

WORLD  
HEALTH  
SUMMIT



YEARBOOK 2014

## HEALTH IS MORE THAN MEDICINE

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## Editorial

*Dear Friends, Dear Colleagues,*

When looking back on the year 2014, many people will remember the wonderful world championship of soccer in Brazil, which united people from all over the world for the pure joy of soccer and gave them shared good times. Media attention was higher than ever for a sports event, for which we should be thankful. Yet more important than world champions are the millions of young people all around the globe who play soccer on the streets, in stadiums, and as members of sports clubs. They are learning fair play and tolerance and are thus becoming active members of a civil society that promotes health through physical activity. Nothing better can happen for health and the prevention of disease than people joyfully transcending national, socioeconomic, and ethnic borders in the name of sports. But the World Cup in Brazil also heightened awareness for the many health-related issues that threaten societies worldwide—climate change, aging societies, and rapidly increasing urbanization.

The issue of climate change and health is a top priority at the World Health Summit 2014. Academia and the health community have to address the dire consequences that this will inevitably have on health. Through the demographic changes that accompany climate change and a rising global population, our existing health systems are doomed to collapse within the foreseeable future. We cannot simply continue along the beaten path but have to work to change existing systems as long as this is still possible. This is especially true for the health of people living in urban areas. The world has seen the development of over 20 megacities, and they continue to spawn very poor urban areas that have engendered the rise of unhealthy lifestyles. How do we guarantee universal access to health and change unhealthy lifestyles in overpopulated areas? How do we cope with demographic change? How do we improve education throughout the world, particularly in professions related to health? These questions stand at the heart of this year's World Health Summit.

In 2014 Brazil hosted not only the World Cup but also the World Health Summit Regional Meeting—Latin America, organized by Faculdade de Medicina da USP and held in April in São Paulo. This meeting evoked many of the topics that will now be pursued at the World Health Summit 2014 in Berlin. They stimulate a clear call for timely and global action. The World



Health Summit acknowledges this demand, and we are happy to provide a forum and framework through which these challenges can be addressed on a global scale. Plans are already ongoing to get ready for the next World Health Summit Regional Meeting in Kyoto, Japan, April 13-14, 2015.

The World Health Summit in Berlin 2014 unites participants from about 90 countries and all health sectors, representing a unique wealth of expertise. Only a global collaboration that unites academia, the private sector, politics, and civil society can provide the key to solving the problems of health and health systems today and tomorrow. Together we can develop realistic solutions. Together we can initiate an overdue process of change. Together we can make the world a healthier place.

**PROF. JOSÉ OTÁVIO COSTA  
AULER JÚNIOR**  
WHS President

**PROF. DETLEV GANTEN**  
WHS President

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# World Health Summit 2014


## Welcome Messages



Health is a precious asset for everyone in the world. Medical progress therefore does not only involve researching and understanding methods for promising care, diagnosis and treatment, but also the capacity to apply this knowledge everywhere. Each year, the World Health Summit addresses this global challenge, which is faced equally by academia, the political sphere and society. As a widely recognized forum with high-ranking participants, the event provides an ideal format for identifying needs and opportunities for joint action.

The international community is currently at a crucial stage. What is important now is that we set the course for ambitiously expanding the Millennium Development Goals. Hence, I am very pleased that this year's World Health Summit will focus, among other things, on the links between climate change and health. By exploring various aspects of this field, we will be able to see very clearly how close international cooperation is urgently needed in order to limit global warming and its effects.

As patron of the World Health Summit, I would like to wish all of us a successful event. I hope that all of the participants will benefit from interesting meetings and productive discussions.

  
**DR. ANGELA MERKEL**  
Chancellor of the Federal Republic of Germany



Are we the masters of our own health? Considering the determinants for health in the world means evoking economic inequalities, technological progress, cultural influences, and diet. It also means considering the determinants which we may be able to control given that they will become hugely influential in the decades ahead.

This year's World Health Summit thus focuses on the influence of climate change on our health. The Summit, which is relevant to people the world over, precedes the United Nations Climate Change Conference (COP21) to be held in Paris in December 2015. Each Summit participant will therefore make their own contribution. By discussing the health of people and their environment, you will participate in the joint reflection which must culminate in a global climate compact. I am thus very much looking forward to seeing the outcome of your work.

  
**FRANÇOIS HOLLANDE**  
President of the French Republic



Looking ahead. When European citizens are asked about their priorities for the 15 next years, health and medical care emerge as the number one concern. European citizens also believe that the greatest impact of science and technological innovation will be on health improvement. Health-oriented policymaking must therefore become a clear priority. All the more so as the coming decades will see major simultaneous changes—aging population and the growing chronic diseases burden, urbanization, pollution, or climate change—that will increase the health and wealth vulnerability of our society.

Fortunately, within the same timeframe, convergence of the neuro-, nano-, bio-, and info-technologies will open up new avenues for improved medical care, and especially the opportunity for personalized medicine. In particular, medical progress will benefit immensely from access to “Big Data,” generated by rapid genome sequencing for example, and the related computational power. It is paramount that the EU keeps up its efforts in these trans-disciplinary fields that will boost innovation.

Technological solutions will, however, only improve health in Europe if they are affordable. The costs of neurological-related diseases alone amount to €800 billion a year in Europe and can only increase and challenge equity. This is why it is important to put a strong emphasis on preventing avoidable diseases and promoting public health.

Europe needs sustainable and efficient health systems able to provide healthcare to all citizens now and for generations to come. For this to happen, all actors—citizens, health professionals, the biomedical and pharmaceutical industry, the research community, the insurance sector, educators, and policymakers—must work hand in hand.

  
**JOSÉ MANUEL BARROSO**  
President of the European Commission (2004-2014)

A photograph of three individuals seated at a long, polished wooden table against a wood-paneled wall. On the left, a woman with short brown hair, wearing a dark sweater over a white collared shirt, looks towards the center. In the middle, an older man with grey hair, wearing a dark suit and a red tie, looks towards the right. On the right, a woman with curly brown hair, wearing a bright red jacket, is gesturing with her right hand while speaking. The table is highly reflective, showing clear reflections of the people and the wall.

“All this knowledge  
has to trickle down to  
individual citizens.”

*On the occasion of the World Health Summit, Prof. Hélène Boisjoly, Prof. Leroy Hood, and Dr. Ursula Eid met to discuss the pressing issues of the year, from Ebola and research funding to systems medicine and sanitation.*

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**PROF. HÉLÈNE BOISJOLY**  
*Dean, Faculty of Medicine,  
University of Montreal,  
Canada*

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**PROF. LEROY HOOD**  
*President, Institute  
for Systems Biology,  
United States*

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**DR. URSULA EID**  
*Chair, United Nations Secretary-  
General's Advisory Board,  
Water and Sanitation, Germany*

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*General opinion is split between the concerns that health providers in the developed world have in terms of resources devoted to cancer and other complex non-communicable diseases and much more basic health problems in the developing world. Do you think the money we spend on healthcare is justly divided? Should we be spending less money on technology and more money on sanitation?*

**Ursula Eid** — I would not start with the question of where money should be invested but with a more fundamental question: Are our priorities the right ones? And are our interventions fact-based? We hear, for example, that a lot of money is needed to combat malaria, tuberculosis, and HIV/AIDS. But look at the number of children dying from diarrhea—there are many more than those dying from malaria and HIV/AIDS. Diarrhea, as a water-related disease, is very easily preventable. We don't need to put much money into the health sector to prevent it. The responsible governments have to make fact-based choices about where their health priorities are and invest their money accordingly. Adequate sanitation, safe drinking water, and sound hygiene, including habitual change through public health education, according to my observation, are the cheapest preventive medicine. Shift the priorities, and you could save many more lives with little additional spending. One billion people are still defecating in the open, which is a hazard to public health. In the international development debate, distributing mosquito nets against malaria is a big topic. I've never heard those people suggest getting rid of the dirty water puddles where the mosquitoes are breeding.

**Hélène Boisjoly** — Even the Ebola crisis that we have right now appears to be related to sanitation in the sense that bush meat caused the first case. If these countries had evaluation of safety of the meat that is eaten by people, we would not have Ebola. Because of poverty and sanitation problems, we get diseases that we shouldn't, and then academics have to figure out molecules to treat them or vaccines to prevent them. And then the pharmaceutical companies choose which ones can be marketed. So it's a whole cycle.

**Leroy Hood** — I think another really important area is asking what is going to make the most difference. In infectious disease, clearly if you can figure out how to do vaccines effectively that would make an enormous difference in HIV/AIDS, tuberculosis, Ebola—all the things that we don't know how to make vaccines for very well. We can learn how to make vaccines, but that has not been a very high priority.

I think it's time to make it a fundamental research priority to deal with infectious diseases effectively. And I would argue the way we have to do it is through these more global comprehensive systems approaches. I remember arguing with the head of the National Institute for Allergy and Infectious Diseases, Dr. Anthony Fauci, about 12 years ago, saying 'If you really wanted to make a difference in infectious disease, you really need to put good money into basic fundamental systems approaches to how to

make vaccines.' And that is just starting to happen. Lots of places are all about, 'What can you do for me today?' What you can do today is not very much, and we've got to move to a longer-term outlook.

*So why is that changing?*

**Hood** — We're just beginning to see it because systems approaches are being accepted and they're starting to spread to people who practice immunology. But there isn't a really big concerted effort. If I were the infectious-disease czar, I'd say we ought to put half a billion dollars into fundamental research—into a global holistic systems approach to vaccines and how we can make them more effective.

**Eid** — Here in Germany we have a clear trend: Parents are more and more reluctant to have their children vaccinated. I think there is a public responsibility to explain more and to get parents to understand why it is so necessary to have children vaccinated. Even here, where we have the means, people don't use them.

**Hood** — Then there are countries like Pakistan, where vaccinations are suspected of being devices the West is using to take advantage of them in various ways.

**Eid** — We almost abolished smallpox. It's so important to educate parents, the public, and the politicians who make the health policy decisions.

*This is a problem that the US has been dealing with, too. Is it a problem in Canada as well?*

**Boisjoly** — Yes. In many other countries, too.

*Where is the flaw in the education in Germany or in the US? Do people not trust doctors?*

**Boisjoly** — Well, there are always isolated cases of a vaccinated child developing autism, and you know there are some associations with statistics. And it's very difficult for the average person to triage what the true risk is and what is not. As of today we may have two vaccines for Ebola.



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*“There’s a knowledge transfer dimension which we really have to work on: For many problems, we may have the solutions, but we’re not necessarily using them.”*

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**PROF. HELENE BOISJOLY**

*An accomplished research scientist and educator, she serves as Dean of the Faculty of Medicine at Université de Montréal.*

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*“I’d say we ought to put half a billion dollars into fundamental research—into a global holistic systems approach to vaccines and how we can make them more effective.”*

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**PROF. LEROY HOOD**

*With his work on DNA sequencing technology, Hood helped to make possible the Human Genome Project and thus had a deep impact on modern biological science.*



But even if we had the vaccines today, I’m not sure that people would get their children vaccinated. Often you get a foreign antigen with a vaccine: There is a fever, and it often resembles the early stage of the illness. And so it requires a lot of education to get populations to accept.

**Eid** — I think we have a false sense of security. If you’re 25 or 26, in your lifetime as a parent you’ve never met somebody who had smallpox or polio. I was born right after the Second World War. I had three cousins my age, and two of them had polio. We grew up with these illnesses, so it was without any question that our children would be vaccinated. But now the threat is out of the picture, and parents don’t feel the need anymore. People sometimes do not accurately evaluate what risks they take.

**Hood** — You put the whole population at risk if you refuse to have your child vaccinated. And so it’s a kind of societal obligation.

*So do you need to educate doctors differently when they talk to patients about this? What role do doctors play in this kind of outreach?*

**Boisjoly** — Well, doctors and other health professionals have to understand these barriers to vaccines, but also to any treatment. And it’s always very important for educators to teach medical students or other health professionals that we always have to take into account the landscape or the family situation. Part of medical education is to understand not only biology and the ideal treatment, but what the

right treatment is for the right person in a specific situation. And this is part of personal medicine—it’s not only the genomic dimension. It’s the socio-cultural potential.

So with regard to vaccines, you have to discuss the Spanish flu. Usually people and their families say ‘Oh yeah, my grandmother, or great-grandmother died from the Spanish flu.’ And then they understand how severe the situation can be.

*From basic science to politics, is enough being done to translate science into public policy and into practice?*

**Hood** — Well, from my point of view, the answer is always no. We all live in territories that are somewhat fenced off. And the people that transition between those territories are few and far between. We need more people who will encourage breaking those silos down and making it much easier to translate from the basic to the applied.

With something like vaccination, I think we really could approach it very effectively with basic tools and systems thinking. It will cost a reasonable amount of money, and it’s not something a pharmaceutical company can easily do on its own. So that’s where you have to have it funded. Once you get to a point where you can begin using those applications, then you can spin the companies off. But we aren’t there yet.

**Eid** — There is a long way to go to get the right knowledge to the decision-makers. This is something I’m struggling

with. When our board was inaugurated by former UN Secretary-General Kofi Annan in 2004, we said we don’t need research on water and sanitation issues. The world had debated water and climate and desertification for the last 30 years. The facts, the knowledge is there, but the right solutions must be implemented. And so our task was to reach out to the decision-makers and convince them to do more on providing safe drinking water and sanitation. We tried to start not with moral arguments, but with economics—making clear what it costs the government not to invest in safe water and sanitation. What is the benefit if you invest? And then to make clear to India or to Bangladesh that not to invest in sanitation is reducing their GDP by 6 percent annually.

So we have to come from different angles to push policy-makers to do the right thing. It is not easy to sell sanitation and hygiene, as you don’t find enough politicians who promote themselves by standing in front of a toilet or a sewage treatment plant and saying, ‘This is what I’m going to do for you in my next legislation period.’ So one has to make it more appealing by giving hard economic facts.

**Hood** — I agree. The same is true for healthcare. I mean, time and time again, the arguments come down to ‘Is it economically favorable?’ And funding agencies are much more interested in the profit/loss call than whether it improves health.

**Boisjoly** — For several diseases, we have very good medications, but often they are not prescribed. Innovation and

new medication have to be followed by education. There’s a knowledge transfer dimension which we really have to work on: For many problems, we may have the solutions, but we’re not necessarily using them.

**Eid** — May I make one other point? One level is to have knowledge going from the researchers to the policy-makers, but all this knowledge has to trickle down to individual citizens, too. I mean, if people don’t know that you are not infected with Ebola unless you are in ...

**Hood** — ... direct contact.

**Eid** — You have to have community extension workers who go into the villages and try to find multipliers in the community. In many societies it is the chief or the teacher. In religious communities it might be the priest, the pastor, or the imam. The traditional decision-makers are listened to. If you get these people to communicate what people should do and what they should not do when it comes to healthy behavior, that is very important.

**Boisjoly** — In the Western world, we’re accustomed to women becoming prime ministers. But in many countries, women do not have access to education, and this is highly related to women’s and children’s health. Education about breastfeeding and hand washing—which is so easy to do, but even our medical students don’t seem to remember all the time—is critical. Part of the global solution is associated with access to education.





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*“Forming a team of medical doctors and urban planners and water and sanitation people is a challenge.”*

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**DR. URSULA EID**

*An Africa specialist and former Parliamentary Secretary of State in the German Federal Ministry for Economic Cooperation and Development, Eid is on a mission to improve the safety and availability of water worldwide.*

**Hood** — It's particularly true of physicians and related sets of workers because I think as a whole the healthcare system is enormously conservative. I think it is very reluctant to accept fundamental changes. We're doing this wellness study and we've had really spectacular results, but one of the things we've had is the physicians for patients that are included in the study calling us saying, 'This is non-sense.' They're insecure because it's a change. But the other thing is they're terribly ignorant. They don't know what they're talking about and that terrifies them. So how do you get to the people that are at the very core of delivering the services? It's an enormous, enormous challenge.

**Boisjoly** — You have to realize the importance of lifelong learning for physicians and different professionals. I'm an eye doctor, and over the last 30 years my surgical technique for cataracts has changed five times. So it's really important that continuous education for professionals is built into a career.

*Is that conservatism just human nature?  
Or is it something specific to physicians?*

**Hood** — I think it's human nature. I think most people are quite conservative and are more comfortable in following the past than trying to forge the future.

**Eid** — Another aspect comes into this—get out of the silo, as you mentioned before. As a medical doctor, you might have to deal with an urban planner. I mean, densely populated areas are hot spots when it comes to public health. So forming a team of medical doctors and urban planners and water and sanitation people is a challenge.

**Boisjoly** — That's a huge challenge.

*Changing direction a bit: How would you evaluate the international response to the Ebola crisis?*

**Hood** — I think one of the best things we could do is put in substantial resources, fund the research, and figure out how to make vaccines. And then we can deal with HIV and malaria and TB and Ebola all at the same time,

rather than doing them all piecemeal. And you know what we're doing frankly is what Edward Jenner did back in what? 1796? We're following the same basic, uninformed procedures that initially created vaccines. I think it's time to bring modern systems science to thinking about how to create vaccines and likewise to understanding how host-parasite interactions really occur, and how you can block some of those activities. Both of these things require a global holistic approach rather than a kind of one-at-a-time approach.

**Boisjoly** — We are all on the same planet, and we have only one planet. So when something happens in Africa or Asia, we really have to take care of those situations with appropriate surveillance. If this had started in New York I think surveillance of the disease would have been different. We have to be reminded that...

**Hood** — ... we're all interconnected.

**Boisjoly** — Yes, we truly are interconnected. In the future we will have more control of diseases that are communicated, but we really now have to deal with the chronic non-communicable diseases—diabetes, obesity, cancer. And one that we are not talking about at this meeting and I don't hear enough about is mental health. If we want to have not only a long life but also a happy life, a productive life, we'll have to see how we can lessen anxiety and stress on earth. I think being poor is a stressful condition and situation, by the way.

**Eid** — One last thought: When it comes to Ebola, to me this is a classical case of a development question. Of course it has to be a medical issue as well; that is key. But if an Ebola-infected person had been identified in New York or in Berlin, it would not have become such an epidemic. So the question is: How and why are poor countries' health systems weak or unprepared? In the short run, we have to find vaccines and cure the illness as such. But in the middle and long run we have to see that these countries are stabilized, that there is economic development, that their health systems are developed, that they have enough healthcare professionals. In the long run, it's a development issue.



*Dr. Eid, Prof. Boisjoly, Prof. Hood, thank you all for your contributions. ●*

*Photographer*  
**FLORIAN BÜTTNER**  
*Moderator*  
**ANDREW CURRY**





# Education and Leadership

Healthy Cities and Prevention

In times of limited resources, we need well-trained leaders to build high-performing and sustainable health systems. They will be change agents who will better serve the needs identified by their communities and contribute to improving health outcomes and health equity. It is now clear, however, that public health professionals must go beyond merely promoting healthy behaviors to bring about health benefits.

The urban environment, for example, can contribute to health by promoting healthy behaviors, such as exercise and healthy diets. And yet most public health professionals don't know how to influence structural change in communities. "My students have no idea how public health gets incorporated into urban planning," said Ichiro Kawachi, Chair of the Department of Social and Behavioral Sciences at Harvard School of Public Health. "There is training needed among public health professionals on how to approach urban planning boards. Health impact assessments should be part of all urban planning."



## INTERVIEW

# “Industry has a role it can play.”

Mark Pearson oversees work on health at the Organisation for Economic Co-operation and Development (OECD). He helps countries to improve their health systems by providing internationally comparable data and policy recommendations on a wide range of public health policies, from smoking to obesity. For the WHS Yearbook he spoke about the fight against fat, the complex question of alcohol abuse, and the best way to enlist industry in public health campaigns.

**Mr. Pearson, from a financial point of view, is it cheaper to prevent than to treat?**

**Mark Pearson** — If you think the object of the health system is to have healthy people, then generally speaking yes. Clearly there are some things we should be doing in prevention that we are not doing, and that would be very cost-effective in the long run. Occasionally, even, cost-saving. Unfortunately, people do get sick at some point. What we're doing in prevention is delaying how long it is before they get sick. So aiming for cost saving is putting the bar too high. Aiming at improving health, definitely, it's much more likely to be done.

**What are some examples of prevention strategies that you can encourage?**

Well, pick your area. I mean, certainly on obesity we have a massive problem. Obesity rates continue to go up in all developed countries. There's one or two signs of improvement among young people in one or two countries—Denmark, the UK—but still, it's a pretty bleak picture. Being obese is as bad for your health as being a smoker. And yet it's not treated in the same way. We are much, much gentler in our attitude toward tackling obesity, and we can do an awful lot more. For example, we should certainly be looking at advertising, especially toward children. We should be working with the industry to see if we can take calories out of ready meals and reduce portion sizes. We should certainly be putting better labeling on food. A fat tax is a little bit more difficult. It's a very sexy idea, but it is quite difficult to design in order to get the results that you want. Denmark found this when they intro-

duced a fat tax. On the other hand, we've now seen pretty broad-based taxes in Hungary, in Mexico. There may well be a role for fat taxes as well.

**When you talk about a fat tax, you mean a tax on soda and such?**

Right, a tax on things that make people fat. Not taxing fat people!

**It's interesting you mentioned smoking. At every break, I see people smoking outside the door to the World Health Summit. We've been working really hard on smoking for decades, and we still haven't succeeded.**

That's right. We are now seeing the next generation, I think, of attempts to tackle smoking. So you have the plain packaging move in Australia, and now France is following up. Some places are prohibiting smoking in public, in places like public parks and so on. Some countries now seem to be competing among themselves to be the first country that eliminates smoking, by which they don't mean they entirely eliminate smoking, but when 95 percent of the population is smoke-free. Over the next 20 years or so, that's a realistic prospect.

**Would you model campaigns against obesity and other public health issues on anti-smoking efforts?**

What we do is to model the effectiveness and cost-effectiveness of policies, and we model the cost of the various diseases. That's what we're doing on obesity. We provide



Alcohol is also a major concern. It's a very difficult issue, because the majority of people who drink don't drink that much, and they won't be doing much harm to their health. However, most alcohol is actually drunk by people who are doing harm to their health. They're either binge drinking or they're just heavy drinkers, and that does a lot of harm. And so you have this political problem that countries face—the average drinker probably isn't doing himself or herself much harm. Is it worth making the average drinker suffer in order to reduce the harm the average drink causes?

**Scandinavia is famous for its really high taxes on alcohol. Have techniques like that been effective?**

High taxes do reduce alcohol consumption for sure—however, as you see from Scandinavia, they don't necessarily reduce harmful drinking. People still binge drink. And so clearly that can't be the only strategy. We also look at things like drunk-driving laws and how they are enforced. We look at, again, the public information campaigns. And the industry has a role it can play. Some of the sensible-drinking campaigns that the alcohol industry has undertaken have been very useful. The last thing we want to do is end up saying that the drinks industry is all bad and can't be part of the solution.

the toolkits so that countries can understand the impact of their measures.

For example, most countries, when they think about an anti-obesity strategy, immediately start thinking about school-based programs to teach children to eat better. And I think that is absolutely a very good and sensible thing to do. But it's not going to have much effect on health spending for a long, long time. I mean, even obese children don't actually generally cost much extra. It's only when they start developing complications, which is when they're in their 40s and 50s, that you start to actually get some measurable impact on their health. And that means that a lot of the programs that public health officials and politicians want to look at are actually the least cost-effective.

Now, that doesn't mean you shouldn't do them. Cost-effectiveness isn't everything. There is something almost morally wrong about seeing a fat child. It seems such a waste of their potential. Nevertheless, you have to be careful about overselling this.

**It sounds like obesity is a priority for you. Are there others, and how do you identify what areas you really want to target?**

Obesity has been a priority, partly because when it comes to tobacco, by and large, countries know that they should be doing things there. They don't really need more evidence. Whereas in obesity, I think they really did need more evidence. I think, again, that's changing. And I think now they're pretty well informed about what they need to be doing.

**“We provide the toolkits so that countries can understand the impact of their measures.”**

Ideally, what we want to do is change toward a model where doctors, when they are coming into contact with people, are assessing what they should be doing to encourage healthier lifestyles. And indeed, maybe going further than that, they should be given a role in public health and prevention campaigns. We need to bring prevention more clearly into the health sector, as well as doing all these other things such as labeling, taxing, and regulating.

**Is that asking too much of doctors? They're pretty stretched as it is.**

They're very stretched. We have to ask, “What is the best way of spending health money?” I do think that this is a wasted opportunity, in terms of what we know about the cost-effectiveness, that they don't undertake prevention work. I think one of the solutions there is that maybe you need to move away from just talking about physicians at the primary care level. When you look at countries with maybe the best primary care systems, such as the Nordic countries, they no longer see it as something physicians do. They talk about a suite or collection of healthcare professionals. Maybe in primary care you might well have a



dietician in the clinic, as well as specialists, for example for diabetes. So taking the routine work out of the doctor's surgeries and into people who can specialize in those other topics leaves the doctors to focus more on diagnosing and treatment.

***Is there a risk when you're tackling these things that you're just seen as a scold?***

Yes. The classic headline, when we write a press release, would be 'OECD says countries must do better.' And I think that is indeed a problem. Of course we are very, very sympathetic to the situation in which policymakers find themselves, particularly during the financial crisis. I obviously was speaking to many policymakers about the dilemmas that they were going to face during the period when cuts were particularly deep.

***"People need to be made more aware of the damage that they're doing to their bodies."***

That's not to say that I think the decisions made were the right ones. Before the crisis, everybody was talking about how this time things would be different: This time it wouldn't be prevention or public health spending that would be cut. We know that hospitals are full of waste. Pharmaceutical spending is high. And so prevention was going to be protected. Our figures show that, in fact, prevention spending was cut more than any other area of health spending.

That's why we scold. I think if we are serious about wanting a better-value health system, we should acknowledge that sometimes we have to stop doing some things that we've been doing in the past. People need to actually show that when they say they want more prevention spending, they're not just saying, 'And we want everything else to stay the same.' They may sometimes have to say, 'We can only afford this if we spend less elsewhere in the health sector.'

