive his medical degree and complete his internship, residency and fellowship at New York University.

to just days, meaning that patients can begin receiving effective, personalized treatments much sooner than before. The cloud is also improving collaboration among the researchers and medical professionals working on the trial, by allowing them all to access the same massive amounts of information, analysis and results regardless of where they are physically located.

Because privacy and security are of paramount concern in healthcare, a healthcare cloud must have several key features, including administrative, physical and technical controls to meet the rigorous needs for security, privacy, reliability and compliance of healthcare enterprises. Contrary to popular belief, the cloud can actually enhance security, and at the same time reclaim thousands of hours a year back for clinicians to spend on patient care – hours they may previously have spent searching for records and test results, looking for the right workstation with the right applications, time spent logging in or worse, calling IT for a password reset.

## The future of healthcare

Beyond technology "connecting the dots" of research data, information technology like the cloud also has the power to reduce costs and enhance patient care – two critical challenges that every nation faces. HPC, for example, has collapsed the cost of gene sequencing from millions of dollars per genome a decade ago to a few thousand dollars today. It can also expand the capabilities for hospitals or research institutions without adding IT infrastructure and the associated costs.

When scientists embarked on the 13-year journey to map the human genome in 1990, they envisioned a future where the knowledge of DNA would aid in the diagnosis, treatment and even prevention of thousands of diseases and disorders. Fast forward to today and that early vision is closer to reality, thanks to ongoing advances at the nexus of high-performance computing and genomics research. This research is transforming complex questions into life-saving treatments in days instead of months.

Once we tap the digital data generated by electronic health records, medical imaging and archiving, as well as genomics research for intelligence, the possibilities for innovation and health

"Research for Health and Sustainable Development," is the theme of the 2012 World Health Summit, focused on finding novel solutions to diseases and conditions in the face of financial constraints. The vast amount of data which is produced in healthcare settings every day creates huge challenges, but also opportunities. At Dell, our vision is information-driven healthcare, where data can be translated into decisions – whether in the laboratory to treat diseases like cancer, or at the bedside to treat diabetes. In both cases we use information technology (IT) to accelerate innovation, reduce costs and improve patient care.

One enabling IT innovation is cloud computing technology. Cloud infrastructure – both a high-performance computing (HPC) resource and a secure data exchange/collaboration resource – is being used to investigate new technologies that accelerate genetic analysis and identification of targeted treatments for individual patients. Ultimately, this supports the development of personalized medicine.

## Genetic profiling

Dell is proud to be providing the secure cloud-based IT infrastructure to support the world's first personalized medicine clinical trial for pediatric cancer. It is being conducted by the Neuroblastoma and Medulloblastoma Translational Research Consortium, and is supported by the Translational Genomics Research Institute (TGen) in Phoenix. Neuroblastoma is one of the most common cancers in

children, and timely treatment is critical to survival. Unfortunately, selecting an effective treatment can be challenging. The genetic profiling they are doing, using next-generation sequencing technologies, is incredibly data intensive and requires a tremendous amount of computational horsepower. "When I first started with TGen, we were looking at 10K SNP arrays, which equated to 10,000 markers across the genome," says Jason Corneveaux,

## At Dell, our vision is information-driven healthcare, where data can be translated into decisions

a Bioinformatician of the Neurogenomics Division, at TGen. "Now we're sequencing whole genomes, which are three billion markers long. If you started counting and rattled off one number every second, it would take you about 96 years to reach three billion. And the way sequencing works, we count each of those three billion positions up to 30 times to get a good estimate of what's going on."

