



PACIFIC HEALTH SUMMIT
SEATTLE 2009

Multidrug-Resistant Tuberculosis: Overcoming Global Resistance



**A report from the
Pacific Health Summit**
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CONNECTING SCIENCE, INDUSTRY, AND POLICY FOR A HEALTHIER WORLD

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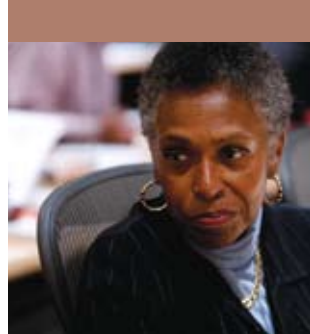
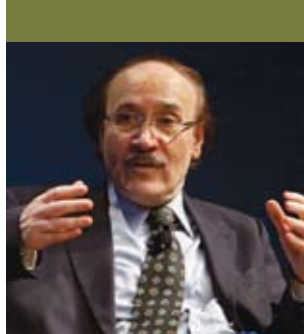
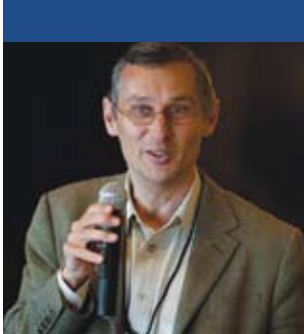
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What we really need is a storm: A new era for fighting an age-old disease

...Now is the time to transform the toolkit that biomedical research can provide.

Anthony Fauci, U.S. National Institute of Allergy and Infectious Diseases

“Why don’t we have 30 new drugs for tuberculosis, a disease that we know is eminently curable?” asked **Anthony Fauci**, Director of the U.S. National Institute of Allergy and Infectious Diseases, speaking to leaders gathered for the fifth annual Pacific Health Summit in Seattle from June 16–18. He admitted that there are a lot of complex answers to that question, and one of them is that “a transforming research effort has not been evident...we are seeing the winds of change, but what we really need is a storm.”

Outlining his vision for a research agenda for multidrug-resistant (MDR) and extensively drug-resistant tuberculosis (XDR-TB), Fauci put forth a bold commitment to address one of the world’s emerging health threats, proclaiming that now is the time to “transform the toolkit that biomedical research can provide.”

But how do we do this, and who is leading the charge? MDR-TB poses exceptional challenges in the discovery, development, and delivery chain of treatment and services. Yet there is good news, according to **Mark Walport**, Director of the Wellcome Trust. “We’re participating in a revolution in biological and medical science.”

Tuberculosis presents enormous opportunities for all stakeholder groups in science, industry, and policy to come together to innovate in truly groundbreaking ways. The 2009 Pacific Health Summit seized upon an outstanding and timely

occasion to build on the momentum of this year’s important international global health meetings addressing tuberculosis: the Stop TB Partners’ Forum held in Rio de Janeiro in March, the ministerial meeting of high M/XDR-TB burden countries in Beijing held in April, and the World Health Assembly in Geneva in May. The year 2009 heralded a collective effort in the global health sector and the international community to cement their commitment to winning the fight against drug-resistant TB.

Hailing from different fields, with a wide array of expertise and experience, participants nonetheless agreed that success in addressing tuberculosis is critical, as well as possible, with new leadership, innovation, and creative private sector engagement.

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It’s not only a biological revolution...there’s also a revolution in terms of connectivity.
– Peter Piot, Director and Professor, Institute for Global Health, Imperial College





Summit background



Every June, the Pacific Health Summit convenes 250 top leaders from science, industry, policy, public health, and civil society to brainstorm for solutions to some of the world's toughest health challenges.

The Summit—now in its fifth year—has built a legacy for bringing together a diverse audience for a healthier world. This year's theme, “MDR-TB: Overcoming Global Resistance,” capitalizes on an arc of events to truly affect progress in fighting a disease that is rapidly undermining important global health goals.

The Pacific Health Summit is co-presented by the Fred Hutchison Cancer Research Center, Bill & Melinda Gates Foundation, Wellcome Trust, and The National Bureau of Asian Research, which serves as the secretariat.