***It seems like in all these things, prevention basically asks a lot of industries, from food to alcohol to tobacco, to change, do less, sell less—***

And sell differently, maybe. I think that's right. I don't think there's any way around that. I think if you look at the resources of, say, Coke and Pepsi, the idea that somehow governments can run a public information campaign and somehow offset the power of Coke and Pepsi to sell their goods is unrealistic. They can persuade Coke and Pepsi that they need to maybe be less aggressive toward children, remove their sales close to schools, maybe stop advertising on programs that children will watch, and

maybe develop less unhealthy product lines. It's not the ideal solution. But it might be better for people's health than just implying these companies are evil.

This is a tricky one, because the public health profession has been hurt in the past. You know, the tobacco industry deliberately misled the public health sector for many, many years. And there's a great deal of suspicion. That means when we go into things with industry, let's actually make sure that we monitor the industry commitments in an open and transparent way. And hold them to account, so that if they do not reduce and remove a billion calories, or if they don't reduce a hundred million tons of salt from their food, then we can actually say, 'Okay, that wasn't good enough. Either we do better or we're going to regulate you.' I think we actually need to be a little bit tougher with the private sector, in terms of measurable outcomes.

***And how do you respond to people who say this is just the nanny state at work, 'I want a cigarette or a Coke, I should be able to do that and make my own choices'?***

I think there is maybe a slight difference between the two cases. I think tobacco is clearly a poison that does you a great deal of harm, and it's addictive. Talking about whether you really want that cigarette? Clearly, you do want it. You want it because you're addicted. Is that the same as having a soda? I think they are two different cases, and you have to be careful about mixing them up.

Certainly I don't think anybody should be stopped. I'll have a drink tonight, no doubt. I don't want to be prevented from having a drink. I might have some chocolate on the way! Certainly I wouldn't want that to be legislated against. However, I do think people need to be made more aware of the damage that they're doing to their bodies. A lot of what we're talking about here is making sure that we don't advertise to people who can't make those sorts of rational judgments, like children. We can do that through labeling, through advertising, through public information.

A fat tax is going a step further. You can justify it: People are imposing costs through their health, given that we don't pay for our healthcare individually—it's socialized. But we have to be careful. Otherwise, yes, we will lose the support of the population.

***Mr. Pearson, thank you for the interview.*** ●



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# EXCELLENCE IN MEDICINE



The Charité - Universitätsmedizin Berlin is one of the largest university hospitals in Europe. Indeed, with over 16,700 employees the Charité is one of the largest employers in Berlin, generating more than one billion euros each year. Day after day our highly-committed staff dedicate themselves to the motto: "Research, Teaching, Healing, Helping". Within this remit, the Charité achieves excellent results both in terms of pre-clinical research and in the clinical development of drugs and medicinal products. In addition, the Charité is an innovative force within the healthcare system. It successfully brings together scientific rigour, compassionate medical care and a creative, entrepreneurial approach to university medicine and healthcare delivery.



## ESSAY

# HEALTHY CITIES: HEALTH PROMOTION FROM GLOBAL TO LOCAL

**The WHO proposed the Healthy Cities Programme as its main vehicle for giving effect locally to its global health promotion strategy.**

This approach is mutually beneficial for all sectors in that partnerships are promoted between city management and public, private, and voluntary or community agencies to focus on urban health and related issues. After three decades of implementation, actual outcomes are available.

## 1. HEALTH, HEALTH PROMOTION, AND HEALTHY CITIES

The health of any human being depends as much on the existing conditions of life as the quality and level of available healthcare. Thus, it is possible to improve health by acting on several environmental, social, and economic factors that can procure a decisive influence on it. This is the cornerstone of what is called the “health determinant approach.” This approach was first formulated in 1974 by the Canadian Health Minister Marc Lalonde in his report *A new perspective on the health of Canadians*. Its roots go back directly to the broader definition of health adopted by the World Health Organization (WHO) Charter of 1946 as being a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity.

The recognition of this fact was the starting point of the Healthy Cities Programme (HCP), launched around the same period as the Ottawa Charter (1986) and proceeding from the same principles of health promotion, which is defined as the process of enabling people to increase control over, and to improve, their health.

## 2. DEFINITION, OBJECTIVES, AND FEATURES OF THE HEALTHY CITIES PROGRAMME

The Healthy City concept was elaborated on by Trevor Hancock and Leonard Duhal and presented during the

“Beyond Health Care” conference, held in 1985 in Toronto to mark 10 years since the Lalonde Report. They defined a Healthy City as one that is continually creating and improving those physical and social environments and expanding those community resources which enable people to mutually support each other in performing all the functions of life and in developing to their maximum potential.

In the wake of the Ottawa Charter, the new concept has spread widely, and thousands of Healthy Cities exist around the world three decades later, but it is mainly in the European Region of the WHO that it has developed in a framework supervised by the Regional Office of this IGO.

The main objectives of the HCP are:

- » Put health on the top of the political agenda, through the recognition by city governments of the holistic nature of health, which is an essential part of overall development within the community, in order to address health problems in an integrated manner and to mobilize resources from a wide range of sectors
- » Set up Health for All as a WHO world strategy through the axiom “Think globally, act locally” and through Local Agenda 21; the WHO acknowledges that it is relevant to act as closely as possible to the citizen level
- » Promote networking between cities in order to stimulate innovation, benefit from the experiences of other partners, and increase the legitimacy of policies and actions

The purpose of HCP is to develop mechanisms to promote the integration of health priorities and sustainable development (Agenda 21) frames as a background for other policies

(economic, urban, transportation, social, education, etc.). A Healthy City is not necessarily one that has achieved a particular level of urban environment and health—it is one that is aware of the health and life settings of its population and endeavors to improve it. The program rests on the assumption that, no matter the current health status of a city’s population, any city can become part of the Healthy Cities movement. What is really important and relevant is the city’s political commitment to improving the health of its residents and its will to create policies, organizational structures, and collaborative processes through which to do so. The Healthy Cities concept is about a process, not just outcomes.

## 3. THE WHO EUROPEAN NETWORK OF HCP

In 1986, under the leadership of Ilona Kickbusch, the WHO Regional Office for Europe proposed the HCP in a few European cities. The first phase, experimental, lasted from 1987 to 1991 and was followed by a second phase, from 1993 to 1997, which had as specific targets the establishment by each participating city of a City Health Profile and a City Health Plan.

Phase III, from 1998 to 2002, focused on the following issues:

- » The set-up of mechanisms able to ensure integrated health planning, linking health policy and other key strategies for the city management, including the Local Agenda 21
- » Implementation of strategies based on Health 21 and aiming, inter alia, to:
  - reduce health inequalities
  - take action for social development
  - subscribe to sustainable development principles (Local Agenda 21)

Phase IV, from 2003 to 2008, selected four core themes:

- » Healthy aging
- » Healthy urban planning
- » Health impact assessment
- » Physical activity promotion

They evolved for Phase V (2009-2013) to the following three:

- » Caring and supportive environments
- » Healthy living
- » Healthy urban environment and design

Since Phase IV, an important overall evaluation is made at the end of every 5-year phase; this helps to carry out the next phase’s core themes under better conditions. The number of city members of the European Network gradually increased to 100, through strict selection using several intrinsic criteria, as well as geographic coverage equity criteria.

In Switzerland, Geneva has a strong involvement in the HCP. With the support of the University of Geneva, outcomes with broader significance were achieved, for instance:

- » The introduction of the Green Fork label for health- and environment-friendly restaurants

- » Community health promotion in neighborhoods through the future scenarios technique
- » Health impact assessment implementation on local and regional levels

## 4. PERSPECTIVES

Phase VI of the WHO European Network (2014-2018) was launched during an International Healthy Cities Conference in Athens in October 2014. The following two strategic goals of Health 2020, the new European policy and strategy for health and well-being, provide the overarching umbrella of Phase VI:

- » Improving health for all and reducing health inequities
- » Improving leadership and participatory governance for health

The phase’s new core themes are also based on a local adaptation of the four priorities for policy action of Health 2020:

- » Investing in health through a life-course and empowering people
- » Tackling the European Region’s major health challenges of infectious and non-communicable diseases
- » Strengthening people-centered systems and public health capacity and emergency preparedness and surveillance
- » Creating resilient communities and supportive environments

These themes are not discrete areas of action but are interdependent and mutually supportive.

## 5. CONCLUSION

Conceived by the WHO as a program able to roll out health promotion on a local level, HCP gives stakeholders and local communities the possibility of ameliorating urban health settings, achieving this through a process of constant improvement, independently of the initial city’s population status. As such, it is possible to assert that HCP is the equivalent for municipalities and health of what ISO 14000 standards are for companies and the environment—a vehicle for endless improvement.

Developed in Europe with important and unfailing support from the WHO regional office, HCP, three decades after its inception, thrives also in many other world areas like North and Latin America, Africa, South-East Asia, and Oceania. ●



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## ESSAY

# INNOVATIONS IN MEDICAL EDUCATION AT THE NATIONAL UNIVERSITY OF SINGAPORE

**Healthcare is becoming increasingly complex, with need for developing the medical workforce of the future. What makes a 21st century doctor and how do we get there?**

The National University of Singapore's Yong Loo Lin School of Medicine, founded in 1905, is Singapore's oldest and largest medical school, admitting 300 students per year for a 5-year program. Deeply rooted in a culture of excellence, the School's graduates are equipped to address healthcare challenges of the 21st century and continue the tradition of serving as Singapore's leaders in healthcare, academic medicine, and biomedical science.

Three key strategies underpin our educational mission, namely transforming the learning environment, nurturing professionalism and empathy, and building a community of scholars.

## 1. TRANSFORMING THE LEARNING ENVIRONMENT

Innovative teaching and learning pedagogies are at the core of transforming the learning environment. We use an integrated systems-based structure, with an assessment system based on identifiable outcomes, and a competency-based clinical training structure.

### *Defining learning through undifferentiated clinical problems*

One of our key strategies in the systems-based structure is the use of undifferentiated clinical problems to frame the learning objectives for a particular condition, covering the basic medical sciences, clinical sciences, and population and behavioral sciences. This forms the basis of a curricular blueprint map with a list of core problems and conditions, with various entrustable professional activities linked to these problems and conditions as part of a cur-

ricular rationalization process. The entrustable professional activities are developed through consensus-building with key stakeholders across all teaching hospitals in Singapore to ensure program standardization, serve as a guide for self-directed learning, and assist in refining and integrating core clinical cases and approaches to clinical problems.

### *Transforming Learning Pedagogies*

We continue to focus on interactive small-group formats, including case-based teaching and simulation via a Centre for Healthcare Simulation. Students are exposed to the use of simulators from their first year in medical school. Complementing the clinical training of students is the embedding of students within healthcare teams in the hospitals, providing the real environment in which clinical care is delivered. Responsibility is calibrated depending on the year the student is in and culminates in the student-internship program, where students practice under supervision in their final year. Emphasis is placed on interprofessional education and team training, involving students from medicine, dentistry, nursing, pharmacy, and social work. As a result of these innovations, students report greater satisfaction in their learning experience and greater confidence and preparedness to function as doctors upon graduation.

## 2. NURTURING PROFESSIONALISM AND EMPATHY

The School places great emphasis on domain-independent skill sets and values such as empathy, professionalism, and good communication skills. This begins on the first day of school during a "White Coat Ceremony," where teachers personally "robe" the students in white coats in a symbolic

gesture of passing on the values and attributes of professionalism to the students. Students are given the opportunity to reflect on, discuss, and sign a "Statement of Commitment to Professionalism" within the first week of school. A "Silent Mentor" ceremony is held where first-year students embark on a reflective journey to respect the cadavers on which they will be working and in the process learn values of gratitude and altruism.

Teaching and assessment of professionalism and ethical practice are integrated throughout the five years through a longitudinal Health, Ethics, Law and Professionalism (HELP) track led by our School's Centre for Biomedical Ethics. The School nurtures empathy by helping students understand how patients manage their disease in the context of their everyday life. In their first year, pairs of students make home visits to patients under the guidance of a mentor to gain a better understanding of how patients cope with disease at home, in life, and negotiating the healthcare system in Singapore. The School also encourages and supports student involvement in community service programs, especially those targeted at the underserved communities. One such program is the Neighbourhood Health Screening, where medical and nursing students work together with healthcare professionals to screen an underserved community for chronic diseases. The students then follow up with the patients to ensure that they are linked to health systems and receive the care they need, acting as patient advocates. Such community involvement projects give students deep insight into the communities they serve and empower them with the knowledge that they can give back to society and make a difference. Students who have been involved in such programs report gains in leadership skills, communication skills, teamwork, and the ability to identify social issues.

## 3. BUILDING A COMMUNITY OF SCHOLARS

The third initiative is focused on building a community of scholars within the School. All students are equipped with skills to search and evaluate peer-reviewed literature through a formal course in Information Literacy and Critical Thinking in the first year of school. In later years, students are required to work in groups to write research proposals on community health projects, submit the proposals for IRB review, and work together on their projects in their 4th year, under the guidance and mentorship of a faculty member. More informally, we have a program of "Houses" where students are given the opportunity to mix and bond across the years and develop a culture of interdependency, camaraderie, and teamwork. This strong foundation allows students to explore various activities together with faculty and alumni mentors and builds enduring relationships. A student-led academic society, named after one of Singapore's leading clinician scholars of the 20th century, the Wong Hock Boon Society, matches students with mentors to develop their interests in research or education. In addition, elective opportunities and blocked time in years 3 and 4 allow the student to spend considerable time in an area of personal research and scholarship.

## CONCLUSION

The School's Medical Education Unit was established in 2002 to provide basic pedagogical support to our teaching faculty. The Unit organized and hosted the first Asia Pacific Medical Education Conference (APMEC) in 2003 to promote scholarship and sharing of ideas among medical educators in the Asia Pacific region. The APMEC has grown considerably, with a record number of over 800 participants from 34 countries at the 11th APMEC held in January 2014. Taking the lead from this, the School also supports an innovative student-led conference, the Student Medical Education Conference (SMED). This annual conference enables medical students in the region to share innovative ideas and initiatives in medical education and fosters leadership and scholarship development. The School now aspires to become a center of excellence in medical education, to "build bridges and connect minds" with our Centre for Medical Education (CenMED), and to continue our long tradition of producing Singapore's leaders in healthcare, academic medicine, and biomedical science. ●



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## ESSAY

# MEDICAL EDUCATION: THE M8 INITIATIVE

**Education is a tool of empowerment and, almost uniformly, results in improved health outcomes. Enhanced medical education is a critical partner of healthcare delivery and research as we seek to tackle the most pressing health problems.**

The M8 Alliance brings together a diverse collection of academic institutions that all contribute to improving the health of their local and broader communities through the activities of healthcare, research, and education. These three activities are almost invariably presented in this order, hence implying a hierarchy of importance or value. Why is this? It could just be habit, but one could also suspect that the reason lies in part because healthcare has us identify with the immediate compassionate needs of our communities; research has the potential to transform the way we do things (and make us famous); and education has often been seen as the thing someone does to “do their day job.” This short essay will outline the efforts members of the M8 Alliance see as allowing medical education to transform healthcare delivery, so that rather than following the notion of “Those who can, do, and those that can’t, teach,” to quote George Bernard Shaw, the words of Nelson Mandela come to the front of our minds: “Education is the most powerful weapon to change the world.” Education requires and demands an eminent position as we seek to tackle the most pressing health problems of our day.

For our purposes here, the term “medical education” will be restricted to mean the basic education that culminates in the graduation of a beginning, practicing physician. This is not to ignore the essential role of further or continuing medical education, or, more importantly, the education of the entire healthcare team (nurses, physical therapists, physicians assistants, psychologists, etc.), but rather to focus attention on current issues for the M8 Alliance.

The M8 Alliance currently has 10 members who are directly involved in basic medical education: Charité – Universitätsmedizin Berlin, Kyoto University, Imperial College London,

Makerere University, Monash University, National University of Singapore, Peking Union Medical College, Sorbonne Paris Cité, Université de Montreal, and University of São Paulo. The method of entry to the institutions varies widely (school leaver vs. graduate entry), the level of qualification differs (Bachelors vs. MD), and the methods of delivery and assessment are also as diverse. Despite these apparent differences, there is great identity in the pressing concerns and challenges for members of the M8 Alliance.

## WHAT CAN AN INTERNATIONAL ALLIANCE ACHIEVE IN MEDICAL EDUCATION?

The overarching challenge for medical schools is how to educate the next generation so that they are capable of transforming healthcare systems to provide for universal health coverage in the 21st century. While there is almost universal agreement about outcomes with respect to traditional “basic” and “clinical” knowledge, skills, attitudes, and behaviors (obviously with minor local nuances), there are considerable opportunities in areas of emerging importance in generating globally aware graduates who are capable of giving to and transforming healthcare systems. The areas where the M8 Alliance is concentrating its efforts are Global Health Curricula, Community Engagement and Education, and the Social Accountability of Medical Schools. The efforts are directed toward the sharing of experiences, curriculum materials, and best practice, with a view to identifying innovative and efficient approaches to tackling educational issues.

## GLOBAL HEALTH CURRICULA

It is being increasingly recognized that the issues of global health are emerging as pressing needs for the development of an international medical/health workforce. Several

factors contribute to these needs, including the rise in non-communicable diseases in the developing world, the dramatic increases in international mobility, and a growing desire in the next generations of medical practitioners to both travel and contribute to solving health problems across the globe. There are a number of specific curriculum initiatives with respect to global health, and while these tend to involve faculty and teaching staff drawn from across the globe, they tend to be programs restricted to a small number of institutions. In addition, curricula are often targeted at post-basic qualification (postgraduate) candidates, meaning that a basic or “core” curriculum in global health literacy that is appropriate for all graduating medical practitioners is lacking. This curriculum should be seen as being as essential as having a command of anatomy or therapeutics. The M8 Alliance has considerable expertise in global health across its schools of medicine and public health, and we believe we have a unique opportunity to draw upon transnational resources to share materials and ideas to define such a curriculum. In addition, in a number of our schools (e.g. Monash, Charité), our students are ahead of the game, and off their own initiative are developing their own sense of core curriculum. Finally, under the auspices of the World Health Summit, we have strong connections with GH.edu, and with them we are promoting debate regarding the essential requirements of graduates in Global Health.

## COMMUNITY ENGAGEMENT AND EDUCATION

While medicine is traditionally, and best, taught at the bedside, changing models of healthcare delivery mean that the bedside may no longer be in a hospital. This creates a number of significant challenges to medical schools. These include the design of curricula so that students can engage with the community and see patients in settings as diverse as ambulatory care, community health and other community settings, and even the patients’ homes. When this happens a whole range of challenges and opportunities arise, including: the impact of the student on the delivery of care in an extra-hospital environment (positive or negative?); the diversion of students away from sites of traditional teaching, where university academics tend to carry out their highly specialized clinical practice and research; and the opportunities for students to truly discover the natural history of disease in a patient, that is, understanding the social determinants of health, along with the socio-political environments in which disease emerges and continues in the lives of patients.

As university resources are often “invested” within hospital settings, needing to have students engage in the community represents a significant challenge to many traditional medical universities. Resources will need to be diverted away from their traditional sites if we are going to ensure that students have access to patients and learn their medicine in a manner that is relevant for the healthcare settings that will be the sites of their future practice. This also presents a significant opportunity for the university sector. It is appropriate that research is undertaken at sites where healthcare is delivered, and this is increasingly going to be

in the community, not hospitals. Students will be placed in the community and, as such, can well become the agents of advocacy and change to develop community engagement for universities and take part in the research agenda. The M8 Alliance is collaborating on the various models of community engagement employed across the various institutions with a view to sharing ideas and establishing best practice.

## SOCIAL ACCOUNTABILITY

A global movement in determining the social accountability of medical schools has developed over the last decades (see: <http://healthsocialaccountability.org>). The question of how the M8 Alliance can uniquely contribute to this initiative has been occupying the minds of a number of the partners. As members of a premier organization of medical universities, we are ideally placed to bring an international perspective to the problem, which will provide diverse opportunities to share solutions. Attending to the poor and homeless in the streets of São Paulo, one of the world’s largest cities, may well have lessons for the care of, and engagement with, indigenous or first-nation communities in Australia, the USA, or Canada.

A common issue faced by many developed world economies is the immigration of doctors who initially trained in the developing world. The M8 Alliance needs to consider how it can intervene to reverse this “brain drain” and, in so doing, provide greater access to the universal right of healthcare, which should be available to all. Perhaps this represents one of the ways we can most appropriately exercise our social accountability in a global sense. A concerted effort to ensure the high-quality training of medical practitioners and healthcare professionals for all communities is likely to achieve significant outcomes in improving access to care.

Via medical education, the M8 Alliance has exciting opportunities to focus on our role as a premier international and global health alliance. Education empowers and provides opportunity. With these effects come improved health outcomes for the whole society. While this actually applies as much to general education as it does to medical education, perhaps it is time for those of us who know, research, and teach about health to demonstrate leadership by propagating our best practices. The pathway is clear, the challenge is before us. ●



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## ESSAY

# WHAT CAN MEDICAL ACADEMIA DO TO BUILD HEALTH-CARE SYSTEMS FOR A “SUPER-AGING” SOCIETY?

## Challenges and opportunities in Japan.

### PAST SUCCESSES AND PRESENT CHALLENGES REGARDING HEALTH IN JAPAN

Until about 20 years ago, healthcare in Japan appeared to have excellent outcomes. Very long life expectancies had been achieved while healthcare expenditures were relatively low. The reasons are various, including diet, sanitation, physical activity, relative social equality, and certainly also universal health insurance with regulated pricing. However, from the standpoint of population health, over the past two decades there has been little or no improvement, and this coincides with economic stagnation, political instability, and increasing social disparity. Japan's successes might not be sustained.

### CHALLENGES AND OPPORTUNITIES

The population of Japan is aging faster than the population of any other country in the world. The birth rate is so low that the demographic structure is becoming an upside-down pyramid. The result is obvious: Rising healthcare costs could impose a major burden on younger generations. The physical dependence and dementia of “super-elderly” people is an additional social burden. The other side of the coin is that by facing this challenge we have an opportunity to build a resilient system that might be applied internationally. If Japan succeeds, other countries might use our solutions to mitigate or to overcome similar problems that they, too, will have to face in the near future.

### GOALS

Healthy life expectancy at birth in Japan is among the highest in the world. To maintain that, two main goals are necessary:

1. We should prevent premature deaths among the “young elderly.” Many people aged 60 to 74 are not dependent on others, but instead are now supporting society by continuing to work even after age 60.
2. We should prevent the “old elderly” (people older than 74) from becoming disabled and dependent, which would save a large amount of healthcare resources and would relieve a significant social burden. For example, a significant proportion of disability and dependence could be reduced by preventing falls and bone fractures among people in this age group.

### DIET AND NON-COMMUNICABLE DISEASES

People in Japan generally consume less fat and fewer calories overall than do people in other developed countries. However, salt intake is very high in Japan and is associated with high prevalence of hypertension and stroke. Stroke is a major cause of disability, particularly in men aged 60 to 74.

Another problem in Japan is the high intake of carbohydrates, mainly from highly polished rice, which is associated with a high prevalence of diabetes. In Japan, diabetes is one of the most common and serious non-communicable diseases. Japanese people are genetically predisposed to secrete relatively small amounts of insulin. As a result,

diabetes is common even in those who are not fat. It is estimated that about 21-27 percent of the adult population now have adult onset diabetes or glucose intolerance.

Changes in dietary behavior should reduce the numbers of major events, such as those related to cerebro-cardio-vascular or renal disease, and premature deaths among the “young elderly” people in Japan. One innovative approach developed by the National Cerebral and Cardiovascular Center is the creation of a series of recipes for low-salt but good-tasting boxed meals. Developed with a chef from Kyoto, these recipes and the meals are available for purchase. But are they really beneficial? As health scientists we look for evidence, so our role here is to evaluate these innovations using valid and reliable methods.

### TECHNOLOGICAL INNOVATION

With our “inverted” demographic structure, we have a shortage of workers who can take care of disabled elderly people, and that shortage will only get worse. To some extent the severity of the problem might be lessened by robots. Fortunately, Japanese people's attitudes toward robots are generally positive. For that I think we can be grateful to a member of the medical profession, Osamu Tezuka, MD, who invented a famous cartoon character, the robot “Astro boy.” Robotics gives many Japanese people hope, both for economic growth and for maintaining healthy longevity. For example, Professor Sankai of Tsukuba University is well known for developing robots that can assist in caring for disabled people. His new robot helps disabled people to walk, bathe, and do other important activities of daily living. A company in Japan has been taking another step by developing robots that respond to physical expressions of human emotion. However, as with dietary innovations, with robotics, too, we should not believe they are useful to society until we see evidence.