## Targeting pediatric cancer

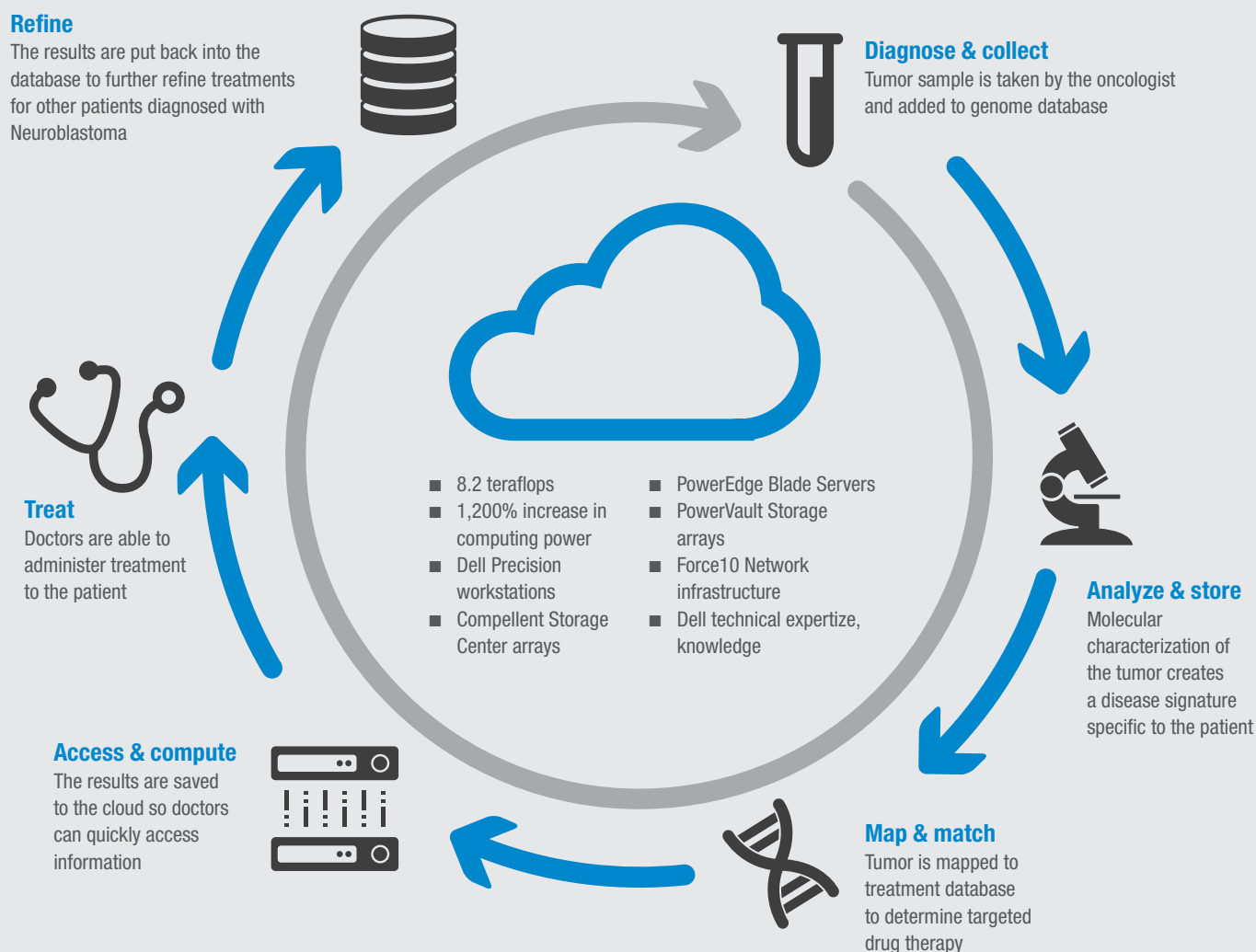
By increasing TGen's gene sequencing and analysis capacity by more than 1,200 percent, a process that used to take months to complete has been reduced

## ACCELERATING TREATMENTS FOR PEDIATRIC CANCER WITH DELL CLOUD TECHNOLOGY

Dell 'Powering the Possible' uses high performance computing (HPC) and cloud technology to investigate new ways of accelerating genetic analysis and identification of targeted treatments for children with pediatric cancer. Through a partnership with the Translational Genomics Research Institute (TGen), Dell technology and support is powering new possibilities for fighting one of the deadliest forms of pediatric cancer – Neuroblastoma. To learn more, visit [dell.com/pediatriccancer](http://dell.com/pediatriccancer)