Sounding the alarm bell: Prioritizing TB alongside the multitude of other health challenges

The ancient and once readily curable tuberculosis disease now claims two million lives a year. MDR-TB, which does not respond to two of four first-line drugs, and XDR-TB, which is often fatal, together have emerged as a modern public health crisis, rapidly undermining the achievement of global health goals. MDR-TB and XDR-TB are the result of public complacency, a lack of effective drugs, diagnostics, and vaccines, substandard treatment, and weak health systems in the developed and developing worlds alike. Additional complicating factors include poverty, a funding shortfall

for TB research, and flagging political will. XDR-TB has been reported in 55 countries and, like all forms of tuberculosis, is indifferent to international borders and a nation's economic status. The World Health Organization (WHO) estimates 500,000 new cases of MDR-TB emerge each year.

“Even more alarming,” noted **Margaret Chan**, Director-General of the WHO, “is that well over half of these cases were resistant to multiple drugs right from the start and not as a direct result of substandard treatment. This tells us that resistant strains are now circulating in the general public, spreading widely and largely silently in a growing pool of latent infection.”

As a follow-up of the ministerial meeting in Beijing, the 2009 World Health assembly prioritized MDR- and XDR-TB. China's delegates proposed the resolution.

– Depei Liu, President, Chinese Academy of Medical Sciences





If MDR-TB is left unchecked,

the resulting XDR-TB could take us back to the treatment era that pre-dates the development of antibiotics.

Margaret Chan, World Health Organization

If MDR-TB is left unchecked, Chan added, the resulting XDR-TB “could take us back to the treatment era that pre-dates the development of antibiotics.”

How can the global health community confront such a challenge, alongside the multitude of health threats that plague our populations today, such as maternal and infant mortality, HIV/AIDS, and the H1N1 influenza pandemic?

Reasons for optimism

“The people on the ground in the countries affected most by the disease are now taking hold of the problem,” remarked **Tachi Yamada**, President of Global Health for the Bill & Melinda Gates Foundation. “The combination of advancement in science and advancement of ownership of the problem is very exciting for the future of TB.”

Bringing together new allies to share their vision for a healthier world, the Summit served as a catalyst for innovative partnerships and a showcase for how collaboration can transform the battle.

“I’m a big believer in openly collaborating with those in the industry and at research centers worldwide to work together to develop solutions for tuberculosis and other pressing health challenges,” said **Paul Stoffels**, Global Head, Research & Development, Pharmaceuticals, Johnson & Johnson.

Tibotec, a subsidiary of Johnson & Johnson, announced a partnership with the Global Alliance for Tuberculosis Drug Development (TB Alliance), in response to the urgent need to accelerate the discovery and development of new drugs to fight tuberculosis. The agreement grants the non-profit a royalty-free license for worldwide development and access to TMC207 in the field of drug-susceptible TB. TMC207 is a promising drug therapy candidate for drug-susceptible forms of tuberculosis.

These announcements added to the promise of exciting new discoveries and developments on the horizon, including a new vaccine candidate, currently in Phase IIB clinical trials in South Africa, which offers great hope and is considered to be the most clinically advanced of a new generation of vaccines.

With additional new drug therapies and drug combinations in the pipeline and new delivery systems being considered, the Summit an-

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A lot of patients are beginning to develop drug-resistant TB because of the failures of the system that we have put into place.

– **Jeremiah Chakaya**, Chief Research Officer, Kenya Medical Research Institute

nouncements buoyed enthusiasm for innovative alliances between stakeholders. While participants welcomed and applauded them, leaders in the room also expressed a desire for more action and discussion on how to push the envelope even further.

The Summit provided an interactive and lively forum for top experts to explore strategies for greater progress, while forging creative solutions to remaining challenges. Participants hailing from diverse backgrounds shared ideas and provided input on the TB agenda, while moving the conversation beyond the core TB community.