### COMPACT CITY

One city in Japan provides an example of how local-government policies can help the country meet its new health challenges. Toyama City (population about 400,000) is trying to reverse suburban sprawl. Perhaps it will demonstrate the health benefits, at least in the economically developed

world, of living in denser, more compact, urban areas. In the 1970's and 1980's, Japan's baby boomers made up much of the work force and contributed greatly to Toyama City's economic growth. Many achieved their dream of owning their own house in one of the new suburbs. But now the situation is changing. Children have grown up and left home. Husbands have reached retirement age, and some have died. In some cases widows have been left to live alone in a now-too-big house far from the city center, and without having learned how to drive. These elderly people, most of them women, are at risk of almost never going out and eventually developing dementia or becoming frail, falling, becoming demented, and then being bedridden. Recognizing such dangers, the mayor Masashi Mori of Toyama City implemented policies that encourage elderly people to move to the center of the city. For example, he renovated an old railway in the city center, turning it into a model of urban light-rail transit. Elderly people can get on and off easily, and those who have trouble walking can use wheeled walkers, complete with handbrakes and a shopping basket, which are provided free by the city. The result is that more people can move around the city to socialize. This could succeed because, as we know from modern social epidemiology, health depends on social connectedness, and communities in Japan still have traditions that promote and reinforce social cohesion. ●



Written by  
**PROF. SHUNICHI FUKUHARA**  
Dean, School of Public Health, Kyoto University, Japan



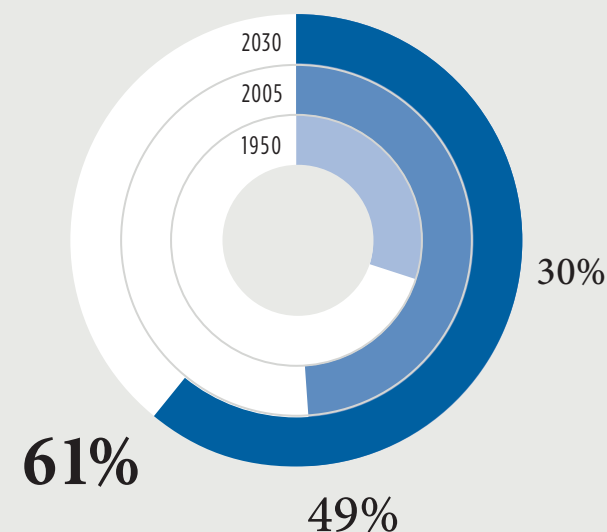
## HEALTH IN NUMBERS

# Healthy Cities and Prevention

*More people are moving into cities, yet cities can be hothouses of unhealthy living. Urban planning that integrates health into city living can prevent chronic illnesses.*

## INFOGRAPHIC

World population living in urban areas



United Nations, 2014

**TUBERCULOSIS** is much more common in big cities. New York City, for example, has tuberculosis rates **FOUR TIMES** higher than the US average.

WHO, 2014

## TRACK NUMBER

# 1.7

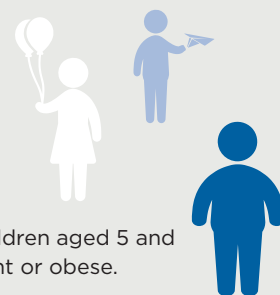
... trillion US\$ is what air pollution cost OECD countries in 2010, taking into account deaths and illness.

OECD, 2014

## FACTS

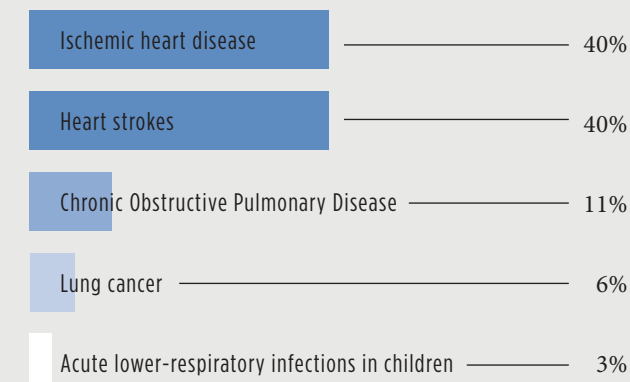
In 2013, 42 million children aged 5 and under were overweight or obese.

WHO, 2014



## INFOGRAPHIC

Outdoor air pollution-caused deaths by disease



WHO, 2014

## STATEMENT

***“The original intention of greener cities was environmental, but the additional effect is creating healthier citizens.”***

**ICHIRO KAWACHI**

Professor and Chair, Department of Social and Behavioral Sciences, Harvard School of Public Health, United States

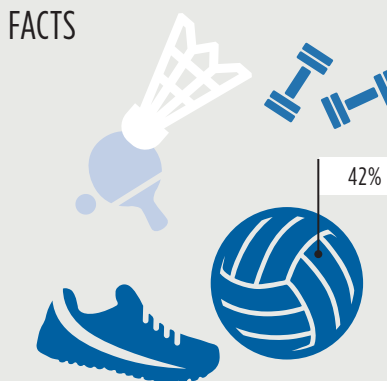
## WORDCLOUD

DIABETES **PUBLIC BIKE** OBESITY **ELECTRIC CARS**  
**TRANSPORTATION**  
**CAR FREE WALK**  
 PEDESTRIAN AREAS  
**HEART DISEASE** EXERCISE

Nearly **TWO-THIRDS** of the world population lives in countries where **MALNUTRITION KILLS FEWER PEOPLE** than **OVERWEIGHT** and **OBESITY**—including all high-income and most middle-income countries.

WHO, 2014

## FACTS



42% of Europeans never exercise or do sports.

European Commission, 2014

**69%** of Europeans spend **2.5 to 8.5 HOURS** **SITTING** on an average day.

European Commission, 2014





## REPORT

# WHS Regional Meeting— Latin America

Following the inaugural WHS Regional Meeting in Singapore in April 2013, the regional conference traveled to South America. Held in São Paulo, the second WHS Regional Meeting focused on the health challenges affecting Latin American countries in particular. It was an important and timely look at a region more than 600 million people call home.

São Paulo provided the perfect location to discuss the region's specific scourges. In the last decade, Brazil has emerged as one of the world's fastest

growing economies. That headlong rush toward prosperity necessitates an in-depth debate about health and its relation to social development—particularly in the context of the 2014 World Cup, held just a few months after the Regional Meeting. The sporting event led to mass protests, as Brazilians questioned the logic and morality of spending billions on soccer stadiums when the country's healthcare system remains underfunded and unequal.

The links between economic and social policy have been a prominent topic in many recent discussions of

public policy in Latin America. For despite significant improvements in public health and standards of living, expanding health services and coverage is still a challenge Brazil and many other Latin American countries must meet.

The Regional Meeting's speakers and supporters were a sign Brazil is taking this challenge seriously. "I am deeply glad that Brazil has this chance to host Latin America's World Health Summit Regional Meeting. This meeting will certainly encourage a profound reflection on such an important theme to our region," said Arthur Chioro,

*"The opportunity has also huge potential to result in positive outcomes amid the sectors involved—researchers, health experts, academia, civil society, policy-makers, and private initiatives."*

ARTHUR CHIORO  
Minister of Health, Brazil

Brazil's Minister of Health. "The opportunity has also huge potential to result in positive outcomes amid the sectors involved—researchers, health experts, academia, civil society, policy-makers, and private initiatives."

The opening ceremonies were held at São Paulo's Government Palace on April 6, 2014, with the president of Brazil's Office of International Affairs, Jorge Kalil, in attendance. Other luminaries included Lincoln de Assis Moura Jr., the president of the International Medical Informatics Association, Francisco Inácio Bastos of the Oswaldo Cruz Foundation (Fiocruz), and Gary H. Gibbons, the director of the National Heart, Lung, and Blood Institute at the National Institutes of Health (NIH) in the US.

The topics of the Regional Meeting were tailored to regional problems. Increasing population rates presuppose megacities as well as negative effects on urban and public health. One of the main goals was to discuss ways to increase healthy life expectancy, such as reducing child and maternal mortality, reducing the burden of infectious and parasitic diseases, and lowering the levels of risk factors like smoking, poor sanitation, and limited access to clean water. In addition, the meeting hoped to come up with a political framework to address urban problems like poor housing conditions, water and air pollution, violence and drug abuse. The topics were organized along five tracks:

- » Healthy Life Expectancy
- » Urban Health and Health in Megacities
- » Increased Research Capacity to Incorporate Technologies
- » Management of Health Systems to Ensure Universal Coverage
- » Health Education

More than 1,000 participants from 30 countries agreed with the WHS Regional Meeting's premise: that solutions should be applicable to Latin American countries in general and from there develop worldwide.

At the three-day summit's close, a call for immediate action was released, demanding governments and responsible institutions to act to counter the significant socio-demographic and epidemiological changes in developing countries and their effects on health. The statement was delivered in the name of the M8 Alliance of Academic Health Centers, Universities and National Academies. The statement was communicated to decision-makers worldwide to influence the agenda for improved health in Latin America and beyond. ●



01 The São Paulo workshop on Medical Education was continued at the World Health Summit 2014 in Berlin.



## About the Meeting

### THE HOST CITY— SÃO PAULO

Founded in 1554 and located in the Southeast Region of Brazil, São Paulo is the country's largest city, with 11.8 million inhabitants. It is one of the most cosmopolitan capitals in the world and the main financial, corporate, and mercantile center of South America, the scene of major negotiations, corporate events. São Paulo is home to several nationalities, cultures, beliefs, and ideals.

### THE ORGANIZER— THE UNIVERSITY OF SÃO PAULO MEDICAL SCHOOL

Founded in 1912, the USP Medical School's activities are characterized by a combination of education, research, and healthcare. FMUSP offers undergraduate courses in medicine, physical therapy, and speech and occupational therapy, as well as post-graduate courses and residency programs in primary care.

Research and education alike is conducted at the University Hospital (HU) and at the largest hospital in Latin America, the Hospital das Clínicas or FMUSP-PHC. Currently FMUSP accounts for 14 percent of Brazil's scientific production in medical sciences and 4 percent of the overall Brazilian scientific output. It has 200 research cores and 62 clinical investigation laboratories (LIMs).



# Universal Health Coverage in Brazil

*The health sector is one of the most important segments of economic activity in the country, generating over 4.3 million direct jobs and receiving priority on public and private agendas.*

**Health is a right to the citizens and a duty of the State**

The regulation of a health system in Brazil was made possible when the Federal Constitution of 1988 established health as a right for all citizens and a duty of the State. At that moment, the Unified Health System emerged to ensure universal access of all Brazilians to health services on an equitative and integral basis.

This universality widens access to health to the entire population. And equity provides standard assistance, respecting the singularities and needs of each patient. Lastly, integrality grants to citizens full access to health services. The health system is co-financed by the federal, state, and municipal governments and split in primary, secondary, and tertiary care.

Primary care promotes preventive services and educational programs. Secondary care is aimed at reducing the prevalence of a disease through medical examinations. Tertiary care reduces prevalence of functional disabilities produced by the disease, as in the case of rehabilitation.

The Unified Health System is funded by the government, with resources obtained from social contributions and taxes. But since the health system is mixed, there are also private investments—from insurance, from direct spending from the families, or from other sources.

This system is governed by the Ministry of Health, which rules the public policies for funds allocation, financing, and regulation, as well as establishing

guidelines for national health programs, such as vaccination campaigns and specific programs for the main issues in the country, like reduction of child mortality and epidemics. These vaccines are produced at reference centers, such as Fundação Oswaldo Cruz and Instituto Butantan. Brazil also invests in the AIDS Program, which makes access to treatments easier to those infected by the HIV virus.

According to the World Bank, Brazil committed 8.9 percent of the GDP in 2011 to health. Public expenditure was below private, representing 4.07 percent and 4.83 percent respectively. Although public funding for the health system has increased in the past few years, it is still lower than in many countries. Currently it is similar to the United States, a country where health is not featured as a constitutional right of universal access, as well as being inferior to the world average.

Being a country of continental dimensions, Brazil still has a high diversity on health indicators, resulting in regional inequalities. Some remote and low-income communities have difficult access to health services. The most precarious regions in the country, such as the North and Northeast, suffer from the lack of physicians, nurses, and other health professionals. These regions also have higher child mortality rates than the South and Southeast—where there are excellent hospitals and well-trained professionals.

Another difficulty relates to the distribution of competencies among the federal, state, and municipal spheres. The public assistential model in Brazil, based on basic and hospital care, has limited coordination and integration, increasing the actual inefficiencies of each level. In the Brazilian assistential model, strategies and goals are focused on the assistance and management of acute patients, while this increases the number of other types of patients, such as chronic, high complexity, outpatients, and critical.

**Strategies and proposals for improvements to the health system**

One of the future challenges Brazil will face is the change in the epidemiologic profile of the population, a result of an increase in life expectancy, and its implication in the new health policies. According to the Brazilian Institute of Geography and Statistics, the country will be the sixth largest in the world in terms of the number of elderly people. With this scenario, chronic diseases, multiple pathologies, and lack of autonomy will arise.

Another aspect to be considered is the possible integration of operations between health plans and health offices in order to promote an exchange of management experiences and align the quality level of health services, with increased participation from the private sector. This would be fundamental to increasing the quality of health assistance to the population and developing a more efficient health system.

Incentives for the generation of qualified jobs to fill the gaps in assistance and more investments in primary care—the entry to the Unified Health System—are also crucial for the enhancement of the health system.

It is necessary to create a management model with the purpose of providing continuous improvement, quality, and efficiency of processes and of stimulating the development and qualification of management models of all health agents involved. ●



Written by  
**PROF. GIOVANNI GUIDO CERRI**  
Director of the Medical School at USP,  
President of the WHS Regional Meeting—Latin America 2014

# M8 Alliance Statement WHS Regional Meeting— Latin America, São Paulo, Brazil

*São Paulo, April 08, 2014*

Health is one of the fundamental rights of every human being and should be secured through economic and social policies. While the principles of universality, equality, and integrality of healthcare have become unquestionable ethical and social values, increasingly new challenges are posed to contemporary health policies.

Significant changes in the socio-demographic and epidemiological profile of the population, especially among developing countries, which require a thorough evaluation of proposals for organization and design of healthcare models have been observed. On the other hand, there is the question of the relationship between health and development, particularly important among countries with accelerated growth and urbanization. This brings the question to what extent investing in health contributes to growth and development, or how economic growth can contribute to the improvement of health conditions. Technological innovation in health is an investment that contributes to economic development to the extent that health represents a significant percentage of GDP.

Currently, the UN is promoting debates about the universal health coverage, suggesting it should be a goal for all countries of the world, making it increasingly necessary to discuss strategies for ensuring universal access of the population to health services. Academic institutions have played

an important role in Public Health in Latin America, both in delivering high-level health education and in the development of biomedical research aimed at contributing to the health system. Therefore, concluding the discussions at the World Health Summit Regional Meeting—Latin America, the M8 Alliance of Academic Health Centers, Universities and National Academies addresses the following call for action in five major areas:

- 1. Healthy life expectancy
- 2. Urban health/health in mega-cities
- 3. Increased research capacity to incorporate technologies
- 4. Management of health systems to ensure universal coverage and technologies to formulate plans
- 5. Health education

The M8 Alliance of Academic Health Centers, Universities and National Academies urges representatives of all health-related sectors to help achieve these five goals:

- 1. Planning and acting for better health of the population through concerted strategies targeting higher health life expectancy and facing the social inequalities
- 2. Devising policies that address the multifactorial social, economic, environmental and political determinants of health-related to urbanization
- 3. Strengthening research and development capacity as an essential way to incorporate new technologies and to perform population studies which are

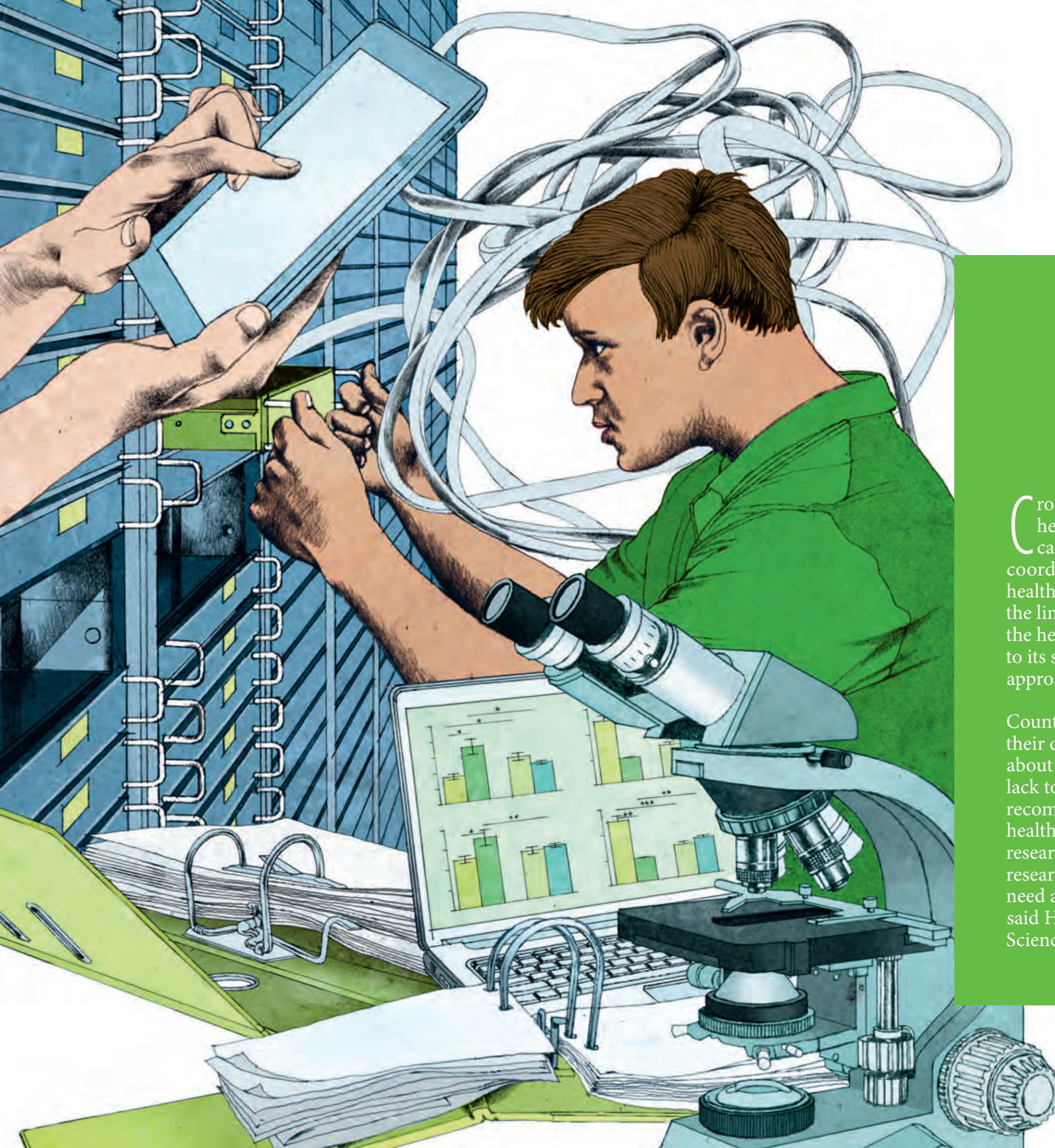
- necessary to establish the best cost-benefit policies for health
- 4. Ensuring a true universal health coverage considering the public-private mix and its impact on the existing model of universal healthcare system
- 5. Adopting the educational system for health professionals according to local priorities, in order to provide adequate health services into the future



*The M8 Alliance of Academic Health Centers, Universities and National Academies is a collaboration of academic institutions of educational and research excellence committed to improving global health, working with political and economic decision-makers to develop science-based solutions to health challenges worldwide.*  
[www.worldhealthsummit.org/m8-alliance/members](http://www.worldhealthsummit.org/m8-alliance/members)

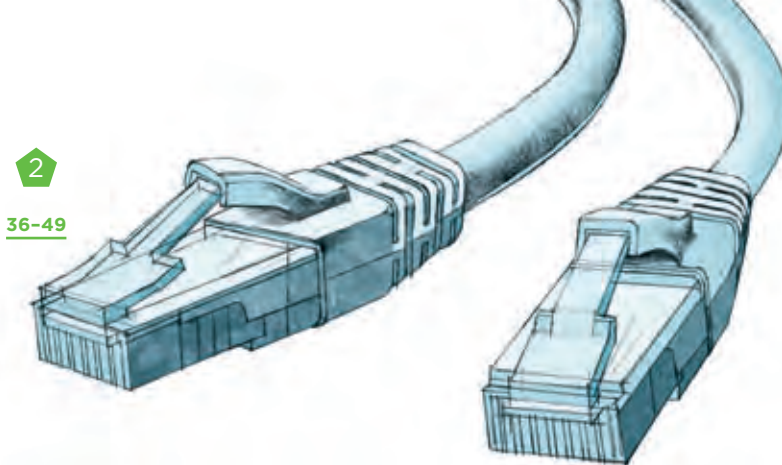
*The complete statement is available online:*  
[www.bit.ly/M8-Statement-Sao-Paulo](http://www.bit.ly/M8-Statement-Sao-Paulo)





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# Research and Innovation

Big Data and Systems Biology

Cross-sector collaborations between global health and foreign policy programs and new capacity-building initiatives are vital to improve coordination and to stimulate the financing of health research. This is also crucial to strengthening the links between evidence and policy. To improve the health status of its people and to contribute to its social and economic development, a systems approach at the country level is needed.

Countries with universal health systems have at their disposal large amounts of electronic data about their populations. But most health systems lack tools to analyze the data and turn it into useful recommendations on how citizens can maintain health. "Software and data resources for biomedical research are the critical components for successful research. But systems can't talk to each other. We need an open-ended integrated software platform," said Hiroaki Kitano, President of Sony Computer Science Laboratories.



## INTERVIEW

# “The scientist wants to get back to invention.”

Barry Marshall won a Nobel Prize in 2005 for his discovery of helicobacter pylori, bacteria that live in the gut and cause ulcers. The story of his discovery in the face of widespread doubt—he drank a flask of helicobacter pylori, colonizing his own stomach with the bug, to prove the connection—is an often-told tale of scientific curiosity and determination. For the WHS Yearbook, Marshall spoke about the doors his research opened, his re-search on helicobacter, and the enduring conservatism of the medical establishment.

*Prof. Marshall, it's fascinating that your initial discoveries opened the door to the idea of the microbiome, which is very hot right now.*

**Barry Marshall** — Well, I used to say that helicobacter showed we haven't discovered everything. I could see in the '90s that the strategy for excluding infectious agents seen in common diseases was really to start archiving samples the day you were born. Eventually, the technology should arise whereby something would happen in a cohort you were studying, and you could go back and probe the samples and see what's happening. Those studies have actually started up over the last few years—a cohort of 1,000 children getting monitored for viruses and giving fecal samples and maybe a blood sample occasionally, until they're 20 or 30 years old. Then the ones who developed an immune disease or some disease of unknown origin could at least be hypothesis-tested.

There are things in the development of microbiome I haven't really thought about which are interesting. One of them would be the link with obesity. Despite all the hype, I personally believe it's going to be quite difficult to shift the microbiome. It'll be like eradicating any kind of bacteria that's lived on you for many years—it's tough to get one sort out but the other sort in. It works in germ-free mice, where you can switch their microbiomes, but doing it in humans will be a little bit tougher.

*Do you still describe helicobacter as a pathogen? Other experiments have suggested maybe it and other bacteria can actually have protective roles.*

The interesting thing is that people with immune diseases like Crohn's disease or colitis tend to have less helicobacter. If you don't have helicobacter, you're a little bit more prone to get something like that. The NHANES study in the USA showed a negative association between helicobacter and allergies and asthma. It raises the possibility that you could use helicobacter in some kind of allergy-protection brew.

*“I don't know why they were collecting the data, because they didn't use it.”*

That's what I'm actually doing in Australia. We think you could use live helicobacter as a delivery system. The future might be that you could take a helicobacter product of some sort and it might just take the edge off your allergies, instead of continually nose running, eyes streaming, you might just be a bit sneezy on some particular days. That would be really valuable, I think. And if you could give it harmlessly to children and direct their immune system away from the allergy profile, that would be a breakthrough.

*In the annals of science, I feel like you're one of the few with a superhero-like “origin story”: Drinking the flask of bacteria to convince your critics led to your big discovery.*

Everyone asks. I'm so frozen in time, it's like I'm a character actor. After that, just imagine trying to get a different job.

*Do you think science has become more open to new ideas since that fateful day?*

Oh, yes. Now you can do a lot more hypothesis testing just by drawing on data sets and using an intelligent research plan to follow up. We even had a session here on Big Data.

I'll give you an example: When I started off, my collaborator Robin Warren thought bacteria might be associated with ulcers. The logical question would be, 'If you give lots of patients antibiotics, would they get better?' At that time, I knew that the ulcer treatment was so expensive that the government was actually recording everybody who took it. You had to fill out a form to take an H2 blocker. So it seemed to me if those forms were in a computer somewhere and there's another computer that had a log of everybody who took penicillin or erythromycin or whatever for sinus or earaches, you should be able to intelligently combine those databases and say, 'Okay! We are right!' Everybody who had a long course of antibiotics, maybe for a sinus infection, who had an ulcer, didn't have any more ulcers. You could have easily done that just by looking at the data that was out there, but in the '80s, sadly, nobody did. I don't know why they were collecting the data, because they didn't use it.

*So the data-analyzing capability we have now opens a lot of research opportunities. Are people still pretty conservative?*

It's certainly possible to develop hypotheses and innovate. Quite often, it's very difficult to get to the state where you're testing it out in some humans. To move to a product that somebody in the US or Berlin could buy in the pharmacy, you're probably looking at 10 years. If it was going to address a fatal disease—cancer for example—well, then it can be fast-tracked, and maybe you'd start to see it after just a few years. But the scientist in the lab is carrying a great millstone around his neck in that he's doing a little bit of work there, but he actually then has to do all this other work that he didn't actually sign up for—this regulatory burden, hypothesis testing, ethics committees, data collection like you wouldn't believe. All those things are incredibly expensive, long-term bureaucratic activities. The scientist wants to get back to invention as soon as his product is out of the lab.

*Are you unusual for a medical doctor in that you're also interested in experimenting? Are most practicing physicians pretty conservative?*

I'd say probably 75 to 80 percent are. But the people that go into medicine are often like me. And in fact, every doctor experiments on his patients. And quite a lot of good ideas



come out of the practicing doctors that are among the patients and making these observations. It's difficult to amalgamate them all, but I say to my young interns these days, 'Look, you're carrying a smart phone.' If that was me, I'd put every single patient I ever admit in my file and I'd have a little database with some kind of app for problems that I couldn't solve. And then when you did have an idea or make an observation three or four years later, you could just tap the app on your phone and you might filter the patients to say, 'Hang on a minute!' There would be a lot of interesting new discoveries made just by looking carefully at the data we're all collecting already.