### Refine

The results are put back into the database to further refine treatments for other patients diagnosed with Neuroblastoma



advancement are unlimited. Once armed with integrated electronic medical record systems that include genomic information, physicians can develop more targeted therapies and lifetime wellness plans for patients with genetic predispositions to specific diseases. At Dell, we are proud to be at that forefront; bridging the gap between science, medicine and technology to solve the world's most complex healthcare challenges. If you have challenges to share, or questions on the cloud or healthcare IT, please email [ask\\_dell@dell.com](mailto:ask_dell@dell.com)

### About Dell Healthcare

Dell Inc. (NASDAQ: DELL) listens to customers and delivers worldwide innovative technology and business solutions that give them the power to do more. As the #1 provider of IT Services for healthcare according to Gartner, Dell healthcare is uniquely positioned to provide the people, processes and technology needed to transform patient care. We call it Information-driven healthcare, and we invite you to read more at: [www.dell.co.uk/HCdata](http://www.dell.co.uk/HCdata) and connect with us on Twitter at [www.twitter.com/DellHealth](https://twitter.com/DellHealth)



Dell is a trademark of Dell Inc. Dell disclaims any proprietary interest in the marks and names of others.

# For a sustainable future: developments in Southeast Asia

**As developments in Southeast Asia accelerate, the region's vast diversity means it represents nearly all demographics, making it the ideal location in which to study and ascertain the impact of new diseases and health challenges on our increasingly connected global population**

**By** Kishore Mahbubani, Dean; Tikki Pang, Visiting Professor;  
Phua Kai Hong, Associate Professor – Lee Kuan Yew  
School of Public Policy, National University of Singapore

**A**nyone who wants to have a glimpse of the future should come to Southeast Asia. As we move towards the end of the era of Western domination of world history and the return of Asia, we move towards a multi-civilisational world. No other region is as diverse as Southeast Asia, hence the region represents the best microcosm of the emerging multi-civilisational world.

With more than half a billion people living in the 10 countries of the Association of Southeast Asian Nations (ASEAN), Southeast Asia demonstrates diversity in every area: cultural, economic, political, religious and ethnic. From the viewpoint of

of hand, foot, and mouth disease (HFMD) in Cambodia and a new flu strain (H5N2) in Taiwan, East Asia.

Recent decades have shown that Southeast Asia has been the region of origin of new and deadly viruses. The first human cases of avian influenza (H5N1) appeared in Hong Kong in 1997, and rapidly spread to other countries in the region and the rest of the world. Of the 359 deaths reported so far, nearly three-quarters are in the region, with 159 cases (44 per cent) in Indonesia and 61 (17 per cent) in Vietnam. Severe acute respiratory syndrome (SARS) originated in southern China in 2002-03 and spread globally to cause over 8,000 cases with 774 deaths. Nipah virus was

have resulted in a large and important body of knowledge, experience and practical tools that can be shared with other countries and regions. First, the avian influenza, H1N1 and Nipah virus epidemics have provided valuable lessons on the close links that exist between poultry and pig farming and contact with humans in the causation of epidemics by these agents.

Secondly, the countries in the region have cooperated closely in developing platforms and early-warning systems for surveillance and the sharing of epidemiological information on the appearance of epidemics caused by new and re-emerging pathogens. Examples include the Mekong Basin Disease Surveillance network (MBDS) and the ASEAN Disease Surveillance Network platform.

Thirdly, countries have also cooperated in preparing measures to respond to epidemics. An ASEAN-Japan joint project, launched for the timeframe 2006-13 and funded by \$30 million, aims to stockpile antiviral drugs and personal protective equipment against pandemic influenza at both national and regional levels, with the regional stockpile located in Singapore. Many lessons have been learnt during the process of responding to these threats that are of great value to epidemic response and containment.

**Southeast Asia's experiences in dealing with numerous threats of emerging and re-emerging diseases have resulted in a large and important body of knowledge, experience and practical tools that can be shared with other countries and regions**

global health, this remarkable diversity also provides an ideal laboratory in which to ascertain the impact of new diseases and health challenges.