Tachi Yamada stated that a key Summit goal is to bring science into the equation to confront the world's biggest health problems. "Success requires a partnership between unusual players, people who do not often work together, but who must work together in order to bring true solutions, sustainable solutions," he said.

The push for greater innovation, coupled with dynamic new leadership, has the potential to alter the landscape of global health, said **Peter Singer**, Professor of Medicine, and Director of the McLaughlin-Rotman Centre for Global Health at the University of Toronto and University Health Network. "My metaphor for this meeting is the Rubicon River is standing before us. Maybe this is the transformational moment...and we have to decide whether to cross it. It really does seem to be that sort of moment."

We still have a long way to go, but the Philippines' Department of Health has responded to the problem of TB by recognizing strategic partnerships that can really make a difference.

– **Thelma Tupasi**, Executive Director, Tropical Disease Foundation, Philippines



A swift response to influenza pandemic threats

Just days after the WHO declared the H1N1 virus a global pandemic on June 11, 2009, and building on key discussions from the 2007 Pacific Health Summit (focusing on pandemic influenza), **Chris Viehbacher**, CEO of sanofi-aventis, made a major announcement.

"I want to support the call for common action," he said. "To act responsibly, we all have to play our part."

As proof of his commitment, Viehbacher announced that sanofi-aventis was donating 100 million doses of influenza vaccine to the WHO's stockpile for developing countries. This contribution follows on Margaret Chan's 2007 Summit announcement that the WHO would create a global stockpile of vaccines for the H5N1 avian flu virus. GlaxoSmithKline responded, declaring that the company would donate 50 million doses of its pre-pandemic influenza vaccine to help establish the stockpile. Two years later, global efforts to prevent and address a pandemic of avian flu are proving critical for how we cope with the H1N1 virus.

Success requires a partnership between unusual players, people who do not often work together, but who must work together in order to bring true solutions, sustainable solutions.

Tachi Yamada, Bill & Melinda Gates Foundation



Seizing the opportunity, mobilizing industry engagement

Health systems and product innovation need to be linked.

Maharaj K. Bhan,
Department of
Biotechnology, India

“Wouldn’t it be nice if Xerox printed the guidelines for national TB programs, if FedEx or Coca Cola distributed them to key partners on the ground through their supply chains, Hilton Hotels offered the venue for the press event, and then Google advertised it worldwide as a best-case study?” asked **Marcos Espinal**, Executive Secretary of the Stop TB Partnership Secretariat, deftly illustrating a model scenario of what true industry collaboration might look like.

Indeed, many participants wondered why it is so easy to find ice-cold cans of soda throughout sub-Saharan Africa, yet the network of laboratories is critically weak and hospitals experience regular stock-outs of life-saving N95 masks. These discrepancies provide clear evidence that industry must be fully engaged in the battle against tuberculosis.

Industry has a lot to teach in terms of operations and supply chain management, marketing, and delivery. With industry’s reach, skill, and capacity, the voice of companies is essential. To truly address tuberculosis, the private sector offers invaluable advice and ideas, as well as partnership.

Bringing companies to the table as key stakeholders is a unique feature of the Summit, setting it apart from other important global health meetings. Overwhelmingly, leaders in the room concurred that industry must be a critical partner to



empower a successful campaign against today’s global health threats.

The prospect of a “new toolkit” in the battle against tuberculosis generated optimism and excitement among the many participants who have long battled against tuberculosis with very few new or effective tools in their arsenal. The diagnostic test most widely used today was developed more than a century ago and today’s TB vaccine, Bacillus Calmette-Guérin, or BCG, is 85 years old. Yet it does not even prevent pulmonary TB, the most common form of the disease.

A complex and lengthy regulatory process, requiring each pill to be shown to contribute independently in new drug combinations and the lack of available trial sites has encumbered new drug and vaccine development. Without new drugs, the MDR-TB treatment regimen remains a two-year commitment, involving up to 20 pills a day, and

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We cannot treat our way out of MDR-TB. We have to prevent MDR-TB. And you must do that primarily by ensuring cure of new TB cases, and to assist governments in terms of their response.