*Prof. Marshall, thank you for the interview.* ◆



**PROF. BARRY MARSHALL**  
Nobel Prize Laureate in Medicine  
(2005), Australia



## ESSAY

# BIOETHICS IN OUR BIO-CENTURY—A PHARMACEUTICAL PERSPECTIVE

**The century of molecular medicine offers huge advances. But it comes with ethical questions. The pharmaceutical industry has to build a trustful relationship to patients in order to cope with the challenges ahead.**

It is estimated that half of the economic progress in the world since 1800 is due to advances in health.

It is not hard to believe given the advances in sanitation, clean water, prenatal and neonatal care, occupational health, and better nutrition. Advances in medical science, medical imaging, surgery, and diagnostics all played their part. Important drugs have joined the fight against age-old scourges of mankind such as tuberculosis and polio, cancer, diabetes, and premature heart disease. At the beginning of the 20th century life expectancy in the US was 47; globally now it is 70.

If the 20th century saw the unprecedented triumphs of clinical medicine, ours now is the century of molecular medicine. Immunology and systems biology are already lifting the curtain of clinical signs and symptoms of disease to uncover their fundamental molecular and genetic mechanisms, pointing the way to precise therapeutic interventions, finally shaping the magic bullets which Paul Ehrlich dreamed of only a century ago. If mankind conquered outer space in the last century, in this century immunotherapy, nanotechnology, and engineering will conquer inner space.

A perfect example of where bioethics will become central to future success is in the use of genomic, proteomic, and other -omic data in R&D, a systems biology approach to understanding the triggers, manifestations, and potential cures/treatments that were only dreamt of. In only a generation, Gaucher's Disease went from being an untreatable lysosomal storage disease to being a manageable chronic

condition with patients leading fulfilling adult lives. It has gone from being a disease with no treatment to requiring periodic intravenous treatment and later only daily tablets. And it will not be alone as the previously untreatable become the chronically manageable, for example HIV/AIDS.

If patients are analog, medicine is now digital. Digital technology is already speeding up time, making us faster and we hope smarter. Moore's law is driving our world to be smaller and more accessible, going from room size to desktop, from mobile to wearable to implantable. But with the quantified self come new challenges. Too long the patient has been on the sidelines, watching the parade of scientific progress and not being part of it.

## ROOM FOR PATIENT-TO-PATIENT MEDICINE

In this biocentury, patients will be more empowered and more actively engaged in their care, blogging with fellow patients, comparing notes on therapies and side effects, rating their doctors and their therapies, much like rating restaurants. Patients will also be conducting their own observational trials to evaluate the comparative benefits and side effects of different therapies. In short, scientific medicine will need to make room for patient-to-patient medicine.

The wealth of new data bridging the very small, the genetic, to the very large, the at-risk populations, is being midwifed by Big Data analytics and bioinformatics. This analytics of the "connectome" of science, behavior, and medicine will enhance future innovation and feed the

pipeline in a virtuous circle of mechanistic discovery and disease treatment. Using data from R&D processes, retailers, patients, and caregivers will help identify new potential drug candidates and develop them into effective, approved, and reimbursed medicines more quickly as a result of a number of factors, including:

1. Predictive modeling of biological processes
2. New discovery technologies
3. Heightened and quicker data flow
4. Patients being recruited more widely and with more factors, allowing for smaller, shorter, real-world trials
5. Better clinical efficiency and real-time monitored trials

As we stand on the threshold of this new era of precision medicine, all those dealing with these tools, including the pharmaceutical industry, must address the bioethics of informed consent and patient privacy. Although it would seem self-evident, informed consent and patient privacy have not always been acknowledged or respected, even in so-called developed countries with a long-standing heritage of law respecting individual rights.

In clinical trials, the motive of doing good is necessary but by no means is it sufficient. It may even be dangerous if it is not governed by prudence on the expected benefits versus risks of novel agents, risks which may be more or less acceptable given the severity of the disease and available standards of care. Discussions of clinical trials between a researcher-physician and a patient are governed by explicit elements of informed consent around the world.

Although these standards are being expanded, for example to include video instruction, informed consent involves a conversation explaining the risks, benefits, and alternative care to an experimental intervention, protecting patient autonomy and privacy, all in language which is understandable to a patient. Ultimately, the pharmaceutical industry serves patients and will do it better if there is trust and confidence in clinical trials. In this way we will be able to treat or cure disease and improve patient outcomes so that patients are living longer and feeling better.

## BIG DATA OFFERS LARGE OPPORTUNITIES AS WELL AS RISKS

The 40-year "Tuskegee Study of Untreated Syphilis in the Negro Male" administered by the US Public Health Service is perhaps the most infamous example where medical research did not respect these rights. But this example was in the age of paper and pencil. The data was primarily restricted to the scientific world. However, now, with vast, complex, and evermore connected Big Data, let alone governmental surveillance, Internet, and the risk of hacking, the risk to privacy is exponentially higher. In effect, Big Brother can have serious repercussions on an individual.

It is hard to imagine in our Twitter age that similar, multi-generational violations to adequate care, privacy, and consent would be discovered only after 40 to 50 years—more likely today it would be 40 to 50 minutes! As important as these declared principles are to establishing a basis for humane discourse in clinical science, they are only prescriptive, i.e., they form the normative basis of conduct between the researcher-physician and the patient-subject. On the other hand, the transparency, speed, and immediacy that come with the World Wide Web are proscriptive, the unblinking eye of public scrutiny. Thus we have two guardrails, ethical right and public might, which together guide us along a path which respects patient rights.

The challenge is, therefore, to develop policies which respect patient privacy and informed consent while not discouraging scientific innovation and the benefits of data sharing for the benefit of population health and quality of care metrics. To succeed, we will have to reimagine the pharmaceutical and regulatory interchange to include patient insights and outcomes important to them. The rapid advances in molecular medicine have increased the need to respect patient autonomy and privacy alongside the advances in technology.

At Sanofi and in the industry as a whole these questions occupy us hugely. We set up the Sanofi's Bioethics Committee in 2010 to develop policies addressing advances in science and medicine. In particular, it addresses these areas of informed consent and data privacy. But, we cannot do it alone. I don't believe one company has all the answers. For example, our expertise in pharmaceutical companies may not be one of integral understanding of the power of Big Data and computer technology. How can we ensure protection of the individual data, while benefiting from the data itself?

As an international, connected community, we need to have frank, open discussions on these topics, with experts from multiple areas including patients and patient advocacy groups to ensure we benefit from the science and technology of the future while respecting the rights and confidentiality of patients who are both the beneficiaries of and the partners on this journey. 🍀



Written by  
**DR. PAUL CHEW**  
Chief Medical Officer and Head  
of Global Medical Affairs, Sanofi,  
United States

## ESSAY

# BETWEEN POLYPILL AND INDIVIDUALIZED MEDICINE—CARDIOVASCULAR RESEARCH IN A GLOBAL CONTEXT

**Diseases of the cardiovascular system are no longer the leading diseases only in Western countries.**

In the meantime, in Eastern Europe and many countries with low and middle incomes, the age-related rate of cardiovascular death is higher than in the West. The causes for this include an increasingly Western lifestyle and a corresponding change in diet. Especially in emerging countries such as Mexico, China, and India, an increasingly large part of the population is overweight. China now has the largest number of diabetics in the world.

## TRADITION AND LIFESTYLE—A HEALTH FACTOR IN DEVELOPING COUNTRIES

The situation in the less developed countries is comparable to that in Western industrialized countries 50 years ago: There are many patients who first must get access to established cardiovascular drugs such as beta blockers, ACE inhibitors, statins, and aspirin. Good effects can already be achieved through improved primary care in these countries. Research activities are therefore focused on health policy and sociological questions: What motivates people to go to the doctor? Which living habits hinder taking regular medication? Which preventive measures are useful in the context of tradition and general living habits?

To provide people with generally accessible, easy-to-use medications that are affordable or even free, the concept of the polypill could be applied. The idea of the polypill results from the fact that cardiovascular patients often have multiple illnesses requiring the same set of drugs. This includes drugs that lower blood pressure, reduce cholesterol

levels, and prevent blood clotting and that need to be taken simultaneously over a long period or even life-long. If the different drugs are administered in a single pill, regular intake is much easier and, as shown in a large study, done with much higher discipline. For people in poorer countries, this effect could be of great importance, because they may not be used to taking medications at all.

To date, the polypill has not been popular in the West, and this may not least be because its concept is counter to the trend of the much publicized individualized medicine. In poorer countries, however, the polypill may turn out to be the right approach, because it would provide widespread simple access to a whole combination of life-saving drugs in one pill. Research could contribute to an optimal drug composition. It is conceivable to have different polypills for different patient groups. The pharmaceutical companies could probably sell the pill at a much lower price than that for the sum of single active ingredient medications. With the latter, pharmaceutical companies do not earn as much as they used to because patents have usually expired. Given the huge market for the polypill, the industry could make a profit even with low profit margins while doing good at the same time.

## PREVENTION MUST BEGIN EARLY

Cardiovascular diseases are closely associated with lifestyle. What counts here is optimal prevention. This applies to the less developed countries as well as for Western countries. Prevention research has been very successful

in recent years. One aspect has become clear: Prevention must begin early. The Spanish cardiologist Valentin Fuster impressively proved the effect of early health education in his Bogota study. Here three- to six-year-old children who learned about healthy eating had better health and were less overweight than a control group which was not given this health information. In addition, health education for children greatly affected their families.

However, if an unhealthy lifestyle has been maintained for decades, it is very difficult to change behavior. Prevention research for adults is therefore increasingly less concerned with finding out what could bring a little more effect. Rather, it is important to implement changes in behavior. Actually we have known for centuries what is good for us and what not—we just do not sufficiently act according to what we know. Psychologists are therefore exploring behavior and motivation: Why do people continue to maintain an unhealthy lifestyle although they know better? And how can they be persuaded to change their living habits?

## INDIVIDUALIZED MEDICINE—RESEARCH ORIENTED ON THE PATIENT

In Western countries, cardiovascular diseases have decreased in recent decades, but they are still the leading cause of death. We owe this decline mainly to the classical cardiovascular drugs and improved healthcare structures for acute therapy. The drugs combat the most important symptoms on a broad basis and are quite effective. These therapies can certainly be optimized through further research. Great breakthroughs, however, are probably no longer to be expected with the “one-for-all” approach.


Cardiovascular researchers are therefore seeking to tackle the disease at its root cause. In doing so, they are discovering more and more individual causes and courses of disease. The keyword is individualized medicine in treatment and prevention. For instance, research can thus identify patient groups that would not benefit from conventional cardiovascular therapies or those that would respond particularly well.

Basic researchers are primarily looking for genetic causes of cardiovascular disease. In monogenic diseases only one or two genes are altered. Such mutations occur relatively rarely, but usually have severe consequences. Here, new therapies may specifically or even causally intervene in the disease process. A recent example is the development of gene therapy for a rare monogenic lipid metabolism disorder that leads to severe arteriosclerosis. This is the very first approved gene therapy for a disease of the cardiovascular system.

The vast majority of cardiovascular diseases, however, have complex genetic causes. We probably carry hundreds

of genetic variants in us that have a positive or negative impact on the health of our cardiovascular system. The individual gene variants have only minor effects, but the sum of all determines the health status. What remains important: The classical risk factors such as smoking, obesity, and lack of exercise probably have an effect that is at least as strong as all the genes together. Nevertheless, it is worthwhile exploring these genetic mutations. They may provide information on previously unknown or unnoticed signaling pathways. One example is guanylate cyclase. Researchers at the German Centre for Cardiovascular Research (DZHK) have found that rare, extensive mutations in this enzyme cause very early heart attacks in patients with a corresponding family history. That is exciting for two reasons. First, guanylate cyclase is the key enzyme that is indirectly responsible for the favorable effects of nitrate, which has been administered for over 100 years (“nitroglycerin spray for angina pectoris”). That this gene defect has such a drastic effect indicates that the stimulation of this biological system is a valuable target for novel drug therapy, even for the much more frequent cases with slight defects. Second, there are already new drugs that stimulate this enzyme in a different way more than nitrates.

## THE DZHK AS A MODEL FOR HEALTH RESEARCH IN THE FUTURE

The development of such novel therapies requires structures in which the patient is part of the research and sufficient funds for the lengthy processes required to really bring ideas from the laboratory to the patient. At the DZHK this is ensured. Basic researchers and clinicians work hand in hand. In this way, ideas from the laboratory can be transferred quickly to the clinic, but also, vice versa, observations on patients or from clinical trials can be checked in the laboratory. For me, the German Centre for Cardiovascular Research (DZHK) exemplifies the health research of the future. Over the long term, only if individual research institutions join forces and establish specialized, collaborative research frameworks can we meet the challenges for the health systems that an increasingly aging population throughout the world entails. 



Written by  
**PROF. THOMAS ESCHENHAGEN**  
German Centre for Cardiovascular  
Research (DZHK), Germany



## ESSAY

# WHERE DOES DOWNSTREAM END? HEALTH INNOVATION REVISITED

**The health research enterprise and the healthcare system have each changed dramatically in recent years to such an extent that, when we think about innovation, the concept of “downstream” is now wider, deeper, and longer than previously thought.**

We need to expand our definition of health innovation to include uncharted downstream territory. In particular, we need to more fully integrate patients and research users in shaping the research agenda, increase collaborations between researchers and caregivers, and develop new areas of science, from registry trials to implementation research, to ensure greater penetration of innovation into care.

## HEALTH INNOVATION AS AN ECONOMIC DRIVER

Innovation is a powerful and persistent concept in society. It is inextricably linked to research, science, and technology. For many years, innovation has been positioned as the final step in a well-defined sequence of activities—the so-called innovation pipeline—designed to produce a definitive product, treatment, device, or service.

The term innovation continues to sit at the forefront of policy-planning discussions. But considering the many changes that have taken place in the research enterprise and the healthcare system, we need to evaluate whether it may not be time to reconsider our use of the term and its accuracy in reflecting current realities.

No one would question that health research and innovation are key economic drivers. Most studies estimate that the return on investment (ROI) of health research investments ranges between 20 and 67 percent. Interestingly, this ROI appears to be mainly derived from social

benefits, job creation, and better health outcomes leading to increased productivity. Indeed, the direct economic impacts stemming from the production of new goods and services account for only a small fraction of the total. One could therefore argue that achieving greater ROI requires more impact on care and greater cost efficiencies in the healthcare system.

However, much is left to be achieved when we consider that, in the United States alone, it is estimated that 50 percent of patients do not get treatments of proven effectiveness and that up to 25 percent get care that is simply not needed or is harmful.

In Canada, provincial and territorial governments are spending over 40 percent of their budgets on healthcare, leaving no room for further increases without compromising other public services. Yet, we continue to face the common challenge of improving the quality and accessibility of care.

Two of the major impediments to public research and innovation having a greater impact on the healthcare system are:

1. The pipeline model referred to above, which is predicated on researchers being the sole shapers of the research agenda, as opposed to market forces or users' needs
2. The focus of health research on treatment, through the development of new drugs or devices, as opposed to research on prevention or systems of care

This being said, non-traditional research actors, such as patients and policymakers, are playing an increasingly im-

portant role in the research process. The healthcare sector has also changed. Patients have shifted from being passive consumers of services to active participants in their own care. An increasing number of patients have more than one disease and interact with multiple contact points in a now highly extended health system that addresses disease prevention and health promotion in addition to treatment. And the health research enterprise is itself changing, with increased emphasis on prevention, health economics, and implementation science, not to mention the advent of e-medicine and the exponential growth of digital information that will radically modify the rapport of innovation to care.

## CHANGING THE HEALTH RESEARCH MODEL TO FOSTER INNOVATION

Increasingly, there has been interest in using research to stimulate greater health innovation. In the past two years, this has become a standing agenda item in meetings of provincial and territorial ministers of health in Canada.

The Government of Canada, through the Canadian Institutes of Health Research (CIHR), has worked to meet this demand. The creation, in 2007, of the Centres of Excellence for Commercialization and Research (CECRs) is part of these efforts. These are highly focused ventures that foster partnerships between academic and private sectors in order to harvest, edit, and commercialize leading technology and treatment candidates in very specific sectors. Industry partners typically contribute about US\$2 for every US\$1 in government investments. In 2012-13, partner contributions to Centre activities totaled more than US\$150 million. During the same period, CECRs helped launch an impressive 387 new companies. Other programs were created to foster meaningful partnerships between researchers, clinicians and research users to inform and guide best practices on numerous health system issues such as caregiving, drug pricing, patient engagement, and e-health.


In pursuing these new avenues, it has become increasingly evident that the “downstream” component that we refer to in the path from discovery to innovation is far wider, deeper, and longer than previously imagined. Innovation does not stop when a new drug receives approval or a technology is licensed.

To address these broad, long-term, and open-ended challenges, CIHR has developed and led a major national initiative called the Strategy for Patient-Oriented Research (SPOR). Based on a broad coalition of partners that encompasses the pharmaceutical sector, patient organizations, healthcare authorities, academic health centers, and philanthropic foundations, this initiative integrates clinical, intervention, and implementation science to address specific healthcare goals.

SPOR embraces a broad vision of health innovation and research excellence and works to seamlessly integrate research into care. This vision encompasses important activities such as evaluation of the cost effectiveness of new therapies, as well as efforts to fully understand and optimize the implementation process for new treatments, technologies, and procedures.

As an example of the kind of project that SPOR intends to make possible, a research team in Western Canada developed and tested an integrated shared-care approach to hip or knee replacement. A single case manager coordinated all required services for patients in a single clinic, simplifying and accelerating the patient journey through assessment, diagnosis, and treatment. The result was decreased wait time from first appointment to surgery from 47 to just 4.7 weeks and a 30 percent reduction in post-surgery hospital stays for the procedure. If replicated in healthcare jurisdictions across Canada, the cost savings from this single intervention would be significant.

Health research has helped unravel the biological, chemical, and molecular mechanisms of disease and has fueled innovations that have led to more accurate diagnoses and better treatments. But, we still need to better understand the science of how such innovations are used or not used and why they are successful and scale up easily or fail to achieve widespread clinical use. With initiatives such as SPOR, we are using new tools and adapting non-traditional lines of enquiry for this work such as economic analysis, behavioral science, and social psychology. We are integrating the different perspectives central to improved care, patient perspectives in particular, and we are creating change.

The process will not be easy, but to be successful, we need to be willing to embrace change. The reward is a far greater return on investment than ever before and increased health and well-being for society. 



Written by  
**DR. ALAIN BEAUDET**  
President, Canadian Institutes of  
Health Research (CIHR), Canada



## ESSAY

# NEW PARADIGM HEALTHCARE— POPULATION-BASED SYSTEMS ENABLED BY CLOUD COMPUTING

**Dramatic developments have taken place in healthcare in the last fifty years.**

High-tech science combined with the development of three types of uncorrupt and capable bureaucracies—jurisdictions allocating resources, institutions providing services, and professions developing skills to a defined set of standards—has led to a significant improvement in healthcare and health in all developed countries. However, at the end of fifty years of progress, every society on earth still faces five huge healthcare problems. The first is unwarranted variation in access, quality, and outcome, which in turn reveals the four other problems:

- » Failure to prevent disease and disability through the effective management of diseases such as atrial fibrillation
- » Waste of resources resulting from low-value clinical activity
- » Inequity from underuse by deprived groups
- » Harm from overuse of diagnostic and treatment resources

This can be seen in every country, whatever their structure and financing. These problems cannot be solved by more of the same, namely better, safer, cheaper care, although it is essential that quality and safety should continue to improve. Nor can they be solved by reorganizing the bureaucracies that have served well so far. A new paradigm is needed and is illustrated in the table below.

BUREAUCRACY-BASED PARADIGM	POPULATION & PERSONALIZED PARADIGM
The aim is on effectiveness, quality, and safety outcomes	The aim is value (outcomes/costs, both financial and carbon) and greater equity
Good service for known patients	Personalized service for all the people affected in the population
Improvement through competition	Improvement through collaborative systems and networks with patients and carers as equal partners
Transformation attempted by reorganization and more money	Transformation by culture change and digital knowledge services
Clinicians act as the users of their institution's resources	Clinicians feel they are the stewards of the population's resources

## TRANSFORMING TO THE NEW PARADIGM

The new paradigm is to focus on value. Obviously this requires high quality and safe care, but value is more than high-quality care—in fact high-quality interventions can be of low value or even of negative value, for example in the case of prostate cancer screening. There are three types of value:

- » Allocative value, optimizing the allocation of resources between different subgroups of the population
- » Technical value or efficiency, determined by how well resources are used for all the people in need in the population
- » Personalized value, determined by how well the decisions relate to the values of each individual

There is growing agreement that this is the aim of healthcare in the new paradigm, but how is this to be achieved?

What is needed is a new approach based on complex adaptive systems. Bureaucracies are linear organizations able to tackle linear problems, but health problems are complex and require a non-linear solution, and it is to systems biology and web-based computing that we need look for a solution.

## THE CONTRIBUTION OF SYSTEMS BIOLOGY

General Systems Theory was developed by biologists led by Ludwig von Bertalanffy in Austria in the 1930s. After, and as a result of, the Second World War, the focus shifted to the United States, and the Santa Fe Institute brought systems biologists, programmers working on the early large mainframe computers, and psychologists together to develop the concept of complex adaptive systems. These are sets of individuals and organizations that work together to tackle particular problems. In biology, the best example is the ant colony, and in healthcare, clinical networks focused on specific problems are starting to emerge.

The concept of emergence, also developed in the Santa Fe work, is also highly relevant. If one wants to improve a service for a population, for example for people with epilepsy in Birmingham, the way to do it is not to ask the chief executives of the numerous bureaucracies to take action, but to bring together all the people with epilepsy, their parents and carers, and all the professionals supporting them, from school teachers to neurosurgeons, and let them work together to find solutions—the process called “emergence” by the Santa Fe workers.

What takes place is a move from bureaucratic authority, to use Weber's original term, to knowledge-based organizations with what could be called “sapiential” authority, and this, of course, requires Big Data or, another perspective, cloud computing.

## FROM MAINFRAME TO CLOUD COMPUTING

The distinction between primary and secondary care or acute and community care is historical and arbitrary, as indeed is the distinction between medicine and nursing or between psychology and psychiatry. In the development of complex adaptive systems, for example the national system for people with atrial fibrillation being developed in England, we need to move from a bureaucracy-based model to one that focuses on the population, and we have called this “population healthcare.”

Population healthcare is healthcare designed and delivered with a focus on subgroups of the population, a subgroup being defined either by a symptom such as headache or a condition such as rheumatoid arthritis or a common characteristic such as being frail and elderly. Linking mainframe computers to one another has proved difficult and frustrating, but when we design a population-focused system using cloud computing to link up different parts of Big Data, this allows us to gather the criteria that allow movement toward the system's objectives, or the lack of it, to be measured and reported to the population served. Furthermore the revolution that is now taking place is being driven by three forces—citizens, knowledge, and the Internet, with the most ubiquitous technology being the smartphone, accepting that almost all phones are “smart.” Constant communication makes ant colonies work for the good of the colony, and the smartphone could do the same for healthcare, but only if the professionals treat the patients as equals. ◆



Written by  
**SIR MUIR GRAY**  
Director, National Knowledge Service,  
Chief Knowledge Officer, National  
Health Service, United Kingdom



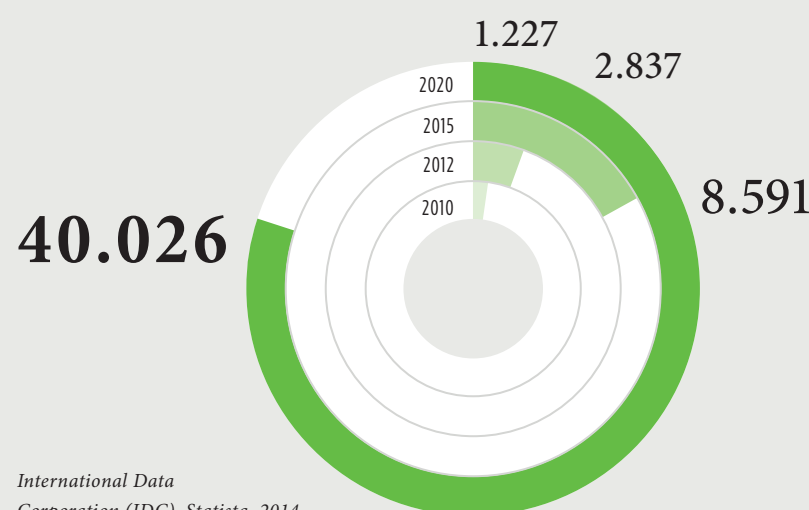
## HEALTH IN NUMBERS

# Big Data and Systems Biology

*The amount of data in the world has grown exponentially. How can we use data to improve public health? New analytical tools are sorely needed.*

## INFOGRAPHIC

Forecast of the volume of the annual amount of digital data generated worldwide in the years from 2010 to 2020 (in exabytes)



## FACTS

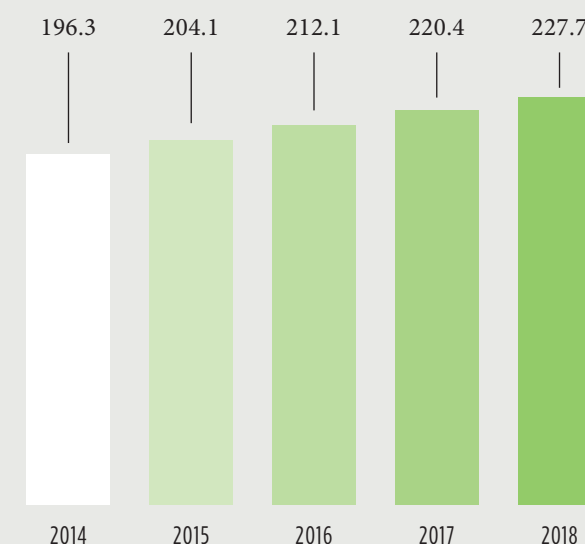


By 2016, 4.9 million patients around the world will be using remote monitoring devices.