It is clear, for example, that Southeast Asia and East Asia will continue to be the 'hotspots' for emerging infectious diseases. Recent examples include the appearance of a lethal strain

first recognised in 1999, during an outbreak among pig farmers in Malaysia. Between 1998 and 1999, Malaysia saw 265 cases with 105 deaths. These infections have now become endemic in many countries and pose a real future threat of re-emergence.

Southeast Asia's experiences in dealing with these numerous threats

## High risk of emerging diseases

It is vital to emphasise here that with the continued rapid pace of economic development in the region, accompanied by urbanisation, increased population density, deforestation and environmental disruptions (for example, severe weather events linked to climate change), the risk remains high in the future for the appearance of emerging and/or re-emerging infectious diseases. In light of this, as the world moves inexorably towards becoming a smaller and deeply interconnected global village,



Southeast Asia holds many lessons for the world in terms of the challenges involved in managing pandemics

pandemics will emerge and spread rapidly to all corners of the world.

No country, no matter how advanced, is immune from these new diseases. Southeast Asia, therefore, provides an ideal ground to study the new challenges that pandemics will pose to a global village. It is worth recalling that from South China and Hong Kong, the SARS virus spread simultaneously to two opposite corners of the world – Singapore and Toronto, Canada. This

demonstrates vividly how small and interconnected the world has become. Hence, the world ignores at its peril the lessons that Southeast Asia has learned in the management of pandemics.

The challenge of managing pandemics is not the only area in which the Southeast Asian experience will hold lessons for the world. Southeast Asia, together with its neighbouring giants of China and India, will also bear the major burden of chronic diseases

in the future. Diabetes, cancer and heart disease are reaching epidemic proportions in countries such as China, India and Indonesia. Research by the International Diabetes Federation has shown that the diabetes rate in Southeast Asia, for instance, is projected to increase by 62 per cent by 2030, to almost 36 million people. This is coupled with the rapid demographic transition of ageing populations (in China, South Korea, Taiwan and



Several Southeast Asian countries have pioneered successful disease-control programmes and innovative health systems

Singapore) and the sedentary lifestyle resulting from increasing affluence. In short, the health challenges of both developing and developed countries can be seen in Southeast Asia and its neighbouring countries.

In addition, while many developed countries have been successful in their campaigns to reduce

smoking (for example, New York City saw a 20 per cent decrease in smoking between 2002 and 2006 following anti-smoking campaigns), Southeast Asia and its neighbours are far from resolving this challenge.

The wider East Asian region contains three countries that are the highest users of tobacco in the world – China, Indonesia and Japan. The inability of this region to reduce smoking may also hold lessons for other developing countries, especially in Africa and Latin America, as the first ‘luxury’ product that is often consumed

by populations that emerge from absolute poverty is tobacco.

The contributions that Southeast Asian countries have made in responding to serious health challenges are also worth studying, although these contributions are not limited to the region. Globalisation has created

medical tourists and patients from all over the world. Several Southeast Asian countries have also pioneered successful disease-control programmes and innovative health systems to achieve high standards of health status for their populations. These market-based economies have experimented

with interesting national healthcare reforms. These include public hospital corporatisation and medical savings in Singapore (ranked number one as the healthiest country in the world in the recent Bloomberg survey) and Thailand’s universal health coverage