– Gavin Churchyard, Chief Executive Officer, The Aurum Institute for Health Research



Mark Harrington, Wayne Pisano, Mark Walport, Paul Stoffels, Peer Schatz, Melvin Spigelman (left to right)

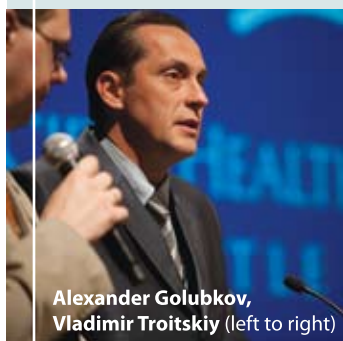
patients suffer from severe side effects. This often leads to lack of compliance in treatment, a contributing factor to the emergence of drug-resistant-TB. Without the essential drugs, diagnostics, and delivery systems, clinicians are fighting an uphill battle with many patients lost along the way, often before their diagnosis is even confirmed.

Addressing the critical shortage of trial sites, Anthony Fauci said, "I am exploring the possibility...of utilizing our extensive and generously funded HIV/AIDS clinical trials network for similar clinical trial capacities for TB."

Among the many challenges for improving TB management and control is the limited reach of laboratory infrastructure in undeveloped rural and remote settings.

"Indonesia, a vast archipelago with more than 17,000 islands (only 6,000 inhabited), has the world's third highest TB burden, and is per-

Tackling MDR-TB in Russian prisons



Alexander Golubkov, Vladimir Troitskiy (left to right)

The well-recognized MDR-TB crisis in Russia's prison system prompted a Summit invitation to Colonel **Vladimir Troitskiy**, Head of the Medical Department for the Russian Federal Penitentiary Services.

Troitskiy described Russia's national thrust to decrease TB incidence and mortality by implementing a broad laboratory network. The effort has been effective, he said, bringing rates down by half over the last seven years.

Tuberculosis is an ongoing problem in Russia, and therefore a priority. "We are not standing aside in this war, we are actively fighting," Troitskiy said. The Summit offered him an unusual and much-needed opportunity for making new contacts, meeting new partners, and finding essential support, he added. "It's about what I bring back, TB has no boundaries. I couldn't *not* come to the Summit."

forming TB control and providing service and care to a population in often hard to reach locations," explained **Tjandra Yoga Aditama**, Director-General of Disease Control and Environmental Health for the Indonesian Ministry of Health. "One of the challenges we face is how to deliver care, diagnostics, and drugs."

"What would be valuable are point-of-care tests and more appropriate and affordable lab-based tests," said **Peer Schatz**, CEO of Qiagen. He identified the opportunities and outlined strategies his company adopted to bring new diagnostic technology online: looking to models based on other

The resources and expertise within pharma are not only extremely important for the areas of pure R&D but also in terms of market access and delivery of new drugs.

– Mel Spigelman, President and Chief Executive Officer, Global Alliance for Tuberculosis Drug Development (TB Alliance)





***It's about
solidarity,
it's about risk
sharing in
some way.***

Nigel Crisp,
UK House of Lords

diseases and a focus on emerging markets. "It can be done profitably, and we're using models from the vaccine and pharmaceutical industry, such as tiered pricing models to address richer regions and poorer regions under one umbrella."

"When I look at the diagnostic industry, the biggest challenge and the biggest opportunity has been the developing country market," reflected **Giorgio Roscigno**, CEO of FIND. "This market is in large part inaccessible to many companies as a result of a certain level of disorder and an unfamiliar level of control."

How do we reduce costs and make market entry more attractive to companies while still strengthening infrastructure?

"If we invest in laboratory strengthening, this will help countries and make it easier for diagnostic companies to engage," Roscigno said.

The enormous expense of Phase III development, coupled with the lack of vaccine manufacturing facilities in the developing world, presents ongoing challenges.