IBM, 2012

## INFOGRAPHIC

Forecast of the number of daily personal and business emails sent worldwide from 2014 to 2018 (in billions)



## STATEMENT

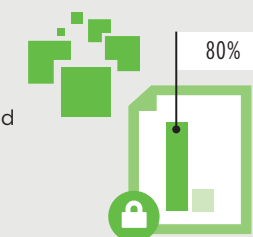
***“The 3rd health-care revolution is based on society and technology.”***

**SIR MUIR GRAY**  
Director, National Knowledge Service, Chief Knowledge Officer, National Health Service, United Kingdom

## FACTS

80% of health data is stored in hundreds of unstructured formats, from lab results to medical transcripts.

IBM, 2013



## FACTS



The Cancer Genome Atlas effort to map the genome of more than 25 types of cancer will generate 2.5 petabytes of data by completion.

US Department of Health and Human Services, National Institutes of Health, 2014

The US invested **US\$200 MILLION** on new research and development on “Big Data” in 2012.

Executive Office of the President of the United States of America, 2014

## WORDCLOUD

PROTEOMICS  
METABOLOMICS  
**DIGITAL DATABASE**  
GENOMICS  
CONNECTED  
INTERPRET  
MANAGE  
CAPTURE  
LONGITUDINAL DATA  
STATISTICS

The US needs an additional **1.5 MILLION DATA-SAVVY MANAGERS** to take full advantage of Big Data’s possibilities.

McKinsey Global Institute, 2011

## TRACK NUMBER

**150**

... billion gigabytes of healthcare data was produced globally in 2011 alone.

European Commission/Edwin Morley-Fletcher: Big Data Healthcare Report, 2013





## REPORT

## World Health Summit—Berlin 2014

# Public Health is a Key to Global Sustainable Development

Climate change and health are intimately related. So why is the impact on health often missing from discussions of climate change? That was one among many questions debated at this year's World Health Summit held in the Federal Foreign Office in Berlin. Over four days, dozens of the world's top public health officials, researchers, politicians, and the public gathered to discuss the most pressing public health issues facing the world today and tomorrow. Intense discussions about Ebola gave way to various ses-

sions around four key themes: climate change and health; healthy cities and prevention; universal health coverage; and medical education. How do these themes tie into public health? The same human-led activities that contribute to climate change—such as burning fossil fuels and cutting down trees that absorb greenhouse gases—also affect health. A warmer planet, for example, will increase the range of infectious diseases, such as Dengue and Ebola. As the Ebola outbreak has demonstrated, countries with health-care systems poorly equipped to cope suffer huge economic losses as death and fear bring societies to a standstill, said Ethel Davis, Liberian Ambassador to Germany, to a packed main hall. If Ebola infections are not contained in Liberia soon, the outbreak would cripple Liberia's economy by 2015, she said.

Such disastrous threats to health require international collaboration. Only if we act globally can we ensure comprehensive health protection locally, said Hermann Gröhe, Germany's Health Minister. The Ebola crisis shows that the international community must strengthen its efforts to create robust health systems, Gröhe added. Climate change will affect countries in other ways too; it will increase the frequency of natural disasters everywhere, for example, which will stress health-care systems. With good planning for floods, earthquakes, and heavy storms, however, some crises may be averted, said Tom Kirsch, Director of the Center for Refugee and Disaster Response at the Bloomberg School of Public Health, during a workshop about health systems after mega disasters.

The developed world is experiencing another health crisis. Having mostly eliminated infectious diseases, health systems are now struggling to control diseases such as diabetes and cardiovascular disease, for which our sedentary lifestyles are partly to blame. Experts pointed to the host city of Berlin when discussing urban environments that promote health. "Health is an issue that touches every aspect of society," said Klaus Wowereit, Governing Mayor of Berlin. "Berlin is exploring new paths to health and prevention." But even the most walkable cities won't persuade people

to exercise if they aren't themselves motivated, said Benno Nigg, Founder and CEO of Biomechanig Engineering in Calgary, Canada. "It's a matter of personal responsibility."

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*"We have to work together to make this world healthier."*

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**DETLEV GANTEN**  
WHS President

One way that science can help motivate people is by making medicine more personal. Medical research produces mounds of data. But tools with which to analyze and make sense of it have not kept pace. During an afternoon session about Big Data, Leroy Hood, President of the Institute for Systems Biology, described how researchers are just beginning to use new analytical tools to find meaning in large datasets, such as those collected from genomic sequencing technologies.

Such new tools must also be integrated into training young medical professionals, said José Otávio Auler, President of the World Health Summit 2014, during a morning session about medical education. As an example of integration of new technology into teaching, he explained how teachers at the University of São Paulo are using 3D printed models of human anatomy to better train medical students.

During the Closing Ceremony, WHS President Detlev Ganten reinforced the message that communication and collaboration are the only ways forward. "Health is more than medicine. It is a complex issue. We have to work together to make this world healthier." By "we" Ganten meant not only the public health community, but citizens, industry, and politicians. It is the core belief of the World Health Summit that it is only through mutual effort across all sectorial and national borders that lasting improvement of health worldwide can be achieved. ●





## Moments from the WHS Berlin

### DAY 1

October 19, 2014

#### PRESS CONFERENCE

*Europasaal, 15:30*

"It's new territory for all of us," said Walter Lindner, special envoy representing Germany on Ebola, regarding the international response to the Ebola outbreak.

"I would hate it if we left the room with the impression that we were too late," said Hans-Dieter Klenk, virologist at the University of Marburg, Germany, on the Ebola crisis.

"There is nothing more important than health. At the same time, it is one of the most complex issues we know of," said Detlev Ganten, President of the World Health Summit.

#### OPENING CEREMONY

*Weltsaal, 17:00*

Regarding the Ebola outbreak in West Africa, Frank-Walter Steinmeier, German Foreign Minister, assured, "It is clear to us that we cannot simply abandon these people—and we will not do so!"

"With this unique international interdisciplinary forum we can truly push forward the global health agenda," said José Otávio Auler, President of the World Health Summit.



**01** A high-ranking panel of experts answered questions from international media during a press conference.

**02** German Foreign Minister Frank-Walter Steinmeier, German Minister of Health Hermann Gröhe, and WHS President Detlev Ganten approached the stage to welcome participants during the festive WHS Opening Ceremony.

**03** WHS Presidents José Otávio Auler and Detlev Ganten officially launched the Summit.



**04** The historic Weltsaal in the German Foreign Ministry hosted keynotes and symposia of the WHS 2014.

**05** During the Opening Ceremony, German Foreign Minister Frank-Walter Steinmeier urged a call to international action to control Ebola.

**06** World-renowned Nobel Prize Winner Barry Marshall welcomed a captivated audience.



**07** The international health community and prominent politicians discussed pressing public health issues.

**08** Young leaders in public health spoke out on critical issues affecting their countries: Agostinho Moreira de Sousa, Lakmali Amarasinghe, Tra My Dang (from left to right). "The biggest step is to go from words to practice and to provide quality in education and health for all," said Agostinho Moreira de Sousa from Portugal.



# Moments from the WHS Berlin

DAY 2

October 20, 2014

**SPECIAL SYMPOSIUM**

Weltsaal, 8:30

**Ebola: a Wake-up Call for Global Health**

“Such an outbreak would even be a challenge for countries with a public health system,” said Reinhard Burger, President of the Robert-Koch Institute, Germany.

“These are places of death, fear and rumor,” said Annick Girardin, French Minister of State for Development and Francophony, of her visit to Guinea during an outbreak.

**KEYNOTE**

Weltsaal, 12:00

**Climate Change and Health**

“Fixing dreadful sanitation is not just about introducing toilets. It’s about changing habits,” said Ursula Eid, Chair, United Nations Secretary-General’s Advisory Board for Water and Sanitation, Germany.

**KEYNOTE**

Weltsaal, 14:30

**Big Data, Systems Biology, and Systemic Medicine**

Biomedical researchers need innovative tools with which to develop new medicines. “We lack reliable models that depict the human as a whole or as individual organs. What’s good for a mouse is not necessarily good for a human,” said Georg Schütte, State Secretary for the German Federal Ministry of Education and Research.



01-04 French Minister of State for Development and Francophony, Annick Girardin, and German special envoy on Ebola, Walter Lindner, were two of the speakers in a special symposium on Ebola discussing the international efforts to stem the Ebola epidemic. International media plied Lindner with questions.



05 Breaks between keynote lectures, workshops, and symposia provided plenty of time to exchange ideas.

06 Many participants took notes to follow up with speakers later.

07 During a workshop, Susanne Weber-Mosdorf, former Assistant Director-General, World Health Organization, discussed how trade agreements challenge public health policy.

08 More than 1,200 internationally renowned scientists, economists, politicians, and the public met in Berlin to discuss the most pressing public health issues of our time.

09 Shunichi Fukuhara, José Otávio Auler, Burkhard Kieker, and Detlev Ganten enjoyed the traditional drum music and opening festivities during the WHS Night gala celebration in the historic Berlin Town Hall.





“I am interested in the social determinants of health such as urban planning and the food industry. I think you can’t separate public health from medicine, and we need to integrate the two to affect change.”  
**CATHERINE RAN JI**  
*Member of the International Federation of Medical Students’ Associations Québec, Canada*



“I’m interested in learning about what’s going on in global health. For someone who’s just coming in, it gives a good idea of the opinion leaders and an overview of the field.”  
**CHRISTOPH PROSS**  
*Department of Health Care Management, TU Berlin, Germany*

# Faces and Voices in the Crowd



“The actual negotiations, discussions, and decisions are made in the corridors, not in the keynotes. World leaders are approachable by students. That’s cool.”  
**HAMPUS HOLMER**  
*Member of the International Federation of Medical Students’ Associations, Sweden*



“We need to act with more urgency in tackling these global health challenges. It was nice to see and meet the people and faces behind these challenges.”  
**KOPANO MABASO**  
*Participant in the Young Physician Leaders Programme, Oxford University, United Kingdom*



“The leading cause of death in my country is infectious disease. I found the Ebola sessions fascinating and really praise the healthcare workers who have risked their lives to help victims.”  
**KANIZ FATEMA**  
*Emergency room physician, BIRDEM General Hospital, Bangladesh*



“It’s a great place to make global and local connections. Our problems are all interconnected, so it’s wise to think and understand other people’s experience. It’s important to think globally and act locally.”  
**MOHAMMAD MAINUL ISLAM**  
*McGill University, Canada*

**01** Karl Max Einhupl, Chairman of the Executive Board, Charit – Universittsmedizin Berlin, met Brazilian ambassador to Germany H.E. Ms. Maria Luiza Ribeiro Viotti at the World Health Summit.



**02** Roger I. Glass, Director of the Fogarty Center, gave a rousing speech on how to transform medical education and research in Sub-Saharan Africa.

**03** Expert presentations were followed by open discussion.



**04** Annette Grters-Kieslich, Dean of Charit – Universittsmedizin Berlin, moderated a workshop on social accountability in medical education.

**05** The 20 workshops offered a forum for small groups to focus on hot topics.

# Moments from the WHS Berlin

DAY 3

October 21, 2014

**WORKSHOP**

*Stresemann, 9:00*  
**Health Systems after Mega Disasters and Conflicts**  
“Communication really becomes the crux of the matter in all these disasters,” said Michael J. Klag, Dean of the Johns Hopkins Bloomberg School of Public Health, United States.

**KEYNOTE**

*Weltsaal, 14:00*  
**Universal Health Coverage**  
“Without functioning national health systems, there is no chance for a global system,” said John Arne-Rottingen, Department of Global Health and Population, Harvard University, United States.

**SYMPOSIUM**

*Weltsaal, 16:00*  
**Financing Global Health**  
“Investing in health is investing in prosperity,” said Annika Calov, Head of the Department of Education and Health, KfW Development Bank, Germany.

**WORKSHOP**

*Stresemann, 16:00*  
**Social Accountability in Medical Education**  
“One thing that I am always struck by is when interns say that the first day they became a doctor feels like the first day they became a student,” commented Naveen Tenneti, Student, Monash University, Australia.



# Moments from the WHS Berlin

DAY 4

October 22, 2014

Public Day: “Healthy Cities”

**SYMPOSIUM**

*Weltsaal, 9:00*  
**Physical Activity and Healthy Aging**

“We as physicians really need to make an exercise prescription. We must begin to merge fitness and sports with healthcare,” said Bernd Wolfarth, Director of the Department of Sports Medicine, Humboldt University, Germany.

**KEYNOTE**

*Weltsaal, 11:00*  
**Healthy Cities and Prevention**  
“Motivating people to do sports can’t merely start when a person enters a sports club. You have to start as a child, and this means you have to engage the parents so that they are part of the process of learning how to lead an active lifestyle and then continue this as an adult,” claimed Robert Bartko, Olympic gold medalist in cycling for Germany in the year 2000 and board member of the German Olympic Sports Confederation.

**CLOSING CEREMONY**

*Weltsaal, 12:30*  
**Towards a Healthy Society**  
“Sport teaches that the value of the team is greater than the individual,” said Jacques Rogge, Hon. President of the International Olympic Committee (IOC).

“We want to make this world a healthier place. We have to take action,” concluded Detlev Ganten.



**01** Questions from participants encouraged lively debate.

**02** Ichiro Kawachi, Chair, Department of Social and Behavioral Sciences, Harvard Public School of Health, appealed to health experts to involve themselves in urban planning.

**03** Robert Bartko, German Olympic gold medal winner in cycling, stressed the importance of daily exercise, beginning in childhood.

**04** Inside the “Room of Ideas,” conference participants and WHS partners discussed thoughts and opinions.

**05** During the WHS Closing Ceremony, public health experts and prominent politicians celebrated a successful Summit.



# M8 Alliance Statement World Health Summit—Berlin

*“Health is more than Medicine”*

*Berlin, October 19 to 22, 2014*

**A. HEALTH IS A HUMAN RIGHT.**

Health has an enormous impact on social and economic development worldwide. Nothing is more important than health for the individual and for the whole of society. Today this fundamental public good is facing enormous threats. A concerted global strategy of all stakeholders from academia, industry, politics, and civil society is required to tackle current and future challenges to health on a global scale. In order to succeed, this strategy has to be developed and executed by a broad alliance across disciplines and national boundaries, going beyond presently involved organizations. In view of today’s great and urgent challenges, there is no time to lose. Joint action is not a choice but mandatory.

**B. THE WORLD HEALTH SUMMIT**

is the forum to further international cooperation for health and to devise solutions for the most pressing issues in global health. It brings together decision-makers and opinion leaders from countries across the world and from diverse backgrounds including politics, academia, industry, clinical healthcare, and civil society. With its international and interdisciplinary outlook, the World Health Summit is a central platform for high-profile dialog and strategy development in health since its inauguration in 2009.

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

**C. THE M8 ALLIANCE OF ACADEMIC HEALTH CENTERS, UNIVERSITIES AND NATIONAL ACADEMIES**

provides the academic foundation of the World Health Summit. The M8 Alliance features 17 members from 13 different countries. The InterAcademyPanel (IAP) provides an umbrella for international science worldwide. We are committed to improving global health, working with political, social, and economic decision-makers to develop science-based solutions to health challenges worldwide. The M8 Alliance collaborates closely with all international organizations involved in global health, especially with the organizations of the United Nations and the World Health Organization. For international health issues, the WHO has to be the leading institution.

[www.worldhealthsummit.org/m8-alliance.html](http://www.worldhealthsummit.org/m8-alliance.html)  
[www.iamp-online.org](http://www.iamp-online.org)

**D. CALLS**

for action in the following six major global health issues were developed by the M8 Alliance concluding discussions at the World Health Summit 2014:

1. Ebola
2. Climate Change and Health
3. Translational Medicine
4. Medical Education
5. Prevention, Healthy Cities and Demographic Change
6. Hearing Loss



*The M8 Alliance of Academic Health Centers, Universities and National Academies is a collaboration of academic institutions of educational and research excellence committed to improving global health, working with political and economic decision-makers to develop science-based solutions to health challenges worldwide.*

[www.worldhealthsummit.org/m8-alliance/members](http://www.worldhealthsummit.org/m8-alliance/members)

*The complete M8 Alliance Statement 2014 is available online at:*

[www.bit.ly/M8-Statement-2014](http://www.bit.ly/M8-Statement-2014)





## REPORT

## World Health Summit—Berlin

# Cross-Country Collaboration to Stop Ebola in its Tracks

**“We likely underestimated the magnitude of the epidemic and weren’t well prepared,”** said German Foreign Minister Frank-Walter Steinmeier during the World Health Summit Opening Ceremony on Sunday, October 19.

This year’s World Health Summit was held while Ebola raged through West Africa. The United States had

just reported that a Liberian patient admitted to a Dallas hospital had infected two healthcare workers. Other healthcare workers infected in Africa were being treated in European hospitals. That Ebola had crossed the oceans stoked public anxiety.

The international community in coordination with the United Nations, however, was now responding to the crisis, added Steinmeier and claimed, “Anyone who is aware of the scale of

this crisis will recognize that, in the joint fight against this invisible virus, we need an international alliance which stands together—no country can succeed alone.”

The World Health Summit responded by organizing a special panel discussion on Ebola, held on Monday morning, October 20. “Everyone reacted too late but now things are moving,” said Walter Lindner, special envoy to the German Government on Ebola,

*“Everyone reacted too late but now things are moving. We all want to get on the right track and end this thing.”*

**WALTER LINDNER**  
Special Envoy for Ebola  
to the German Government

during the panel discussion. “We all want to get on the right track and end this thing.”

Ebola epidemics have erupted in Africa periodically since at least 1976, when the first outbreaks were identified in Sudan and the Democratic Republic of Congo. These outbreaks never involved more than 500 people and were quickly contained, explained Hans-Dieter Klenk, virologist at the University of Marburg, Germany. “This time the virus invaded into a densely populated area and into a highly mobile population,” he said. This fact, compounded by the affected nations’ poor healthcare systems, made matters catastrophic. Liberia, for example, has only one doctor for every 75,000 people, said Ethel Davis, Liberian Ambassador to Germany. “Ebola killed people at a faster rate than the civil war in Liberia,” she added.

Most praised were the healthcare workers who risked their lives to help victims. Ebola is spread by direct contact with body fluids of an infected person, after that person begins to show symptoms. Consequently, infected patients are isolated and healthcare workers treating patients must

be clothed with special protective equipment and go through elaborate decontamination procedures. “You can’t imagine the conditions under which they are working,” said Lindner, who told the story of a Belgian doctor who stepped out of a clinic to take a break and then poured liters of sweat out of his rubber boots.

With enough resources, these healthcare workers will contain the outbreak, said Florian Westphal, Managing Director of Doctors without Borders. Out of 22 healthcare workers who had contracted the infection, only 4 had become infected within a healthcare setting, he explained. “With strict hygiene and containment practices, while there is still a risk, it can be managed,” he said.

Patrick Ndimubanzi, Minister of State in the Ministry of Health, Rwanda, explained how the country is preparing to manage Ebola. In addition to extensive training of healthcare workers, police, and the military to recognize Ebola symptoms and how to appropriately handle infected people, Rwanda is conducting active surveillance of all borders by screening people who have been in Ebola-affected countries. This includes taking people’s temperatures to ensure they have no fever. Non-African countries are taking similar measures to ensure any infected peo-

ple entering the country are quickly identified and isolated.

Everyone expressed hope that the aid now flowing into the affected African countries will shore up healthcare systems so that the next time Ebola or any other devastating infectious disease erupts, countries will be better equipped to deal with it. “We have to learn from this,” said Lindner. “We have to provide a better structure to prevent such an epidemic in the future.”

Rounding up the discussion, a “Berlin Declaration on Ebola” was published by the WHS Organizers that concluded: “We shall undertake joint efforts to contain the disease and to prevent it from spreading to other regions, including to those outside West Africa. The Ebola epidemic shall not develop into a pandemic.”

*For further information, please find the whole declaration published on page 65. ●*

*“Ebola killed people at a faster rate than the civil war in Liberia.”*

**ETHEL DAVIS**  
Ambassador of the Republic of  
Liberia to Germany





## INTERVIEW

# “There will be another outbreak.”

David Heymann is an American epidemiologist. He was one of the first researchers to study Ebola, and emerging diseases like AIDS and SARS. Before addressing the World Health Summit session on Health Research, he spoke about the global response to the Ebola outbreak and the threat other emerging diseases pose to global health.

**Prof. Heymann, when you first encountered Ebola in 1976, would you have identified it as a research priority?**

**David Heymann** — Well, Ebola is an emerging infection. What's important about emerging infections is not what you know, it's what you don't know. Because when an infection emerges, you never know if it's going to become a threat. The other thing about emerging infections is the only time a community can begin to understand them is during the time when they're present, and that is during an outbreak. So from the very first outbreak, in which I participated in the US with the Center for Disease Control, it's been a research issue whenever it's emerged. The first outbreak was actually over by the time the teams got there. Ebola usually happens in rural areas, and people understand so well what the disease is that they stay away from patients. What happened in our present outbreak was that the initial response was not robust enough. It wasn't stopped while it was still in three different rural areas. It spread into cities. But elsewhere in Africa, it never went on, because countries were ready for it and stopped it. In fact, there's been an outbreak in the Democratic Republic of Congo that began in August that's already contained and finished. There are three strategies which work every time there's an Ebola outbreak. First is identification, isolation, and making sure health workers are protected. Then contact tracing, putting contacts or patients under surveillance, and if they develop a fever to make sure they're isolated if it's Ebola. And the third is helping communities understand how to prevent infection.

**Is there a vaccine being developed?**

There are vaccines being developed. And they were developed only because this agent found itself on the list of

bioterrorist agents in North America. Had it not been on that list, there would have been no research and development. That's typical of all emerging infectious diseases that don't affect the developed world. Now we're in a position where we have to try those vaccines and those drugs and other treatments during the current outbreak. Fortunately, there's a research plan that is technically sound, and the Wellcome Trust in the UK and the NIH are providing resources.

**Is Ebola an odd choice for a bioterror weapon?**

I don't think so. It's not a matter of transmitting rapidly or causing an epidemic, it's just a matter of fear. And so if there are a few people with Ebola and if it's used in such a way that there are people in many different sites with infections, it could be a terror weapon. But I'm not saying it is. I have no evidence that anybody is working on this.

**So coming back to the lessons that we've learned from this case in terms of research priorities and how the international community should respond: Do we need to reevaluate the process?**

Well, we learned in the SARS outbreak what needs to be done. We need epidemiology, we need to discover the agents that cause infection and conduct clinical research. All those need to be working together, and they worked together very well during the SARS outbreak. We stopped that outbreak very rapidly. That hasn't occurred in this outbreak. People haven't been cooperating. So there needs to be good coordination in each country by the UN system and governments.

There's an abundance of good will in terms of providing technical and physical infrastructure support that needs



**Is it too soon to talk about lessons learned?**

The big challenge right now is to get research and development done on these new vaccines, new drugs, and treatments. If they are shown to be effective, they need to be made available for the next outbreak. Because there will be another outbreak.

**“You’ve got the devil you know and the devil you don’t know.”**

And at the same time, an issue we have today is weak infrastructure in developing countries. But again, there's no use in making excuses on why this is occurring in countries like Liberia and Sierra Leone. It's that it needs to stop. And African countries must use their own ingenuity and must be supported by the international community.

**Is the fact that a number of African countries have successfully contained the outbreak an optimistic sign?**

I think provided coordination is done properly and is strong in countries and provided all this good will is channeled in the right direction, there's no reason why this outbreak can't stop. In addition, in places like the former Zaire, people know what this disease is, and they stay away from it. They understand in their context that this is caused by evil spirits within the person, and if you touch that person those evil spirits will enter you. And so they stay away. And so that's why many times outbreaks don't occur, because people get sick, a few of them die, a chain of transmission is broken, and then it's over.

**Is there difficulty in terms of recognizing the disease in places like Liberia, where it's not as familiar?**

Well, there is always difficulty in identifying any emerging infection. Ebola is very difficult to identify because it's like the flu when illness first appears—it causes fever, muscle aches, joint aches, and then in some sickness gets worse and results in death while in others it moderates with survival.

But hopefully what will happen in this outbreak is that as hospital workers become more familiar with the disease, they'll be able to manage patients better and keep them alive long enough for their immune system to neutralize the virus. The other challenges, of course, are using convalescent blood from patients who have survived, to get the antibody from that, and treating patients with it to see whether that's effective or not.

to be best coordinated so that there aren't gaps and so that people aren't duplicating each other's efforts. That's where the UN comes in, and hopefully it will be very strong at the country level. The UN should be putting its best people in the field in those countries to help coordinate what's going on.

**So when you talk about the UN system and the global response, you are talking specifically about Ebola or about—**

I think the example of the recent cholera outbreak in Haiti is a good one. There was very weak coordination in Haiti, and as a result that outbreak continued for quite awhile.

**Is that difficult when there isn't a huge public health or medical infrastructure to begin with?**

That's true of most African countries, and Ebola has been contained elsewhere. I think it's not time for excuses. It's time to say, 'What can we do with what we have?' It's very easy to say, 'Oh, this happened because this and that.' The real issue is how to stop it. And that's where people should be concentrating efforts.



*Is it difficult in the sense that you can only study this during an outbreak?*

Very difficult. That's why we have to be ready. There's a clinical research network in Europe ready to jump on these outbreaks when they occur. There's a need to have the research protocols on the shelf, ready to go when an outbreak occurs. Initially it wasn't known whether Ebola would reemerge. SARS may never reemerge. It may have been a one-time event.

*But there are plenty more emerging diseases out there. And we haven't been able to cure malaria, or any of these other much larger killers, either. How would you distribute research funding?*

That's a good question. You've got the devil you know and the devil you don't know. You've got the diseases you know and the diseases you don't know. And what's important is to have a balance between what's killing people and the diseases that are present today and the diseases of the future. That's a very difficult balance. You know, how many children die each day from malaria? Those numbers may actually be increasing in Sierra Leone and Liberia, where patients can't get routine healthcare because resources have been taken up by the Ebola response.