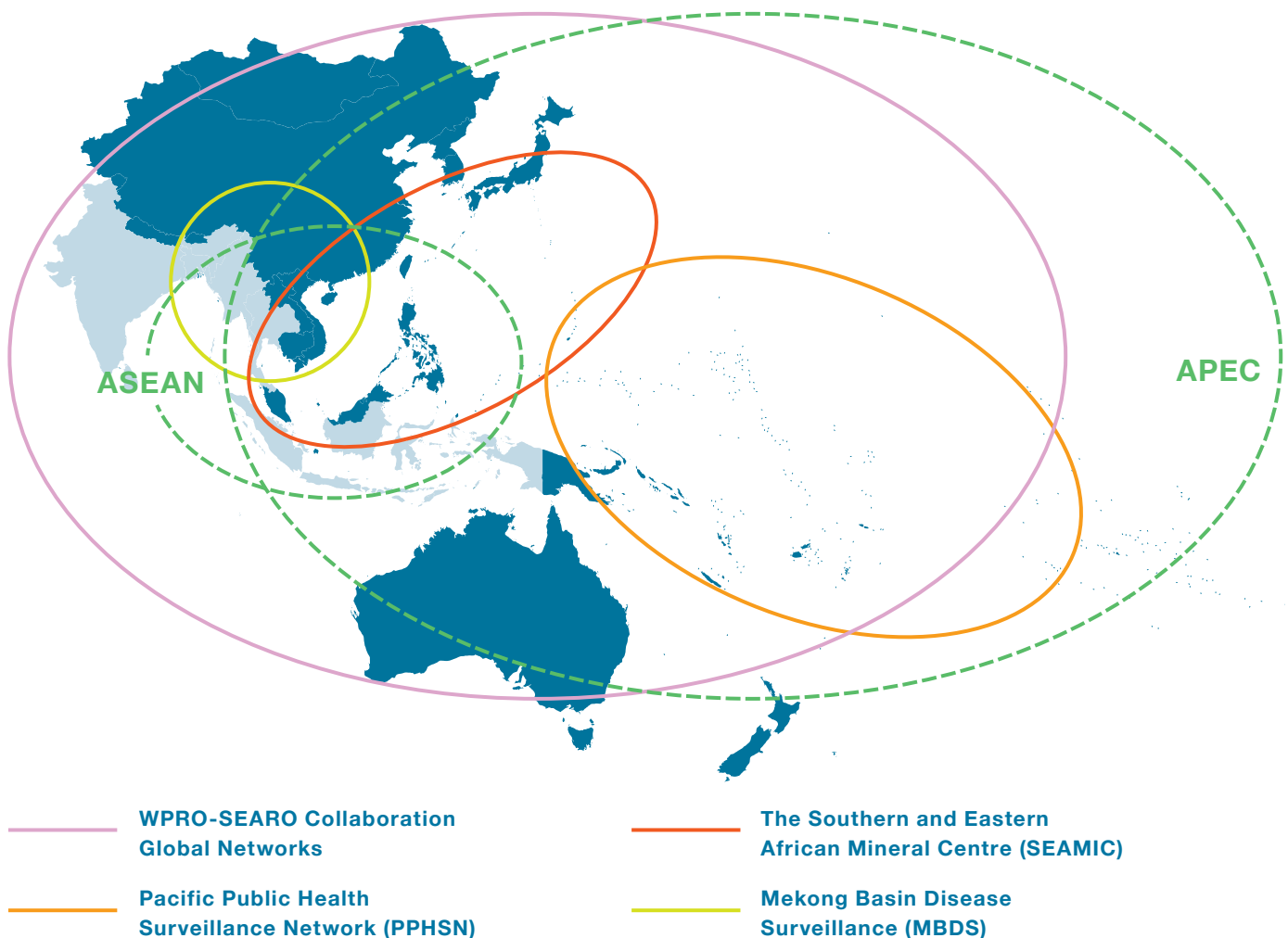
through its past 30-baht National Health Insurance programme.

Hence, both the developed and developing worlds can learn lessons from the diversity of the Southeast Asian experience. The country that spends more on healthcare than virtually any other country in the world

### **The rapid demographic transition of ageing populations and the sedentary lifestyle resulting from increasing affluence makes Southeast Asia witness to health challenges that span the globe**

a new international trade in health services, with outbound migration of health workers and internal medical tourism. The Philippines is a great source of healthcare-workforce supply to many developed countries, while Thailand, Malaysia and Singapore are value-for-money destinations for many

## Regional surveillance networks in Southeast Asia



is the US. Yet, as Matt Miller, a writer for the *Washington Post*, has documented, the US achieves far less in healthcare results than Singapore, even though 17 per cent of its gross domestic product (GDP) is spent on healthcare, while Singapore spends less than four per cent. “Singapore achieves world-class results thanks to a bold, unconventional synthesis of liberal and conservative approaches,” Miller wrote in 2010, while the US Congress was embroiled in a fierce debate over healthcare reform. “It is further to the left and further to the right than what President Obama or his foes now seek. The island’s real ideology is pragmatic problem-solving.”