Creating an effective vaccine for pulmonary TB to prevent infection in the first place would make an enormous difference, noted **Jerry Sadoff**, President and CEO of the Aeras Global TB Vaccine Foundation. But when the dream of a vaccine is realized, it will not solve the problem alone. "The biggest tragedy," he lamented, "would be if we raised \$100 million, did a Phase III trial, proved that the vaccine worked, and then there

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*The poorest countries pay the lowest price possible, oftentimes through UNICEF acquisition. So in terms of a market, there **is** a market.*

– **Wayne Pisano**, President and Chief Executive Officer, sanofi pasteur

was no factory that could manufacture it.”

“We need to get serious about raising new money if we’re going to actually see these promising technologies delivered,” declared **Peter Small**, Senior Program Officer at the Bill & Melinda Gates Foundation.

Making mutually beneficial partnerships irresistible

Implementation of mid-level innovation is critical in India—not money, explained **Maharaj K. Bhan**, Secretary of India’s Department of Biotechnology. “Health systems and product innovation need to be linked.”

“We have a tough time spending our R&D money because the system is not always ready to absorb it, but global partnership gives us the development experience we need, and that, in turn, gives us more return on the investment we make. Global partnership should be designed so that it also builds our capacity and that, in turn, will benefit other developing countries as well,” he added.

The long-awaited storm promising transformative change is brewing quickly in China, according to **Kewen Jin**, General Manager at Charles River Laboratories in Shanghai, who described the emergence of a fast-growing and vibrant new research-based life sciences industry. Amid the chicken farm and brickyard that punctuated the swamp where his company set up eight years ago outside of Shanghai, Kewen says he can see five

We need to incentivize companies in developing countries to get into the business of producing good quality anti-TB medicines as there will be some profit at the end of the day. We need to come up with better forecasts for TB drugs and how new tools will be marketed.

– **Patrizia Carlevaro**, Head of International Aid Unit, Eli Lilly and Company

Universal access through universal health coverage



Diana Weil, Joel Spicer
(left to right)

To achieve real results against MDR-TB, fundamental policy changes—bringing about universal access and therefore universal health coverage (UHC)—are essential, said **Mario Raviglione**, Director of the WHO’s Stop TB Department, as he led a thought-provoking discussion on a running theme in global health.

The concept, hailing from the HIV/AIDS community, Raviglione said, “is now expanding to cover a number of other health burdens.” As international pressure grows, the issue gains momentum. The task now is to finance UHC, while making access to health truly universal.

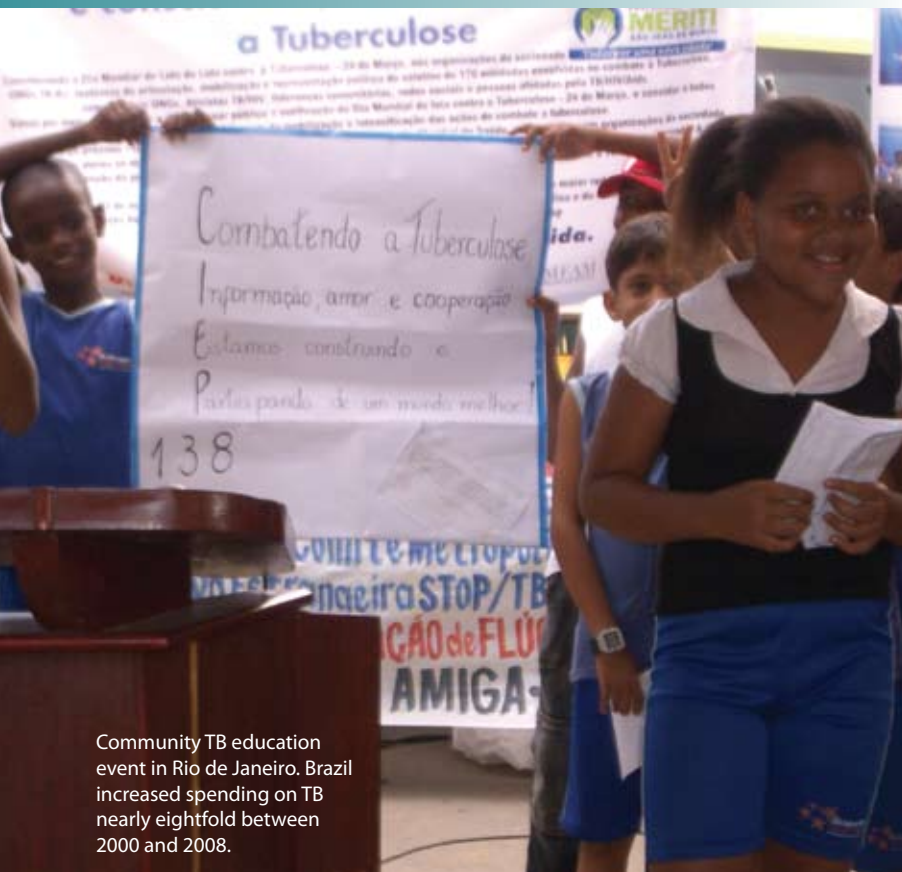
A variety of stakeholders offered differing perspectives on user fees, maintaining a standard for treatment protocol, and addressing hidden costs.