—  
*“The microbial world is very complex. And it's one you have to constantly be watching over.”*  
 —

This is a very horrible outbreak, and one we want to see stop as soon as possible, but if you look in the long term at priorities, HIV, tuberculosis, malaria, and other infections are also very important. We know about them. And we have to continue to invest in them. The reason we're still seeing high mortality from TB or AIDS is because we don't have the vaccines to prevent them. And we need to develop vaccines. Then you have to balance that with the research on the other side for diseases we don't understand but which may continue to emerge.

*AIDS was an emerging disease at one point, right?*

Absolutely. There are three types of emerging diseases. There's one that emerges and doesn't go further. There's one that emerges and spreads a short while but then disappears again—that's Ebola in previous outbreaks, and hopefully in this one. And then there's a disease like HIV that emerges, spreads among populations indefinitely, and becomes endemic.

*I've heard reports that Ebola might make itself endemic.*

That's why it's important to get it back in the box.

*And how much immunity does surviving give you? Do we know?*

I stayed after the first outbreak, collecting blood from the survivors. And during that process, you take the blood, you divide the clear part, which has the antibodies, from the red blood cells. You give the red blood cells back to the patients, to the survivors. You keep their antibodies. And then that was used one time in the UK, but then by the time the next outbreak occurred in 1995, it was no longer good. At that outbreak, whole blood transfusions were given to people. It was clear that they were free of HIV, free of the Ebola virus; they were then used as transfusions to eight people—and seven survived. It's not a clinical trial, but it's a clue.

*Are there other things out there that scare you as much as Ebola?*

Well, there are some things that are known that are quite frightening, and that is for example antibiotic resistance. We know that organisms are developing resistance to the antibiotics we use to treat them. We're not treating antibiotics the way we should be. The microbial world is very complex. And it's one you have to constantly be watching over.

*Do you think that the developed world has been too confident—I'm thinking of the US in particular—in saying, ‘This will never spread here’?*

No, no. We saw that SARS will spread in industrialized countries. The difference between Ebola in an industrialized country and in a developing country is the treatment and management is basic in a developing country. This organism has never been seen to spread in industrialized countries. Twice, in Johannesburg and in Zurich, it was detected and didn't spread. The complex procedures that they're using may increase the risk of contamination of a gown or contamination that makes it more difficult to remove that protective clothing from that contamination.

*Maybe hospitals in the US should be using less complex procedures?*

Well, they have to do the procedures around their protocol. They'll get more experience.

*Prof. Heymann, thank you for the interview. ●*



**PROF. DAVID HEYMANN**  
 Chairman of the Board, Public Health,  
 England

## Berlin Declaration on Ebola World Health Summit—Berlin

—  
*“The Ebola epidemic shall not develop into a pandemic.”*  
 —

*Berlin, October 19-22, 2014*

We, the organizers of the World Health Summit (WHS), the “M8 Alliance of Academic Health Centers, Universities and National Academies,” the partners and the participants of the WHS from governments, industries, civil society, governmental and non-governmental organizations, express our deepest concern about the unprecedented spread of Ebola in parts of West Africa. We are deeply saddened by the loss of thousands of lives and the suffering the disease is inflicting. We note with regret that there appears to be no standard cure for the Ebola virus to date. The United Nations Security Council has determined that the unprecedented extent of the Ebola outbreak in Africa constitutes a threat to international peace and security. It is our common understanding that the current Ebola epidemic has the potential to turn into one of the most serious public health threats in the 21st century.

As members of the international health community, we recognize our collective responsibility to mobilize our efforts to deliver assistance to the affected communities. We shall undertake joint efforts to contain the disease and to prevent it from spreading to other regions, including to those outside West Africa. The Ebola epidemic shall not develop into a pandemic.

The participants of the World Health Summit are convinced that, in the wake of the current Ebola outbreak, the international community needs a new approach to combating similar threats to health in the future, bearing in mind the increasing mobility of today's world. In the future, we must ensure that diseases as infectious and deadly as Ebola will remain on the agenda of the international health community. They deserve our constant attention and a resolute and coordinated response.

We commend all the local and international health workers and volunteers for their courageous efforts. We will match this selfless commitment by providing relief through financial and material support and through expertise. For our contribution to be effective, we always have to make sure that we take into account the individual requirements of the countries affected. In the short term, our aim should be to meet the most urgent needs. Ultimately, however, we must make ourselves part of a long-term effort to assist the affected region in rebuilding its health infrastructure.

**M8 Alliance**  
 Academic Health Centers Universities and National Academies

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[www.worldhealthsummit.org](http://www.worldhealthsummit.org)  
[www.worldhealthsummit.org/m8-alliance.html](http://www.worldhealthsummit.org/m8-alliance.html)



# Evidence to Policy

Climate Change and Health

According to the UN Resolution on Global Health and Foreign Policy, global health affects all the core functions of foreign policy: achieving security, creating economic wealth, supporting development in low-income countries, and protecting human dignity. But climate change threatens the progress in public health we have already made in the developed world and could wreak havoc on the fledgling healthcare systems of the developing world.

“Climate change represents an additional stressor on our already impaired systems,” said Bettina Menne, Program Manager of Climate Change, Sustainable Development and Green Health Services at the World Health Organization European Centre for Environment and Health. “Where you have high levels of mortality or high levels of child or female vulnerability, populations will suffer more. We must act now to strengthen health systems in vulnerable areas.”



## INTERVIEW

# “You can’t neglect the built environment.”

Sarah Cook is the director of the United Nations Research Institute for Social Development. Her research has focused on social and economic transformations in China, including gender, labor markets, inequality, and social welfare. Her work on the implications of China’s rise for international development gives her insights into the challenges other developing economies face as they try to balance economic progress with urban planning and health. For the WHS Yearbook Cook discussed the lessons policymakers can learn from the Chinese example.

*Dr. Cook, what are some of the opportunities that middle- and lower-income countries have to skip ahead of some of the mistakes that the industrialized world might have made in city design and urban planning, moving into the future?*

**Sarah Cook** — Obviously we’re seeing very rapid urban change, but also environments where it’s very difficult to integrate some of the kinds of lessons we’re learning here. Given technical capacity, costs, etc., new technologies can be brought to bear on the design of cities. But for a low-income country, facing rapid urbanization, mobility, very few resources, real challenges just to develop basic primary health systems, very few doctors, very few trained medical services—how does one even start the process?

I’ve worked in China over a period of 30 years, and they’ve gone from having cities which were bicycle cities to cities where bicycles cannot traverse a city. Perhaps it’s an inevitable process: You first have to get to a point where you experience a negative aspect before you start thinking, ‘Oh, maybe we need bike lanes and we need urban environments where people can live.’

It’s not just about individual choices, but individual choice is important. We need to try to affect, as people get richer, what kind of aspirations people have for their societies. What do they look to as models? And often they might look to the urban environment in America, where everybody has a car. Why don’t they look to the urban environment in Holland? It goes for everything from the architecture, the design of buildings, the layout of streets, to the location of working-class neighbor-



hoods relative to the places they need to work. All of these issues clearly are at stake in an urban planning and health context.

*I’ve often seen China lauded for installing thousands of kilometers of urban rail capacity and aiming to build over 100 public transportation systems from scratch in the next five years. The argument goes that because they’ve had so many cities growing so fast, they’re paying more attention to transit and urban planning. What’s your take?*

China is definitely paying more attention to this, but you’ve got to put that in the context of 30 years of poorly regulated planning. Obviously they’ve had strict controls on migration and mobility, which has negative sides as well for the individuals concerned. So it’s true, they have made huge investments recently in public transportation systems. But if you think of a city like Beijing, and the extent of the public transportation system, it’s still tiny.

*“It’s important to remember that many of the benefits are way in the future.”*

The growth of car use so far exceeds it that the challenges are still huge. Can the small and middle-sized cities that the government is trying to put more investment in undertake these kinds of projects? I mean, there’s a lot of capital investment needed. There’s a lot of technical knowledge and know-how needed. The scale in a country like China is huge—and then even more so if we start looking ahead to India’s urbanization process. These are massive, massive challenges. Can countries in Africa learn enough about the experiences of China and really get the level of expertise, the technical know-how, but also the resources from the developed world to fill the financing gap that’s going to be necessary to pursue these kinds of options?

*Do you think advances in technology like the cell phone are creating an opportunity for decentralization of services?*

It’s clear that they offer opportunities in terms of health information, marketing information, things that could maybe reduce the need for actual mobility, that you could do much more digitally, including financial transactions—so there are huge possibilities. But of course you can’t neglect the built environment that people have to operate in, particularly as we are also talking about diabetes, obesity, chronic diseases that are already becoming a huge part of the disease burden in low-income countries.

*And is there enough discussion about the future of low-income urban areas?*

Obviously there are people looking at these issues and discussing them. I think it’s not prominent enough in the discussions. When we’re talking about health and low-income countries, we tend to be focused on particular issues—infectious diseases, maternal and child mortality—all of which are critical issues. Increasingly, however we are moving away from vertical structures of dealing with disease-specific interventions toward more holistic approaches.

Clearly, what we need is better systems. And those systems can’t happen in an ad-hoc, siloed way. And I think with the issues we’re talking about here with healthy cities, the discussion can’t just be left to the health sector, because the health sector clearly can’t determine all of these environmental outcomes. They’re still emerging issues that don’t get enough prominence. They probably don’t get enough funding, partly because everybody works in sectors, and it’s hard to get cross-sectoral cooperation going.

*Is the most effective way to do that—and it seems to come up over and over—to put a price tag on the costs and sell the benefits?*

I don’t know that it’s the most effective, but it is often a necessary thing to do. It’s important to remember that many of the benefits are way in the future. And so in many countries, there’s a political obstacle to investing now for things that will happen 30 years in the future. But also we often lack the kind of knowledge needed to understand those future payoffs. And there are immediate needs. How do we trade off investment in lifesaving technologies for infants at birth today versus what we’re going to see in terms of our urban environment in the future? If countries are forced, because of resources, to make these tradeoffs, it’s probably clear which choices they are likely to make.

Another issue that is becoming increasingly prominent in discussions is inequality. We now know more about the link between inequality and poor health outcomes in the rich world. Inequality itself leads to differential health outcomes. In the developing world, with urban elite populations who are globally connected, who go for their health needs externally, who want their own private mechanisms for transport, there’s less buy-in and less political pressure to address some of these issues locally. Inequality, in itself, is probably an obstacle to moving forward on some of these issues.

*Dr. Cook, thank you for the interview.* ■



**DR. SARAH COOK**  
Director, United Nations Research  
Institute of Social Development,  
Switzerland



## ESSAY

## HEALTHY AGING

**The social determinants of health are defined as the conditions in which people are born, grow, learn, work, and age. Investing in social determinants is crucial to the successful aging of the population.**

## WHAT HEALTHY AGING IS—AND WHAT IT IS NOT

Healthy aging is defined as the ability to maintain optimal physical, mental, and social well-being as we age. It is important to keep in mind that the opportunity for healthy aging is not limited to just those individuals who manage to remain free of disease and disability as they grow older; such a restrictive definition would apply only to a minority of the population (less than five percent). The concept of healthy aging is more expansive than the absence of disease or disability; it acknowledges the potential for even older individuals with chronic conditions to experience productive and fulfilling lives.

Nor is healthy aging exclusively defined by our ability to stave off premature death. The objective of social policy is not simply to maximize the years of life, but to optimize the quality of life as we age (as encapsulated in the oft repeated slogan: “Add life to years—and years to life”). Advances in medical technology have dramatically improved our ability to extend life. But it is a fallacy to attribute improvements in healthy aging to medical advances alone, for the health and well-being of the population is determined by many factors that fall outside of the healthcare system. As every doctor or nurse understands, by the time a patient walks into the emergency room, their state of health (which prompted them to seek medical attention) has already been shaped by decades of exposure to conditions that have relatively little to do with the activities of healthcare professionals.

Promoting the healthy aging of the population depends crucially on the adoption of healthy behaviors, i.e., avoiding cigarette smoking, eating a healthy diet, regular

physical activity, moderation in drinking. The problem is compliance. If everybody were capable of adhering to these lifestyle prescriptions, we could undoubtedly achieve tremendous leaps in healthy aging. But the problem is that very few of us—less than fifteen percent of the population—are able to stick to all of these recommendations. Meanwhile, the ability of people to adhere to public health guidelines is itself shaped by broader circumstances in their lives, such as levels of health literacy, access to decent jobs, and strong social environments that support the individual, as well as strong solidarity and social community. In short, a strategy to promote healthy aging in society needs to invest in the broader social determinants of health.

## THE SOCIAL DETERMINANTS OF HEALTHY AGING

The World Health Organization defines the social determinants of health as “the conditions in which people are born, grow, learn, work, and age.” To wit, the social determinants of health are everywhere around us: They consist of the quality of schooling we receive in youth, access to safe and secure jobs, the availability of decent housing, public transport, and residential environments that provide opportunities for social interaction. In short, a society that cares about the health of its aging population cannot rely exclusively on the actions of the healthcare sector; it must engage in a coordinated strategy that acknowledges the contributions of educational, labor market, transportation, and social security policies in assuring the conditions for healthy aging.

The social determinants of health exert their influence throughout the life course. For example, the maintenance of optimal cognitive function into old age is not just about

reminding the patient to swallow a daily multivitamin supplement. Evidence suggests that the cognitive reserve for maintaining memory (and staving off Alzheimer’s disease) is established much earlier in life, perhaps as early as the years of compulsory schooling. Accordingly, a strategy to promote healthy cognitive aging must begin with investments in the high-quality education of our children, many decades before the onset of decline in cognitive function. Similarly, a strategy to prevent falls and fractures cannot rely just on prescribing calcium and vitamin D supplements to the elderly. A more far-sighted strategy to prevent osteoporosis needs to begin much earlier in life, for example through the promotion of physical activity in the population to achieve optimal bone mineral health throughout the life course.

## INVESTING IN SOCIAL CAPITAL

A key (but often overlooked) ingredient of the social determinants of health consists of the quality of social connections between members of society. “Social capital” is defined as the resources that inhere in social relationships; it recognizes that social connections in our daily lives have value, and that the advancement of well-being in society should look beyond the accumulation of wealth (financial capital) or knowledge and skills (human capital).

Social scientists have long recognized that the quality of our social relations is crucial to our ability to age successfully. Indeed the very definition of healthy aging embraces our continued potential to participate in the mainstream of society as we age. Active social participation and civic engagement is key to maintaining optimal physical and cognitive functioning. This point is vividly illustrated by a recent report from the Japan Gerontological Evaluation Study, which examined the role of participation in sports clubs as a determinant of disability onset among older individuals. According to this report, older men and women who participated in informal sports groups—e.g. pétanque, gate-ball, walking groups, mini-golf—were more physically active and better equipped to ward off disability compared to their sedentary peers. This came as no surprise. However, in the same study, the researchers also looked at the disability onset risk of a group of seniors who reported engaging in regular physical activity but not as part of a social group (we dubbed them “lone exercisers”). Contrary to expectation, this group of individuals had roughly the same risk of disability compared to the sedentary group. Most interestingly, the study identified a group of seniors who reported participating in sports groups but were not themselves physically active (because they primarily belonged in order to fulfill social functions, such as being a club booster or administrator). Surprisingly, this group of individuals benefited to the same degree in terms of lowered risk of disability as their peers who participated in the same clubs and reported being physically active. In other words, it appeared that the secret health-promoting

ingredient of belonging to a sports association was not the part associated with physical activity but the social participation per se.

Building social capital via the promotion of social participation and civic engagement has profound implications for aging populations throughout the world. As societies grapple with the implications of population aging for retirement and social security policies, they need also to figure out ways to tap the vast potential for older adults to contribute to the productive capacity of social capital in society.

In the United States, a program known as the Experience Corps® illustrates the potential for unlocking the vast potential represented by the “graying” of the population. The program is based on training community-dwelling retirees to volunteer as teachers’ assistants in local public elementary schools. It represents a win/win solution to two challenges: i) the successful recruitment of older individuals who seek meaningful roles as members of their community, and ii) the need to recruit motivated teachers in a budget-constrained public education system. An evaluation of the program suggested that the intervention promoted social interaction across the generations and resulted in an improvement for both the health and well-being of the older volunteers (increased mobility, functional independence), as well as improvements in the academic performance of the children.

In conclusion, the healthy aging of societies depends upon the adoption of far-sighted policies to assure the conditions for optimal physical, mental, and social well-being as we age. Such policies need to begin early in the life course (e.g. investing in high-quality early education), and they need to reach beyond the provision of medical technology in the healthcare sector. At the same time, a hitherto overlooked determinant of healthy aging is the capacity of social capital to promote the well-being of older adults in the community. ■



Written by  
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Professor and Chair, Department of  
Social and Behavioral Sciences,  
Harvard School of Public Health,  
United States



## ESSAY

# A GLOBAL NETWORK TO IMPROVE HEALTH

**The InterAcademy Medical Panel (IAMP) is a network of the world's medical academies and medical sections of academies of science and engineering. Established in 2000, IAMP currently has 73 member academies.**

The organization is committed to improving health worldwide. Its priorities include:

- » Facilitating the provision of evidence-based advice to governments and international organizations on critical global health issues
- » Assisting in the creation of academies where none exist and building the capacity of existing academies to provide this evidence-based advice
- » Promoting cooperation among academies of the world by exchanging information and sharing expertise
- » Supporting projects of member academies to improve health and strengthen health-related research and higher education in their countries
- » Issuing consensus statements on matters of importance to global health

IAMP's highest decision-making body is the General Assembly, which consists of the Presidents of all member academies, who meet every three years and are empowered to make decisions on all matters affecting IAMP. The General Assembly also elects the Executive Committee (EC), ensuring representation from different regions as well as a balance between low- or middle-income countries and high-income countries.

The EC consists of two co-chairs (currently Prof. Lai Meng Looi from Malaysia and Prof. Detlev Ganten from Germany) and representatives of nine member academies (currently the Brazilian Academy of Sciences, Chinese Academy of Engineering, Nigerian Academy of Science, National Academy of Science and Technology, Philippines, Academy of Science of South Africa, Académie de Médecine, France, Swiss Academy of Medical Sciences, Academy of Medical Sciences, UK, and the Institute of Medicine, USA). The EC is responsible for carrying out the tasks deemed necessary for achieving IAMP's objectives. IAMP works with its member academies to meet these

objectives. Among the most common vehicles are workshops, conferences, and the issuing of statements.

In 2013, in collaboration with the Academy of Sciences of South Africa, IAMP organized a conference on "The Changing Patterns of Non-Communicable Diseases." IAMP also organized the third session of its Young Physician Leaders Programme (YPL) in conjunction with the World Health Summit in Berlin, Germany, as well as an Asia regional session in Singapore, and will host the fourth YPL session during the World Health Summit 2014.

Also in 2013, IAMP published two statements which received the endorsement of a majority of its member academies: "A Call for Action to Strengthen Health Research Capacity in Low and Middle Income Countries" (May 2013) and the Joint IAP/IAMP Statement on "Antimicrobial Resistance: A Call for Action" (December 2013), available at [www.iamp-online.org/statements](http://www.iamp-online.org/statements). The statements have been disseminated to a wide audience in the global health context, including the Executive Board of the World Health Organization.

In 2014, IAMP has strengthened its links with the International Council for Science (ICSU), particularly with reference to a joint program on "Urban Health," and has hosted a workshop in Trieste on the "Social Determinants of Health Inequities," led by Prof. Sir Michael Marmot, director of the University College London Institute of Health Equity (UCL IHE), which convened academicians and government personnel from some 25 countries. ■

Written by  
**DR. PETER MCGRATH**  
IAP/IAMP Coordinator, Italy  
[www.iamp-online.org](http://www.iamp-online.org)

## STATEMENT

## International Role and Importance of IAMP

The Young Physician Leaders Program is a successful endeavor of the Inter-Academy Medical Panel (IAMP). Since 2011, this program has fostered a new generation of global health leaders. Inspired by the success of this IAMP activity, the Philippines, through the National Academy for Science and Technology, is beginning a series of Future Health Leaders Workshops in 2014. These workshops are for promising leaders with demonstrated accomplishments in clinical medicine, medical education, public health, health policy, or other health-related program development. Their goal is to assist young leaders in maximizing leadership potential and to provide a network of peers, potential mentors, and advisers. In 2015, a regional workshop will be organized, timed to coincide with the Asia Pacific Economic Cooperation (APEC) Summit.



Written by  
**DR. CARMENCITA PADILLA**  
National Academy of Science and Technology, Philippines

## STATEMENT

With the specific aims of promoting communication and exchange between member academies and ensuring coordination in health-related matters all over the world, IAMP serves as an independent international forum for academies (of medicine and medical divisions of academies) and experts worldwide, as a platform for experts to appeal to governments and international organizations on health issues, and as a vehicle for launches of important statements, international projects, and programs on issues of global health.

In 2006, IAMP launched the second edition of the Disease Control Priorities Project (DCPP) in Beijing, in conjunction with the IAMP 2nd General Assembly, which was hosted by the Chinese Academy of Engineering (CAE). Currently, experts from China, together with experts from other IAMP member academies, are working on a number of IAMP projects, such as an international project on "Examining Traditional Medicine." We are all looking forward to even more fruitful cooperation in the future.



Written by  
**PROF. DEPEI LIU**  
Chinese Academy of Engineering, China

## STATEMENT

One major role of the academies is to advise the government and society in general, providing the scientific-based studies necessary for their decisions. In order to be effective, the academies need to:

1. Select their members exclusively by scientific merit
2. Be active in promoting frequent studies and statements to improve the health system of the country

The IAMP has been very active in strengthening the capacity of the national academies, facilitating the exchange of experience between them. The IAMP, as a member of the M8 Alliance, is contributing to the success of the annual meeting of the WHS in Berlin and is also taking advantage of the discussion to identify priorities to be implemented to improve global health. An example of success is the IAMP Regional Workshop on "Non-Communicable Diseases," attended by 13 Academies of the North, Central, and South Americas in 2012 in Rio de Janeiro.



Written by  
**PROF. EDUARDO MOACYR KRIEGER**  
Director, International Relations, Medical School of the University of São Paulo, Brazil



## ESSAY

# TAKING ACTION TO PROTECT HEALTH FROM CLIMATE CHANGE

**Our planet is, without a doubt, facing climate change. We are already observing the health impacts and deaths as a consequence of this.**

Exacerbated by intensifying competition for fundamental natural resources, climate change has become a global health security issue. We no longer question whether we need to take action, but rather how to take action to protect the health of the planet's population. To cope with the changes in the global climate that we are already facing, we will need to adapt by strengthening health systems and the resilience of communities. Most importantly, however, we will need to reduce our greenhouse gas emissions to mitigate our interference with the climate system. Important will be the promotion of healthy mitigation measures.

## INTRODUCTION

The United Nations Framework Convention on Climate Change (UNFCCC) defines the adverse effects of climate change as “deleterious effects ... on human health and welfare” and requests all parties to “employ appropriate methods ... with a view to minimizing adverse effects on the economy, on public health and on the quality of the environment, of projects or measures undertaken by them to mitigate or adapt to climate change.”

In the last 100 years, the world has warmed by approximately 0.75°C. Sea levels are rising, glaciers are melting, and precipitation patterns are changing. Extreme weather events, such as flooding and heat waves, are becoming more frequent and more intense. As confirmed in the Fifth Assessment Report (AR5) of the Intergovernmental Panel on Climate Change (IPCC), “it is extremely likely that human influence has been the dominant cause of the observed warming since the mid-20th century,” principally through the burning of fossil fuels and the associated

release of climate pollutants causing significant changes to the global climate system.

## HEALTH IS ALREADY AFFECTED BY CLIMATE CHANGE

Human health is sensitive to shifts in weather patterns and other aspects of climate change. These effects can either be direct (through heat waves, droughts, and fires) or indirect (through disruptions to food security, water safety, air quality, and damage to shelter). Economic and social impacts, such as population displacement, also indirectly impact health.

The European Region is no exception to these impacts; 70,000 people died in excess during the heat-wave period in 2003. Floods have increasingly affected most, if not all, of the WHO European Member States. Furthermore, a quarter of Europe's population lives within 60km of the sea; rising sea levels and increasingly extreme weather events will destroy homes, medical facilities, and other essential services and infrastructure. Compromised water safety will affect hygiene and increase the risk of diarrheal disease. Local changes in temperature and rainfall have altered the distribution of some water- and vector-borne illnesses and contributed to the emergence of invasive vector species in Europe.

## PREVENTION OF HEALTH EFFECTS IS INCREASINGLY MORE DIFFICULT

The WHO estimates that between 2030 and 2050, climate change will cause approximately 250,000 additional deaths per year. The direct damage costs to health are estimated to be from US\$2-4 billion per year by 2030.

At the global level, according to the IPCC AR5, projected climate change will impact human health mainly by exacerbating health problems that already exist. Examples include:

- » Greater likelihood of injury, disease, and death due to more intense heat waves and fires
- » Increased risks from food- and water-borne diseases and vector-borne diseases
- » Increased likelihood of under-nutrition resulting from diminished food production in poor regions
- » Risks from lost work capacity and reduced labor productivity in vulnerable populations

There are also many additional potential indirect health risks: Mass displacement and disruption of livelihoods can lead to health risks such as malnutrition, mental health problems, and infectious disease outbreaks associated with poor water quality, poor sanitation, and overcrowding. It is also likely that migration will lead to further degradation of ecosystem supports and increasing social tensions and conflicts in areas of final destination, with resultant impacts on health.

Climate change will also increasingly jeopardize many development efforts and further compromise and risk reversing the achievement of key development goals, including the Millennium Development Goals (MDGs) and the objectives of the forthcoming Post-2015 Development Agenda. This lack of achievement will not only aggravate consequences for the most vulnerable populations, but also contribute to rising inequalities.