Similarly, both developed and developing countries should study the case of Cambodia, one of the poorest countries in the world, which also suffered devastating conflict between 1970 and 1990. Despite its poverty,

Cambodia has managed to develop one of the best public water systems in the world. Clean water is an essential requirement for good health.

Another area where Southeast Asia has led the world has been in regional cooperation. After the European Union (EU), ASEAN is recognised as the second most successful regional organisation in the world. What makes its success even more remarkable is that this regional organisation has succeeded in a region that Western commentators have traditionally described as the Balkans of Asia. Initially, ASEAN focused only on economic and political cooperation.

Now, ASEAN cooperates in virtually every field, including health. Following the ASEAN Ministers of Health Summit on SARS, held in Bangkok in 2003, and the ASEAN +3 Health Ministers’ Meeting, the setting up of a Health and Infectious Diseases

Unit at the ASEAN Health Secretariat has greatly facilitated the biennial ASEAN Health Ministers’ Meetings and the Senior Officials Meetings preparing for these, called Prep-SOM.

Ironically, despite this significant surge of health cooperation among the Southeast Asian countries, the World Health Organization (WHO) mindset remains trapped in the past. Instead of recognising the emergence of ASEAN as a cohesive regional community, WHO used outdated geographical concepts to divide the Southeast Asian countries into two organisational silos: the Western Pacific Regional Office (WPRO) and the Southeast Asian Regional Office (SEARO). WHO’s way of thinking well reflects the failure of the world to understand how Southeast Asia, once perceived as a backward developing region, now provides the best glimpse into a promising new Asian century. ■

# Sponsors' index

---

Abbott .....	48
African Development Bank .....	44
Astellas .....	66
Bayer Healthcare AG.....	22
Dell .....	84
GE healthymagination .....	30
Indian Council of Medical Research .....	18
Intel .....	91
KPMG.....	2
Leopoldina.....	6
Pfizer .....	8
PwC.....	56
Sanofi .....	92
Serum Institute of India Ltd.....	38
Universidade de São Paulo Faculdade de Medicina .....	10
West African Health Organisation.....	12



# Looking for growth? Look here.

## Innovation not only speeds up technology but economic growth, too.

When people look for signs of economic growth, they look in places where they're used to seeing them: in the indices of the financial pages and wherever "leading economic indicators" can be found. At Intel, we know precisely where to find growth: in the very technologies we create. Intel's pursuit of technology innovation is constantly transforming the computing power essential to the success and productivity of many of the world's most important companies and industries.

These technologies don't just benefit the industries we already serve. They also help form the bridge by which visionary and entrepreneurial ideas become new products and services—and new industries. From mobile computing and wireless communications to microprocessor-driven graphics and video to innovations in health care, Intel microchips are helping create the technologies and industries of tomorrow.

Because such technologies are enablers of future growth, their greatest value comes with their widest dissemination. The broader the reach of enabling technologies, the greater the innovation and productivity gains. Across borders and between economies, the benefits of technology are proven. Just as it has done in the past, technology can help drive tomorrow's productivity gains.

So it turns out that what's at the heart of computing and communications technology is also at the heart of economic growth. To learn more about this kind of technology innovation, visit [intel.com/innovationeconomy](http://intel.com/innovationeconomy)

Sponsors of Tomorrow.™ 



AVS 903 12 013

# HERE FOR YOU. FOR YOUR HEALTH.

Medical knowledge is our fascination. Together with our associates in research, science and education we help millions of people all over the world. We are obliged by our medical improvement, because health matters!

[www.sanofi.de](http://www.sanofi.de)



**SANOFI**