Nigel Crisp, Independent Member of the UK House of Lords, noted that an effective health system is needed in order to deliver good public health. Acknowledging the ongoing debate on funding, he added, “It’s about solidarity, it’s about risk sharing in some way.”



Giorgio Roscigno, Michael Barber, Maria Cattau (left to right)





Community TB education event in Rio de Janeiro, Brazil increased spending on TB nearly eightfold between 2000 and 2008.

We cannot separate production, innovation, science, and access.

Carlos Augusto Graboís Gadelha, Fiocruz

pharma companies' R&D centers from his office window. "You probably can't find any other spot on the planet where they are so clustered together."

China, he declared, has great ambition, which can feed into the fight against tuberculosis. "Our aspiration now is going from 'made in China' to 'discovered in China' and 'invented in China.'"

How can the promise of new development take on the complexities of tuberculosis, especially in low- and middle-income countries and when it has become so entrenched with HIV/AIDS?

"We cannot separate production, innovation, science, and access," remarked **Carlos Augusto Graboís Gadelha**, Vice President of Health Production and Innovation at Fiocruz in Brazil. Im-

plementing successful TB measures must "come from a perspective of single projects to a system approach and a system support."

"Technology can be a key enabler of improvements in disease surveillance, diagnosis, treatment monitoring, and prevention—a transformative force that shifts the way care is delivered and how people can better manage their own health," stated **Peter Neupert**, Corporate Vice President of Health Strategy at the Microsoft Corporation. Software, he continued, is accelerating the rate of discovery and could provide solutions for complex treatment regimens, while addressing specific country contexts.

Michael Barber, Chief Technology Officer at GE Healthcare, suggested tapping into the global reach of an industry leader, which can offer a leg up in clearing the highest TB hurdles. He cited GE's invaluable resource: a network of scientists spanning across the globe and dedicated to developing innovative new ideas. "Hopefully, we can find a partnership, and if it can really play out, it could have a big impact."

Participants noted another important hurdle to clear—the bottlenecks in the regulatory process. Expediting the process is urgently needed to get new drug treatments to a growing number of MDR-TB patients, faster.

Answering that call, **Edward Cox**, Director of the Office of Antimicrobial Products at the U.S. Food and Drug Administration, raised the prospect

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The biggest tragedy would be, we could raise the \$100 million, and do a phase III trial, and prove that the vaccine worked, and not have a factory to make it...So we need all the elements.

– Jerry Sadoff, President and Chief Executive Officer, Aeras Global TB Vaccine Foundation

of studying multiple drugs at once. He noted it was a higher risk scenario, "...but with bigger payoff."

Fixed-dose combination therapies (FDC) have become an integral part of TB treatment and control, but uptake has been slow due to issues related to access, quality, and lack of political will.

A post-Summit workshop, led by **Michael Kimerling**, Senior Program Officer at the Bill & Melinda Gates Foundation, explored strategies for increasing uptake of known quality-assured FDCs, currently used by only about 15 percent of TB patients, despite having been on the market for over 30 years.