## THE HEALTH CO-BENEFITS OF MITIGATION CAN OFFSET INVESTMENT COSTS

Deep cuts in greenhouse gas emission are required. Valuing and incentivizing health-promoting mitigation actions in key economic sectors should be the cornerstone of any climate change strategy. For example, cleaner energy systems and promoting the safe use of public transportation and active movement—such as cycling or walking as alternatives to using private vehicles—could reduce carbon emissions and cut the burden of air pollution. Currently air pollution causes seven million deaths every year worldwide.

The health sector can also lead by example. The estimated carbon footprint for Europe's healthcare sector is comparable to the emissions of international aviation and maritime transport activities of the EU Member States. With some 15,000 hospitals and approximately 250 million tonnes of CO<sub>2</sub> emitted per year, it represents close to 4.2 percent of total European greenhouse gas emissions. Making health systems environmentally and climate friendly is a necessity and not a luxury.

## INCREASING HEALTH SYSTEM RESILIENCE

The most effective adaptation measures for health in the near-term are programs that focus on prevention; there is an essential need to ensure basic public health services

and to provide clean water, air, and food. By reducing inequalities and alleviating poverty many vulnerable populations can be protected from the health impacts of climate change. Increasing capacity for disaster preparedness and response and strengthening health systems will contribute to creating climate-resilient communities.

For this reason, a more intensified inclusion of climate change into public health planning and programs is required, as well as the identification of common approaches and metrics for monitoring and evaluation. This requires governments to put health sector preparedness and resilience at the center of political attention, to build capacity, to support resource mobilization, innovation, and research, and to promote technology transfer.

## WHO RESPONSE

The WHO work plan on climate change and health includes:

- » Advocacy: to raise awareness that climate change is a fundamental threat to human health
- » Partnerships: to coordinate with partner agencies within the UN system and ensure that health is properly represented in the climate change agenda
- » Science and evidence: to coordinate reviews of the scientific evidence on the links between climate change and health and develop a global research agenda
- » Health system strengthening: to assist countries to assess their health vulnerabilities and build capacity to reduce health vulnerability to climate change

The WHO Regional Office for Europe currently carries out the following tasks:

- » Acts as Secretariat of the working group on health in climate change of European Member States and agencies (HIC)
- » Supports implementation of the European Environment and Health Ministerial Conference Commitment To Act, in particular:
  - » Provides evidence, methods, and tools to its 53 European Member States
  - » Assesses trends over time
  - » Builds capacity
  - » Ensures interlinkages with sustainable development
  - » Promotes pilot initiatives ■



Written by  
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Program Manager, Climate Change,  
Sustainable Development and Green  
Health Services (CGS), World Health  
Organization (WHO), Germany



## ESSAY

# GLOBAL WARMING: HEALTH, SANITY, AND INSANITY

**Climate change is a fact and today already affects all spheres of our planet, including human health. Avoiding dangerous climate change for the future means avoiding drastic consequences, not only on physical and biological systems, but also on human and managed systems.**

The recently published 5th Assessment Report of the Intergovernmental Panel on Climate Change (IPCC) states in one of its key conclusions that climate change is happening and that there is a very high certainty that emissions of greenhouse gases from human activities are responsible for it. The two-degree guardrail reflects the scientific evidence on how to avoid dangerous climate change by limiting the average global surface temperature increase of 2°C compared to the pre-industrial average. Although governments agreed on that firewall, the world keeps on pursuing a different path. Against all national promises made, worldwide emissions continued to rise during the last decade by about 2.5 percent per year, as observed by a group of scientists from the *Global Carbon Project* in their latest report on global carbon emissions. If this trend persists we are facing a warming of our planet of 3, 4, or even 5°C by 2100—but what will a world like this look like? In analogy to human body temperature, an increase in the global mean temperature by just a few degrees Celsius can instigate short series alterations in the earth's system. As we well know, the difference between a body temperature of 37°C and 42°C makes the difference between a healthy human being and a system at high risk of suffering from catastrophic organ failure as a result of changing endogenous protein.

## CONSEQUENCES OF A WARMER WORLD

The series of World Bank reports *Turn Down The Heat* summarize in a unique way the consequences of a four-degree-warmer world and breaks them down according to vulnerable regions, as well as sectors such as water, agriculture, health, and others. Intense research efforts like the *Inter-Sectoral Impact Model Intercomparison Project* (ISI-MIP), coordinated by the Potsdam Institute for Climate

Impact Research (PIK), provide the basis for such assessments and highlight the character of the global-warming problem: The dimensions of climate change are manifold and affect all spheres of human and natural systems. The ISI-MIP Project is a community-driven modeling effort and the first climate impact intercomparison to bring together several sectors expected to be affected by climate change: agriculture, water, ecosystems, human health (malaria), and coastal infrastructure. The consequences concern not only physical systems (air and water cycles) and biological systems (terrestrial and marine ecosystems), but also human and managed systems (food production, livelihoods, health, and/or economics). While public attention has so far focused primarily on climate impacts on the physical and biological systems (like sea-level rise, extreme weather, or ocean acidification), climate impacts on the socioeconomic systems—especially on human health—have not yet received the necessary public attention.

Among the already observed geophysical impacts of anthropogenic climate change are glaciers melting worldwide, the decline in Arctic sea ice, increased ice discharge from the Greenland and Antarctic ice sheets with impacts on sea-level rise, warming and thawing permafrost, etc. Changes in precipitation patterns in many regions have an impact on regional water balances and ecosystems, and coastal systems and marine ecosystems are affected by ocean acidification and warming waters.

## A SPECIAL CASE: TIPPING ELEMENTS

As if all these already materializing consequences were not serious enough issues with possible consequences for human well-being on their own account, the climate system has more unpleasant surprises up its sleeve. Crucial earth system components—so called tipping elements—could

be pushed over critical thresholds and the systems tipped into different states. To take up the analogy to the human body again: If a single organ fails, it does not necessarily mean the death of the patient, yet it can trigger a serious chain reaction. The Greenland Ice Sheet could reach a point of no return at 1.6 °C global warming, and the resulting sea-level rise would affect most distant regions in the world, possibly causing other systems to tip. But also vast ecosystems like the Amazon rainforest belong to the potential tipping elements: If it loses its function of being a CO<sub>2</sub> sink and transforms into a seasonal forest or grassland, this process would be irreversible and have fundamental impacts on the climate of the earth.

## GLOBAL WARMING AND HEALTH IMPACTS

The *Turn Down The Heat* report of the World Bank emphasizes the unequal distribution of climate impacts to the disadvantage of the poorest regions of the world with the smallest capacities to adapt. The report names crucial climate impacts and associates them with health issues. Against the backdrop of persistent population growth in developing countries, adequate food supply could become a severe challenge in a four-degree world. Even today, it is observed that climate change affects food production; under conditions of increasing global warming, the risk of crop losses grows, and thus the risk of malnutrition. In low-lying delta regions sea-level rise would likely damage agriculture seriously. Higher intensity of extreme weather events would affect the fight against poverty, especially in developing countries. In particular, large-scale floods, for example, curb food production—which could lead to malnutrition or undernutrition—and pollute drinking water. This in turn, leads to the spread of infectious diarrhea or respiratory infections, thus facilitating epidemics. Health impacts also result from injuries and deaths caused by extreme events. Respiratory disorders, heart and circulatory problems, and allergenic problems can worsen because of increasing smog, ozone, and fine particular matter levels.

Human security at large can be in danger because of possible displacements of entire population groups due to climate impacts on ecosystems, agriculture, and water. A recent ISI-MIP study states that should global warming reach 3°C above pre-industrial level, 10 out of 100 people will be affected by absolute water scarcity. Climate change will also influence the emergence and distribution of infectious diseases like malaria, dengue, or other vector-borne illnesses.

## INCREASING EXTREME TEMPERATURES

Another aspect of health impacts is the possible increase in deaths related to heat stress and the likely decrease in cold-related deaths. But global warming does not necessarily imply a generally decreasing trend in cold-related deaths on a global scale. Instead, global warming leads to shrinking sea ice in the Eastern Arctic, which may lead to severe anomalies in atmospheric airstreams, triggering an overall cooling of the Northern continents. These anomalies triple the probability of the occurrence of extremely

cold winters in Europe and Northern Asia and could lead to more cold-related deaths in these regions.

In terms of additional heat-related deaths, researchers found that the number of summer heat extremes will double by 2020 and quadruple by 2040. A study by PIK researchers also shows that heat extremes might occur at up to 85 percent of the global land area by the end of this century if present emission trends continue. This could be avoided by climate protection measures. However, an increase in heat extremes until the end of the century is already “programmed into” the climate system because of the historically released greenhouse gases, regardless of future scenarios.

## THE CO-BENEFITS OF MITIGATION

Even if the motivation to mitigate greenhouse gas emissions should lie primarily in avoiding dangerous climate change or slowing climate change, the co-benefits of reducing air pollution, increasing air quality, and therefore avoiding respiratory disorders seriously should be taken into account. According to the World Health Organization, air pollution has become the single biggest environmental health risk; household and ambient air pollution together are responsible for seven million deaths per annum worldwide—corresponding to nearly one in eight deaths in 2012. However, although co-benefits from mitigating greenhouse gas emissions mainly occur on a local scale in the near-term, there is a high probability that the benefit of slowing climate change will have a global effect in the long run.

It can be said with certainty that a 3 or 4°C warmer world would have a completely different face than the world we know. If today's generation does not succeed in avoiding dangerous climate change and its drastic consequences by reducing greenhouse gas emissions significantly, the lives of future generations will be affected in many different aspects. ■



Written by  
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Written by  
**PROF. HANS JOACHIM  
SCHELLNHUBER**  
Director, Potsdam Institute for Climate  
Impact Research, Germany

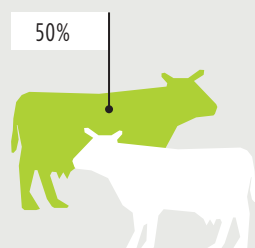


## HEALTH IN NUMBERS

# Climate Change and Health

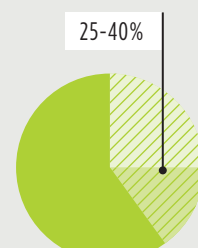
*Hurricanes, droughts, global warming, and tsunamis—natural disasters will be more frequent as climate change progresses.*

## FACTS



If Europeans halved their consumption of dairy and meat products ...

United Nations report, 2014



... greenhouse gas emissions from farming would drop 25-40%.

## FACTS

By 2020, rising temperatures and precipitation in Africa will cause a 50% drop in production of some staple crops.

WHO, 2014



Contamination of air, water, soil and food causes **A QUARTER OF THE WORLD'S DISEASE BURDEN.**

WHO, 2014

**AIR QUALITY** is improving in some countries: deaths caused by outdoor air pollution sank 4% between **2005** and **2010**.

OECD, 2014

## TRACK NUMBER

**250,000**

... additional deaths per year will be caused globally by climate change between 2030 and 2050—from malnutrition, malaria, diarrhea, and heat stress.

WHO, 2014

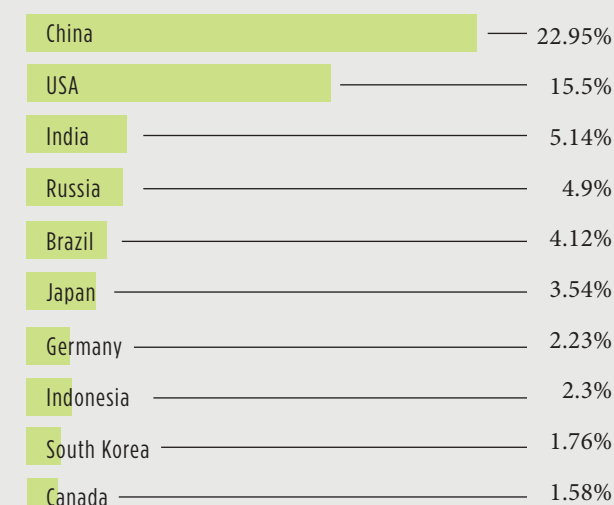
## FACTS

Greenhouse gas emissions reductions—through better and more efficient transport, food, and energy-use choices—can result in improved health, thanks in part to reduced air pollution.

WHO, 2014

## INFOGRAPHIC

The ten largest CO<sub>2</sub>-emitting countries in 2013



Germanwatch, 2014

## STATEMENT

***“The health community needs to improve communication with health governance, which is a major determinant of adaptive capacity.”***

**KATHRYN BOWEN**  
Melbourne Sustainable Society Institute,  
University of Melbourne, Australia

## WORDCLOUD

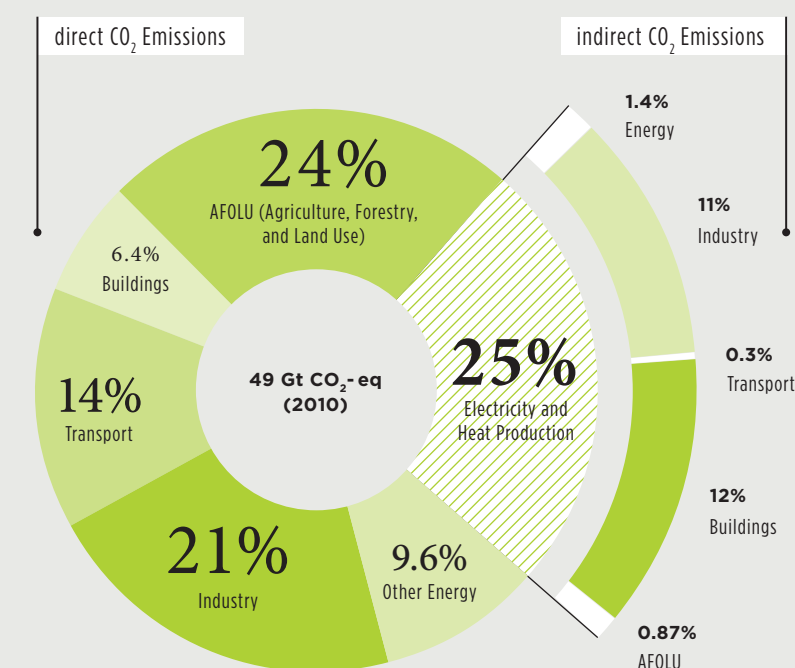
MALARIA AIR POLLUTION  
DENGUE  
GREENHOUSE GASES  
HURRICANES  
INFECTIOUS DISEASE  
TSUNAMI  
HABITAT DESTRUCTION  
DROUGHT  
NATURAL DISASTERS

Malnutrition and undernutrition currently cause **3.1 MILLION DEATHS** every year.

WHO, 2014

## INFOGRAPHIC

Global greenhouse gas emissions by economic sectors



Intergovernmental Panel on Climate Change, 2014



**OUTLOOK**

April 13-14, 2015

# WHS Regional Meeting— Kyoto, Japan



01 The Kyoto International Conference Center will be the venue of the WHS Regional Meeting 2015.

## Welcome Message

With the longest life expectancy in the world and a burgeoning elderly population, Japan has transitioned to an aging society well before most other countries. Soon enough, other industrialized as well as developing countries will likely face similar demographic changes. Thus it is our responsibility to summarize, at this WHS Regional Meeting, the efforts directed toward geriatric care in Japan and examine best practices when it comes to further restructuring healthcare systems in preparation for a rapidly aging society.

Another important issue to focus on at this meeting is the health risks associated with disasters and environmental hazards. Recent devastating natural disasters in Asia (e.g., Typhoon Yolanda in 2013 and the devastating earthquake off the Pacific coast of Tohoku in 2011) left terrible scars on affected citizens and are still fresh in our memory. Environmental hazards such as the increase in air pollution by PM2.5 particulates in newly industrializing countries are threatening public health at local,

national, and global levels. As members of the M8 Alliance, we are committed to taking a leading role at the WHS Regional Meeting in developing a unified approach to minimize the physical and mental health consequences of these disasters and hazards.

It is a tremendous privilege to organize the 2015 WHS Regional Meeting—Asia in Kyoto, Japan. At this landmark conference, we look forward to sharing our thoughts in the hope of promoting rewarding discussions among leaders in their respective fields of expertise.

With warmest regards,

**NAGAIRO MINATO**  
*Vice-President, Kyoto University*

**SHUNICHI FUKUHARA**  
*Dean, School of Public Health, Kyoto University*

**SHINICHI KIKUCHI**  
*President and Chairman, Fukushima Medical University*



## About the Host City

**KYOTO**

Formerly the imperial capital of Japan for more than 1,000 years, Kyoto is famous for its natural scenery. Temples, shrines, towns, and homes intermingle with a poignant historical beauty. The 17 traditional locations in Kyoto were inscribed on UNESCO's World Heritage List in 1994.

Kyoto is also one of the academic centers in Japan and home to around 40 institutions of higher education.

**More about Kyoto City**  
[www.city.kyoto.jp](http://www.city.kyoto.jp)



# About the Meeting

THE HOST—  
KYOTO UNIVERSITY

Kyoto University was founded in 1897. Just two years later, the Graduate School of Medicine was founded. In the years since, it has greatly contributed to society with its advanced education and high standards of research. It has produced numerous world-leading scholars and researchers of medicine and a continuous stream of medical treatment and research findings of great originality.

The Graduate School of Medicine has over 1,300 undergraduate students, 1,000 graduate students and around 440 faculty members with 120 staff administrators.

As the representative of Japanese medical academia, Kyoto University has been an active member of the M8 Alliance since its launch in 2009.

THE CO-HOST—  
FUKUSHIMA MEDICAL UNIVERSITY

Fukushima Medical University was founded for the purpose of nurturing medical professionals who will contribute to the promotion of the health, medical care, and welfare of the citizens of Fukushima Prefecture.

Fukushima Medical University has maintained a close relationship with Kyoto University since the 2011 earthquake off the Pacific coast of Tohoku and the subsequent Fukushima power plant disaster and is now also a significant participant in the WHS.

# Program

## Main Theme

*Building Resilience as Social Responsibility of Medical Academia*

The WHS Regional Meeting Asia, Kyoto 2015 will focus on the most pressing challenges facing Asia, Japan in particular. The purpose of this meeting is to encourage transdisciplinary discussion with a special emphasis on the social responsibility of medical schools and professors. The program will be organized along three tracks.

## Key Topic 1

*Challenges in a Rapidly Aging Society*

As a consequence of the growing proportion of elderly in the population, many countries face transitions to an aged society. With this demographic change, healthcare systems clearly require reforms that move away from the present-day hospital-centered paradigm of medicine focused on advanced medical treatment and care to community-centered preventive medicine geared toward healthy aging.



01 Shunichi Fukuhara, Dean of Kyoto University's School of Public Health



02 The Japanese delegation at the World Health Summit 2014 in Berlin

03 Michael J. Klag, Dean of the Johns Hopkins School of Public Health in Baltimore, USA, will be a speaker at the Regional Meeting.

—  
“The Kyoto meeting will focus on specific topics such as an aging society.”  
—  
**SHUNICHI FUKUHARA**  
Dean of Kyoto University's School of Public Health



04 The main room of the WHS Regional Meeting accommodates up to 550 people on 950m².

## Key Topic 2

*Preparedness for and Resilience after Disaster*

Disasters and environmental hazards are likely to have major impacts on the health of affected citizens. Accurate prediction of and strategic preparation for the health impacts caused by these events are among the most important responsibilities of medical schools.

Addressing the above two topics, the academic community's efforts to develop unified approaches through tripartite collaborations with ministries and industries will be presented as “the Japanese model.”

## Key Topic 3

*Fostering the Next Generation of Global Health Leaders*

One of the most important missions for academic medicine is to groom the next generation of leaders for their role in the continuous promotion of global health. Comparisons will be made among the M8 Alliance members and their training programs to reexamine the aims and future directions of their medical education systems. “Medical research in Japan used to be all about biomedical discovery,” notes Fukuhara. “Now we have to recognize that medical academia has to take responsibility for community needs.”

—  
“Medical research in Japan used to be all about biomedical discovery. Now we have to recognize that medical academia has to take responsibility for community needs.”  
—

**SHUNICHI FUKUHARA**  
Dean of Kyoto University's School of Public Health, WHS President 2015

# More Information

- Graduate School of Medicine**  
[www.med.kyoto-u.ac.jp/en](http://www.med.kyoto-u.ac.jp/en)
- School of Public Health**  
<http://sph.med.kyoto-u.ac.jp>
- Kyoto University**  
[www.kyoto-u.ac.jp/en](http://www.kyoto-u.ac.jp/en)
- Fukushima Medical University**  
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# Global Health for Development

Universal Health Coverage

The outcome document of the Rio+20 United Nations Conference on Sustainable Development gives health a central place as a precondition for and an outcome indicator of all three dimensions of sustainable development: economic growth, social improvement, and environmental protection. Health must become part of the post-2015 development agenda. Universal health coverage enhances health, social cohesion, and sustainable human and economic development. It is an essential component of sustainable development and poverty reduction.

“The enjoyment of the highest obtainable standard of health is a human right,” said Michael Gerber, Swiss Ambassador for Sustainable Development Goals. To achieve the goal of universal health coverage, he states, “Transformative shifts are necessary to ensure that no one is left behind. We have to go beyond a state-centered approach and strengthen health systems in all countries.”



## INTERVIEW

# “We need to adapt ideas to the culture of our country.”

In 2012, Benin launched an effort to expand health coverage to all of its citizens—37 percent of whom live in poverty. The scheme, dubbed Regime d'assurance maladie universelle, or RAMU, will charge members between US\$3 and US\$30 a month. Benin's Minister of Health, Dr. Dorothée Kinde-Gazard, explained some of the challenges and the outlook for the future.

**Dr. Kinde-Gazard, why is Benin focusing on a universal healthcare scheme?**

**Dorothée Kinde-Gazard** — Because we need it. For us, the lack of health coverage is not a joke. It's a priority for Benin, and for all African countries. Investing in health is one of the most cost-effective investments a country can make.

**You have said that one of the challenges for Benin is low-foresight culture. What does that mean?**

It's a matter of unfamiliarity. Our people don't know what health insurance is. They ask me, 'If I pay, and I don't get sick or have a disease, will I get my money back?' So we need to explain the concept. We need to convince them to pay for health insurance, even when they're healthy.

**How do you do that?**

We explain that without insurance, if you are ill, if you are sick, and you don't have money, you won't go to the hospital—you will stay at home, and you will die. But if you put money somewhere, when you are sick you can use insurance to go to the hospital. It is an important investment and better than having to pay directly.

We tell them it's like car insurance. If you insure your car, and you don't have an accident, they don't give you your

money back at some point. So we show them how it works and explain the idea, because it is a new project. We explain, we explain, we explain, until they understand.

**How do you reach the people to spread that message?**

We use television, radio, community meetings—we have found that it really has to be at the community level. We send people to discuss the concept with the community, speak about the health system, and educate community leaders. There's also an opportunity to reach out through primary care providers: When mothers come to the hospital for care or for immunizations, we take the opportunity to speak with them about health insurance.

**How important is international cooperation in making this a reality?**

International cooperation helps us build the system. Technically, we have the support of our partners. It's important to work together with the World Bank and other financial institutions to support progress in our country.

**Can you use European models, or do you look more at Africa for ideas?**

We share experience with other African countries, because that's the most relevant for us. In Africa, there are some



**Do you also need people at the other end? Do you need to balance with people who have money, who are younger and healthier?**

We have started with people who have no money. It is in this group you have the most deaths from lack of health-care. All the other sectors, like administrators or factory workers, they will continue to pay privately for now. But we plan to bring them into the health insurance program.

**“We send people to discuss the concept with the community, speak about the health system, and educate community leaders.”**

For now, in the name of solidarity with these poor people, we plan to give them access to health. It's important in the context of equity and accessibility in the health system.

**Does Benin have enough doctors and nurses to take care of all these people?**

Human resources are a big challenge for us. We have a gap between the funding and resources available and the healthcare needs we have. We need to have more nurses, more doctors.

**Where do they come from?**

We have two faculties of medicine and two health schools for nurses and midwives. Every year we have people who get their certifications. But the country cannot afford to engage them. We don't have the resources to pay them. So they go abroad. It's a huge problem.

**Minister Kinde-Gazard, thank you for the interview. ▲**

countries that started building a national insurance program 10 years ago. Like Ghana, which started 10 or 20 years ago. We've gone to visit Ghana, to benefit from their experience. We've gone to visit Rwanda, to benefit from Rwanda's experience.

**So seeing what they're doing in Ghana or Rwanda is more useful than seeing what they're doing in Germany or France?**

Of course. We need to adapt ideas to the culture of our country. When we come back from meetings in Rwanda or Ghana, we talk about how we can adapt their ideas to our situation. The German system is too far off right now. That said, we need to adapt other people's ideas to our situation. We cannot simply make a copy from another country.

**How long will this process take?**

We started in 2008. We started signing people up last year; after six months, we have 50,000 people signed up.

**And what's your goal?**

We plan to have universal coverage within ten years. But now we start with the population at risk—the very poor, the informal sector, the agricultural sectors. We start with these populations, because we know they need health insurance.



**DR. DOROTHÉE KINDE-GAZARD**  
Minister of Health, Benin



## ESSAY

# THE IMPORTANCE OF HEALTH FOR THE POST-2015 AGENDA—A PLEA FROM THE CIVIL SOCIETY PERSPECTIVE

**Health is a human right and an essential requirement for people to be able to live in dignity and develop their potential.**

The fact that this human right has still not been implemented for many people is what makes it so important that health is given a high priority on the international agenda and enshrined in the post-2015 agenda as a stand-alone goal.

Health-related targets were included in the Millennium Development Goals, which are set to expire in 2015. While there has been great progress in the fight against tuberculosis and malaria, for example, and this goal remains achievable by 2015, the international community will fail to reach other health goals. It is now certain that the goals of reducing child and maternal mortality will not be met. Though maternal mortality almost halved between 1990 and 2013, the target was for a three-quarters reduction. Day after day, around 800 women and girls die from complications during pregnancy or childbirth. Most of these deaths would have been preventable.

This dramatic figure alone shows that health should take a higher priority in the new development agenda and that the international community needs to do a great deal more to ensure this fundamental human right for all.

A study published in May 2014 by the Lancet Commission for Investing in Health underlines the critical importance of investment in health for global development, and here especially the need to promote the health of women and children.

If health is to bring this development potential to fruition, the following principles should be incorporated into the post-2015 agenda:

## 1. *Respect for human rights*

The post-2015 agenda should be based on human rights, and the human right to health should be implemented for all. States are bound by international law to guarantee every person the highest attainable standard of physical and mental health. This right implies that every person—regardless of sex, age, income, religion, nationality, ethnicity, sexual orientation, gender identity, disability, or other factors—should have access to health services. Or to put it another way: A health system is equitable if every person has the same opportunity to be, stay, and become healthy.

## 2. *A stand-alone goal on health*

The post-2015 agenda should include a stand-alone goal on health. Its associated sub-goals should continue the Millennium Development Goals, but be more ambitious. For example, universal access to sexual and reproductive health and rights should be added, along with the goal of completely preventing HIV infections.

## 3. *Strengthening of health systems*

The new health goal should aim to strengthen health systems. The following building blocks of a health

system according to the World Health Organization (WHO) should be strengthened: health service delivery, qualified health workforce, health information system, availability of and access to essential drugs and health products, equipment and supplies, health financing, and good governance in the health sector.

## 4. *Strengthening research and development*

Implementing the human right to health requires closing the research and funding gap in the development of new health products such as diagnostic tools, prevention technologies, vaccines, and medicines for neglected diseases of poverty. Poverty-related and neglected diseases are those diseases which disproportionately afflict people in developing countries. They include HIV and AIDS, malaria, tuberculosis, and seventeen tropical diseases.

## 5. *Universal health coverage*

This concept provides the ideal framework for strengthening health systems, prevention and treatment of disease, and access to healthcare regardless of income.

## 6. *Ensure measurability*

So that a future health goal and associated sub-goals can be measured in the future development agenda, the health goal should contain specific indicators. These need to be disaggregated by sex, age, income, location, ethnic groups, and other social determinants of health. An important requirement in this regard is to register people's location, and to register births as well as deaths.

There are two reasons why registration is necessary for good healthcare. Firstly for the individual: If you are “in the system,” you can demand your rights to health services. Identity documents make people visible to the state. Secondly, however, it is important for the planning and provision of health services to know how many people require health services, as well as their age and sex. This is the only way to find out, for example, what proportion of women and girls do not receive medical care during pregnancy and childbirth. Such data allows the most important health issues to be identified and tackled. Hence the improvement of registration systems and civil registries should definitely be included in the post-2015 agenda.

All of this requires adequate financing. Here the international community has a particular responsibility to support those countries which are not able to finance these activities out of their national budgets. Reliable, long-term commitments are needed to provide predictable financing for strengthening health systems. It is also necessary to ensure that the financing is geared to the needs of the recipient countries, not to the interests of the donor countries. Finally, current development funding needs to be reformed to meet the challenges associated with universal health coverage. In this regard, it is essential that the international community renew its pledge to implement the

0.7 percent target as part of the new development agenda. And this time, the commitment needs to be more than just lip service—words must be followed by deeds.

## GERMANY'S ROLE

In post-2015 negotiations, the German federal government has declared its support for a comprehensive health goal with a focus on people and equity, where the structural determinants of health are taken into account. It is also good to see the German government taking up the theme of universal health coverage. But the associated sub-goals which Germany has proposed are not yet ambitious enough, since they do not live up to the idea of universality.

Here is one example: The German government's official position is that by 2030, 80 percent of the poorest 40 percent of the population should have access to basic health services. Any such 80-to-40 goal in a country like India would mean that around 100 million people do not have access to healthcare. This satisfies neither the principle of “leaving no-one behind” nor a multidimensional understanding of poverty if income is to be the sole differentiating factor. Such an approach would disproportionately disadvantage women and girls, since they make up 70 percent of people living in poverty. We expect the German federal government to show more ambition when it presents its revised post-2015 position in the fall.

It is particularly essential that girls and women receive unrestricted access to sexual and reproductive health and rights and that this is enshrined in the new agenda. Germany is taking a leading role on this important issue.

Hosting the G7 summit in June 2015, the German government has an excellent opportunity to take a clear development policy stance—for example in support of women's and children's health by working toward a continuation of the G8 Muskoka Initiative to reduce child and maternal mortality, which expires in 2015. This was called for by the German Bundestag in a motion passed in June 2014.

The post-2015 agenda is a groundbreaking opportunity to implement the human right to health. I hope that not only the German federal government but also all other participants in the negotiations will use this opportunity. ▲



Written by  
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## ESSAY

# WHY FINANCING GLOBAL HEALTH MAKES ECONOMIC SENSE

**There's a growing and welcome awareness that tackling the world's biggest health challenges is not just about helping to improve the lives of millions of the world's poorest people, but that it can also reap profound economic gains.**

Illnesses such as pneumonia, measles, and meningitis take an enormous personal toll on people living in the world's poorest countries. In addition to the devastating health impact, these and other diseases stretch national resources, which has a detrimental impact on education, productivity and, ultimately, economic development.

One of the strongest ways to end this negative cycle is through vaccination, which has proven to be one of the most cost-effective tools in global health. By avoiding illness, children are able to attend school and become more productive members of society. And instead of caring for a sick child and spending money on medical bills, parents can go to work, boosting their income and spending capacity, which can help the economy grow, attracting trade and foreign investment.

This is an important point for those who gathered at the World Health Summit as they consider how to address pressing issues, such as the need to strengthen healthcare systems. The Ebola crisis starkly shows that strong health systems are critical in protecting people from such tragic outbreaks, underlining the necessity for wealthy countries to raise their financial commitments to global health.

Gavi, the Vaccine Alliance, is dedicated to such health system strengthening, operating through an innovative, public-private business model that helps finance the purchase and delivery of vaccines, simultaneously increasing their supply and bringing down their prices.

## INNOVATIVE FINANCE

Through this model, Gavi and its partners have helped lower the total price of vaccinating a child with pentavalent, pneumococcal, and rotavirus vaccines—which protect against diphtheria, tetanus, pertussis, hepatitis B, Haemophilus influenzae type B, pneumonia, and diarrhea—from US\$35 in 2010 to US\$22 today. This same combination costs hundreds of dollars in the industrialized world. To make this possible, we operate three innovative finance vehicles.

The Innovative Finance Facility for Immunisation (IFFIm) uses long-term pledges from nine governments as the assets that underlie the issuance of Vaccine Bonds to investors. The money raised provides immediately available funds for Gavi, with investors repaid over time from the pledges. This enables Gavi to efficiently move money through time, providing Gavi with financial flexibility and predictability so resources can have the greatest public health impact.

Vaccine Bonds have proven popular with institutional and individual investors, who are able to generate a market-based financial return while making a socially responsible investment. IFFIm, with the World Bank as its treasury manager, has transformed Gavi by raising US\$4.5 billion in the capital markets, helping Gavi nearly double its financial support for countries.

The Advance Market Commitment (AMC) makes available effective and affordable vaccines to prevent pneumococ-

cal disease, which is one of the biggest killers of children under age five. The vaccine was very expensive—US\$96 per dose in the United States and €40 per dose in Europe—and poor countries were not able to purchase it.

But there is no reason that new, effective vaccines should not be introduced simultaneously in developed and developing countries. In the case of the pneumococcal vaccine, the AMC has been the solution, using US\$1.5 billion in donor commitments to incentivize manufacturers by guaranteeing large purchases in exchange for a low price. Gavi and its country partners have paid no more than US\$3.50 per dose. Thanks to the AMC, 42 developing countries have introduced the pneumococcal vaccine as of mid-September, and 15 more have been approved.

Under the Gavi Matching Fund, the UK government and the Bill & Melinda Gates Foundation have pledged about US\$130 million combined as a challenge grant to the private sector, matching contributions to Gavi from corporations, foundations, their customers, employees, and business partners. This mechanism is used to raise financial resources and bring critically needed private sector expertise to the Alliance's efforts, helping Gavi overcome roadblocks and provide visibility to the cause of immunization. Gavi has now raised more than US\$222 million from 12 partners through this initiative.

## THE OPPORTUNITY

No cause is more important than saving lives. Today, we have the opportunity to save not just one child's life, but millions of the poorest and most vulnerable children in the world. With the deadline for the Millennium Development Goals in sight, it is clear that reducing childhood mortality will remain a priority beyond 2015.

One of the most efficient and cost-effective ways of achieving this is by increasing coverage of childhood immunization. Gavi has already demonstrated the huge impact this can have on infant mortality through its work in improving access to new and underused vaccines in the world's poorest countries. Gavi now is in a position to build upon this progress and scale up its activities in a bid to reach every child.

Since 2000, Gavi has used its public-private partnership model to help immunize 440 million additional children, preventing an estimated 6 million deaths in the process. Now the challenge is to provide countries with the support they need not only to introduce vaccines, but to increase their national coverage levels, making vaccines available to children no matter where they live.

By working with its partners, Gavi can help immunize an additional 300 million children between 2016 and 2020, contributing to the prevention of an additional 5 million to 6 million deaths. It would also lead to more than a ten-fold increase in the number of children who are fully protected by the 11 vaccines recommended by the World Health Organization for infants in all countries.

By seizing this opportunity to accelerate impact, we will ensure that the gains and investments of the past 15 years through Gavi are consolidated and sustained for years to come.

## THE CHALLENGE

There is no doubt that Gavi can achieve this new goal, but it will take US\$7.5 billion from donor governments and the private sector to make it happen. That's a large amount of money. But when you consider the health and economic impact—by 2020, Gavi has the potential to unlock US\$80 billion to US\$100 billion in economic benefits globally—the return on investment is clear.

Provided that donors are smart about where their money goes, investment in global development and health can and does produce measureable economic returns. However, getting a return is only half the story. It's equally important to ensure that the investment is sustainable. Critics have long argued that aid makes countries dependent and holds back economic development. But if you invest in modern organizations with innovative business models that have sustainability at their very heart—like Gavi—then the opposite is true.

Gavi requires recipient countries to pay an increasing share toward the cost of the vaccines as the country's wealth increases, until countries cover the full cost themselves. What this means is that Gavi effectively has a sunset clause built into its business model. As it helps more and more countries become self-sufficient, Gavi will slowly put itself out of business.

This should already start to become apparent over the next few years. Currently, 73 countries receive support from Gavi. That number will drop by 22—to 51 countries—by 2020. As a result, the Vaccine Alliance's current funding requirements are expected to represent the peak of its foreseeable funding needs. Scaling up now will enable Gavi to scale-back for years to come, as countries become self-sufficient.

Governments have a duty to maximize economic impact. There are genuine economic returns to be had that often begin, not end, with saving a life. Vaccines truly are a proven, sustainable approach to development. ▲



Written by  
**ANURADHA GUPTA**  
Deputy Chief Executive Officer, Gavi,  
The Vaccine Alliance, Switzerland



## ESSAY

# THE ROLE OF RESEARCH AND INNOVATION AT THE UNIVERSITY OF SÃO PAULO

**The University of São Paulo (USP) is the top research university in Brazil according to national and international indicators.**

USP is a public institution funded primarily by a fixed percentage of the taxes from São Paulo. The state also accounts for approximately 50 percent of Brazil's PhD awardees and articles published in specialized journals and channels 1.64 percent of its GDP into research and development. The latter figure is higher than the 1.1 percent for the whole of Brazil, but lower than the 2.2 percent average of the OECD.

USP and its 6,000 faculty members account for about 23 percent of all scientific publications in Brazil. These figures represent major progress made by USP and other Brazilian institutions in the last 30-40 years, which is associated with a national effort to promote the training of Masters and PhDs (Brazil is currently awarding 14,000 PhDs per year in different areas). These are impressive accomplishments, but they fall short of the ambitions of this large country to become a knowledge society. There is a growing perception that the academic progress has not been translated into a robust R&D platform for the generation of wealth and well-being. USP has focused on strategic planning to provide alternatives for the public and private sectors and the continuous reengineering of its academic enterprise to enhance the scope of its influence outside of the University walls. The current agenda is to increase the excellence and the relevance of the scientific work developed by the faculty. This requires policy and actions signaling a shift, with emphasis on quality and excellence rather than quantity to assess success and career advancement. The path to excellence requires emphasis on: 1) supporting the organization of interdisciplinary teams to tackle complex and relevant problems; 2) enabling scientists to focus on what they do best, rather than wasting time on dealing with bureaucracy, by establishing Grant Manager Offices; and 3) fostering internationalization as a means of increasing scientific excellence.

The University has a key role in educating, training, and preparing entrepreneurs to excel, creating policies that favor innovation and its application, and participating in early steps of the innovation processes. Concerning the latter, USP supports an Innovation Agency to identify partnership opportunities and provide the legal support to propel the innovation process within the public and private sectors. In addition, the University shares the governance of an incubator and a technology park where start-ups and small and large business may join forces under the proper legal setting to embark on the high-risk path to innovation.

The challenges involved in raising Brazil to the level of a knowledge society demand strong commitment to the philosophy of quality and excellence, rather than quantity. The stimulus for individually driven basic research and thematic interdisciplinary approaches to solving relevant and complex problems must be balanced and supported by a robust infrastructure to enable scientists to focus on what they do best. USP wants to educate and foster the development of entrepreneurs and be part of an innovation ecosystem where its faculty participate in early innovative process within the right legal environment and take one step further the opportunities to develop novel products, processes, and public policies. ▲



Written by  
**PROF. JOSÉ EDUARDO KRIEGER**  
Director, Laboratory of Genetics & Molecular Cardiology, Heart Institute (InCor), University of São Paulo, Brazil

## ESSAY

# MAKING MORE HEALTH

**How business and social values are combined to unleash innovation and to achieve both economic and social progress.**

The social and economic challenges of today's world are complex. Health needs keep increasing in the form of demographic developments, aging populations, lack of education, the huge demand for new markets and innovative approaches, the growing income gap, poverty, failing healthcare systems, etc. Traditional "health makers" and the positioning of health products in existing markets, devices, and technologies alone are often not enough to meet these increasing demands. Globalization, demographic developments, connected thinking, modern technologies, the demand for new markets, and many other factors challenge companies and traditional health players not only as economic drivers but also as bearers of social responsibility. It seems that the traditional, somehow "artificial" distinction between social and business no longer works. Instead, many successful initiatives built upon existing social infrastructure solve known health problems and even uncover new issues.

Making More Health (MMH), a global initiative of the pharmaceutical company Boehringer Ingelheim in collaboration with the international organization Ashoka, sponsors social entrepreneurs and actively involves them in daily business. This innovative initiative offers enormous potential for far-reaching, systemic change. But how?

Making More Health is a long-term initiative on an international level to identify new and better ways of improving health globally. MMH was started in 2010. Since then, a huge number of MMH initiatives have been launched by sourcing social innovation to provide more health in the future. It builds on the track record of both organizations by bringing together their respective skills to promote jointly, as social player and business, innovative and effective solutions in the healthcare sector worldwide. For this purpose, they engage in the following:

- » Social entrepreneurs active in the healthcare sector are continuously identified and sponsored as MMH Fellows; network integration, collaboration, and knowledge transfer from business to social and vice versa are crucial to empower innovative activities

that are driven by these social entrepreneurs. Creating more health—in a very broad understanding—includes, for instance, health education, prevention, nutrition, and environmental protection.

- » International contests are launched for ideas to promote co-creation and find solution-orientated social entrepreneurship concepts.
- » As part of the Youth Venture Programmes, knowledge of social entrepreneurship approaches and project-specific implementation are reinforced both within and outside the company, and young people are involved to become changemakers.
- » Employees are encouraged to play an active part in helping to shape proposals for Making More Health through their own ideas and commitment. As "Executive in Residence," promoting a collaboration between the employees and Ashoka fellows onsite, they share business know-how and social-driven approaches to make more health.

Making More Health can be seen in the targeted support of social entrepreneurs and the creation and fostering of networks and contacts, enabling the sharing of ideas, the transfer of business know-how, and collaborative, holistic thinking across traditional borders. ▲



Written by  
**MANUELA PASTORE**  
Global Communications Director for Making More Health, Boehringer Ingelheim GmbH, Germany



## HEALTH IN NUMBERS

# Universal Health Coverage

*Health is a universal right. Guaranteeing access to affordable healthcare to all citizens is a major goal of many developing countries.*

Paying directly for health services pushes **100 MILLION PEOPLE** each year into poverty.

WHO Fact File, 2014

## TRACK NUMBER

## 440,000,000

... additional children have been immunized and 6 million deaths have been averted between 2000 and 2013.

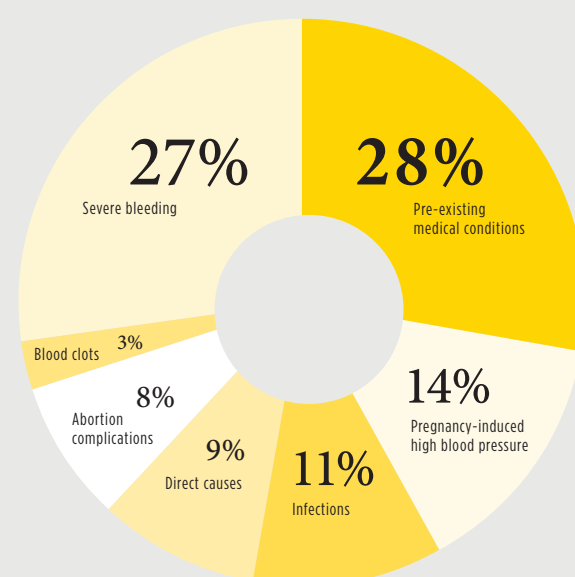
Gavi, the Vaccine Alliance, 2014

In **1980**, **8.6%** of the world's population was **60 YEARS OLD OR OLDER**. By **2014**, this had increased to **12%**; by **2050**, it is expected to soar to **21%**.

United Nations, 2014

## INFOGRAPHIC

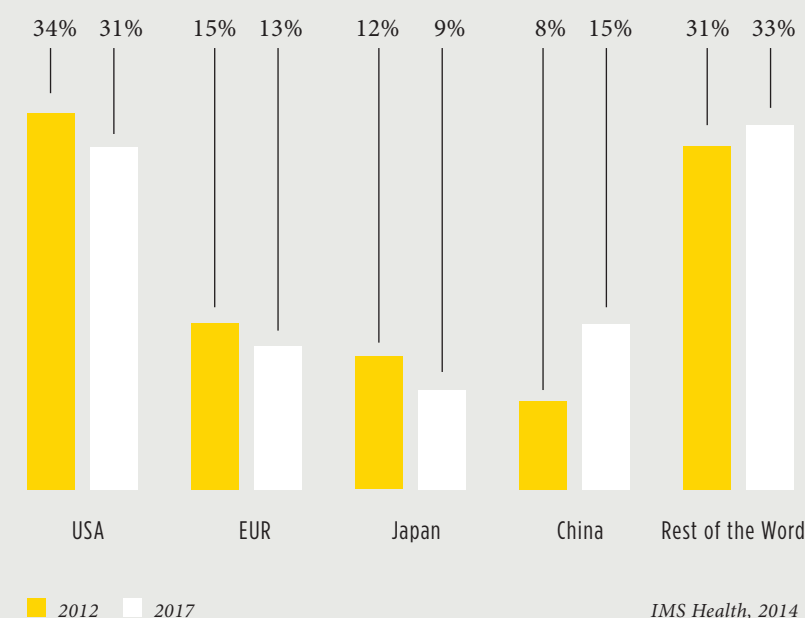
Causes of maternal death



WHO, 2014

## INFOGRAPHIC

Share of global pharmaceutical expenditure by region in 2012 and 2017



**GHANA** funded its **NATIONAL HEALTH INSURANCE** partly by increasing value-added tax by **2.5%**.

WHO, 2010

## FACTS

In some countries less than 20% of births are attended by a skilled health worker, compared with almost 100% in other countries.



WHO Fact File, 2014

## STATEMENT

***“The mortality rate for children under 5 dropped almost 50% from 1990 to 2012. But the speed of decline remains insufficient.”***

**MICHAEL GERBER**  
Ambassador for Sustainable Development Goals, Switzerland

## FACTS



The WHO says 23 doctors, nurses, and midwives per 10,000 people is the minimum to deliver essential maternal and child health services. Only 5 of the 49 countries categorized as “low-income” by the World Bank meet that criterion.

WHO, 2014

## WORDCLOUD

**HEALTH** **INFRASTRUCTURE** **INSURANCE** **LONG HEALTHY LIFE**  
AGING POPULATION  
VACCINATION **HEALTH** **DISPARITY** **HEALTH RECORDS** **HEALTH EQUALITY** **FINANCING**



ABOUT



The M8 Alliance of Academic Health Centers, Universities and National Academies is a collaborative network of academic institutions of educational and research excellence. It was founded on the occasion of the inaugural World Health Summit in 2009 and has provided an outstanding academic foundation to each World Health Summit ever since.

The M8 Alliance features 17 members from 13 different countries, all committed to improving global health and working with political and economic decision-makers to develop science-based solutions to health challenges worldwide.

The M8 Alliance promotes the translation of research progress from the laboratory “benchtop to the bedside,” and transformation of our present medical care approach of treating

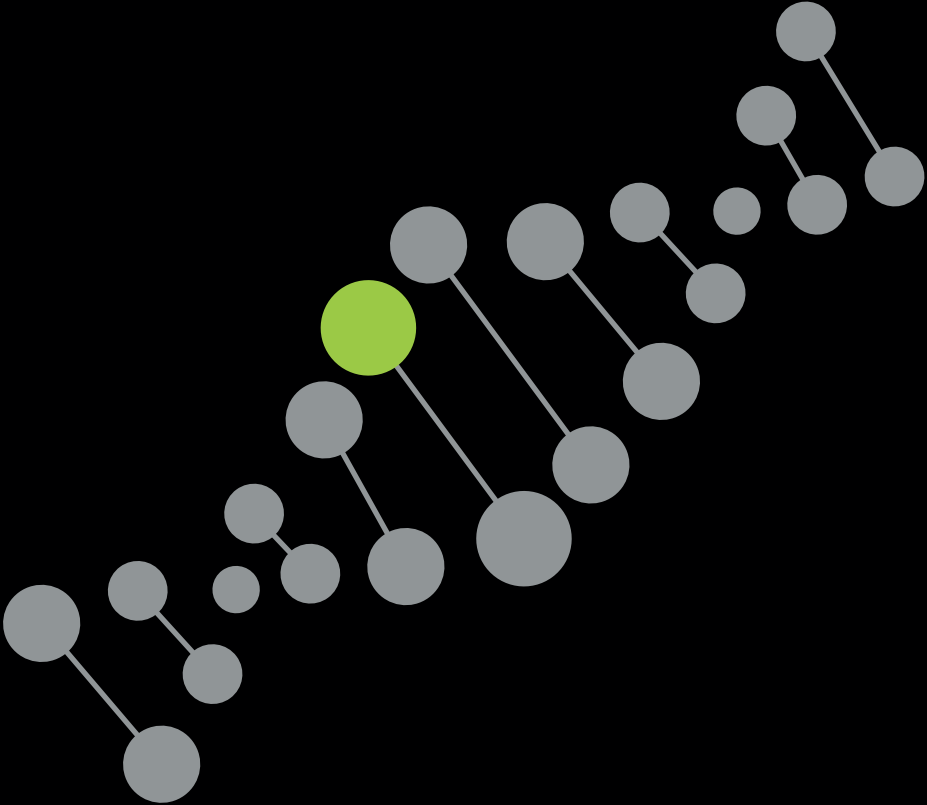
sick people into a true healthcare system with effective prevention of disease. The M8 Alliance works on the adaptation of health-related solutions to our rapidly changing living conditions through research in priority areas such as shifting demographics, urbanization, and climate change.

MEMBERS

- » Charité – Universitätsmedizin Berlin, Germany
- » Johns Hopkins Bloomberg School of Public Health, USA
- » Kyoto University Graduate School of Medicine, Japan
- » Imperial College London, United Kingdom
- » London School of Hygiene & Tropical Medicine, United Kingdom
- » Makerere University, Uganda

- » Monash University, Melbourne, Australia
- » University of Montreal, Canada
- » Institut de Recherches Cliniques de Montréal
- » Sorbonne Paris Cité, France
- » University of São Paulo, Brazil
- » National University of Singapore
- » University of Geneva
- » InterAcademy Medical Panel (IAMP)
- » Association of Academic Health Centers International (AAHCI)
- » Chinese Academy of Medical Sciences & Peking Union Medical College, China
- » Russian Academy of Medical Sciences, Russian Federation

[www.worldhealthsummit.org/m8-alliance/members](http://www.worldhealthsummit.org/m8-alliance/members)



Often a little innovation makes the difference

[www.deloitte.com/de](http://www.deloitte.com/de)





## ABOUT



The World Health Summit (WHS) is the annual conference of the M8 Alliance of Academic Health Centers, Universities and National Academies, organized in collaboration with the National Academies of Sciences of more than 67 countries and their InterAcademy Medical Panel (IAMP).

Since its first meeting in 2009, the World Health Summit (WHS) has brought together opinion leaders from academia, politics, civil society, and the private sector to discuss a wide range of health-related challenges. The WHS takes place annually in October in Berlin, Germany, and attracts about 1,200 participants from all stakeholder groups and from all over the world. The WHS enjoys the patronage of the Chancellor of the Federal Republic of Germany, the President of the French Republic, and the President of the European Commission.

The WHS Regional Meeting is held annually in April. It is organized by the WHS Co-President of the respective year. The first WHS Regional Meeting was held in Singapore in 2013. São Paulo, Brazil, hosted the WHS Regional Meeting 2014, and Kyoto will organize the WHS Regional Meeting 2015.

The M8 Alliance of Academic Health Centers, Universities and National Academies uses the WHS as its central platform and gives the Summit its strong academic foundation.

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

SAVE THE DATE

WHS REGIONAL  
MEETING—ASIA

KYOTO, Japan  
April 13-14, 2015

SAVE THE DATE

WORLD HEALTH  
SUMMIT

BERLIN, Germany  
October 11-14, 2015

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