The session highlighted several promising initiatives in China and Brazil intended to encourage patient use of quality-assured FDCs. The discussion also revealed challenges to progress on FDC uptake, including a limited understanding of market dynamics and product flows in the public and private sectors, as well as the market conditions that will affect the launch of new first-line TB compounds in the future.

Pulling lessons from the community-industry relationship in the fight against HIV/AIDS was a recurring theme, shaping discussions for seeking solutions.

"Despite conflicts over issues like prices and licensing intellectual property, the community and the industry were able to work together in a very fruitful way to accelerate the development

A catalyst for change: U.S. visa policy toward HIV+ visitors



Participants felt a notable absence during a Summit working lunch on battling TB from the front lines when **Paul Thorn**, Project Director for the Tuberculosis Survival Project, was denied a visa into the United States due to his HIV-positive status. Thorn successfully battled against HIV-MDR-TB co-infection. In a letter to Summit participants, Thorn explained

that the U.S. visa application process, which requires applicants to declare their HIV status, left him only two options: to be dishonest and therefore a criminal or be honest about his status and therefore an undesirable. "To my mind, this isn't much of a choice," he wrote.

Prompted by requests from Summit staff, and with the intervention of U.S. Senator Patty Murray and Representative Jim McDermott of Washington State, the issue gained traction. On June 29, 2009, just 10 days after the Summit, Thorn jubilantly wrote colleagues that the Obama administration was repealing the ban on HIV-positive individuals, a policy dating back to 1987.

of...30 drugs for HIV," said **Mark Harrington**, Executive Director and Co-Founder of the Treatment Action Group. Succinctly capturing the spirit of the Summit he added, "what I want to see coming out of this meeting is more industry-to-industry collaboration and working together..."

Finding actors who are not yet committed is an important task ahead, noted **Maria Cattau**, Former Secretary-General of the International Chamber of Commerce. Emphasizing the need for compelling partnerships, she challenged participants to "make them so attractive, you can't resist them."

We need to train academic scientists about the need and responsibility for effectively and efficiently transferring technologies to small biotechs, and partnering with appropriate industry sponsors that have the capacity to move things forward. It's a current failure in our academic systems.

– **Craig Rubens**, Executive Director, Global Alliance to Prevent Prematurity and Stillbirth (GAPPS)



A crisis is a terrible thing to waste

We need to find synergies we can institutionalize, between what government needs to do and what other players should be doing.

Yogan Pillay, National Department of Health, South Africa

Armin Fidler, Lead Advisor for Health Policy and Strategy at the Human Development Network of the World Bank, put forth a sobering figure at a panel discussion on funding TB research, implementation, and access. “The global financial crisis, based on World Bank estimates, may push this year another 53 million people into poverty,” he said.

Noting the impact at the country, health systems, and household levels, Fidler added that the World Bank has tripled its output for health operations from \$1 billion to \$3 billion, bolstering health systems investments in general, and surveillance systems and laboratory networks in particular, in many countries over the next several years.

Funding is a clearly a major concern as the shocks of the financial crisis are felt throughout the world. **Michel Kazatchkine**, Executive Director of the Global Fund to Fight AIDS, Tuberculosis and Malaria, outlined an innovative initiative called “debt to health.”

“Through this mechanism of debt relief, part of the debt is actually converted into finance for health.” In addition to a €40 million agreement between Pakistan and Germany, Australia has committed to an agreement on TB programs in Indonesia.

“That’s a very interesting precedent because this would be the first time that commercial debt is arranged for public health,” Kazatchkine added.

An informed government makes a vital ally

Participants repeatedly expressed the need for strong government leadership and guidance. **Yogan Pillay**, Deputy Director-General of Strategic Health Programs at the National Department of Health in South Africa, noted, “...we need to find synergies we can institutionalize, between what government needs to do and what other players should be doing.” Strong government leadership is key, he added, “...not only to say what is needed for today to strengthen the health system, but also to inform our researchers about what we will need tomorrow and the day after.”

An informed government makes a vital ally.

Armin Fidler, Margaret Chan, Sally Davies (left to right)



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The prevention and the treatment of infectious diseases require the support of the comprehensive social services system. It's still an important basic social function.

– Yu Wang, Director-General, Chinese Center for Disease Control and Prevention

Without bold and radical policy changes, we will not succeed...

Mario Raviglione, Stop TB Department, WHO



Mario Raviglione,
David Fleming (left to right)

This is a key point Anthony Fauci made as he recounted the U.S. government's reaction to the case of Andrew Speaker, a U.S. citizen and 2009 Summit attendee diagnosed with drug-resistant TB who made international headlines in 2007. When called to testify before the Senate and House representatives, Fauci outlined the dangers of tuberculosis in public transportation, which suddenly transformed the disease into a national security issue.

"I seized the opportunity to inform my esteemed colleagues in Congress that essentially all of them have certainly traveled on airplanes with people who were infected with TB, since one third of the entire world is infected...MDR and XDR-TB are part of a problem much larger than safety during international flights."

Working with the government—one that is informed and committed to addressing tuberculo-

sis—is at the center of a great success story in Lesotho. An enclave nation surrounded by South Africa, Lesotho has been heavily impacted by the region's mining industry, a long-recognized high-risk labor environment for TB exposure and infection.

Mphu Ramatlapeng, Minister of Health for Lesotho, identified a prevalence of HIV/AIDS reaching 23 percent and a 72 percent HIV-TB co-infection rate. Facing a "national emergency," she said it was key to develop sustainability. "If you work with governments, it may take you a little bit longer to set up the good systems, but the reality is, it will be a sustainable program." Citing great luck with international partners in the room, such as the Clinton Foundation and Partners In Health, Ramatlapeng has waged an aggressive—and winning—campaign against tuberculosis, providing a successful model for all stakeholders.

In addition to financing the existing drugs and treatment programs, let's try to speed up the process of making the new drugs available for TB programs all around the world....we can do very, very little if we don't have the drugs.

– Jaime Bayona, Director-General, Socios En Salud Sucursal Peru



“Without bold and radical policy changes, we will not succeed,” admonished **Mario Ravigli-
one**, Director of the WHO’s Stop TB Department. Those changes, he added, include universal health coverage, building modern laboratories capable of rapid testing across a spectrum of different diseases, addressing drug policies in terms of both quality and their rational use especially in the non-state sector, and structuring infection control in health facilities and other areas where people congregate.

The most alarming story is what we don’t know

To move the fight against tuberculosis forward, medical researchers need a clearer understanding of the epidemiology of disease, said Peter Small.



Paul Farmer

“The most alarming story is what we don’t know,” he added, “because we are faced with this enormous fund of ignorance in TB.” Participants concurred that most TB efforts rest on a “thin veneer” of knowledge. Researchers, who describe tuberculosis as a “stealth pathogen,” also grapple with a funding shortfall and note that much more could be done with advances in science if there were greater investment.

“We are not able to keep up with the epidemic we’re describing, either



Woman on her way home from market in Indonesia, where TB is the second leading cause of death after cardiovascular disease.

in terms of diagnostics or therapeutics, but also in terms of policies,” said **Paul Farmer**, Co- founder of Partners In Health.

Moreover, tuberculosis is a truly global health crisis, noted **David Fleming**, Director and Health Officer for Public Health—Seattle & King County. A city of growing health prominence, Seattle is often hailed as the “Davos of global health.” It is also an international crossroads, and as a result, ironically, Seattle has a TB rate that is 50 percent above the national average. A successful TB program of proven control methods is the community’s front line of defense against this disease, Fleming reflected. However, he noted, when asked about how he funds these

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Most TB patients are not aware of their rights, that they even have the right to health.

– Carol Nyirenda, National Coordinator, Community Initiative for TB, HIV/AIDS & Malaria, Zambia

initiatives, “we in delivery... are dealt a hand of cards that we’re forced to play.”

Dealt an unexpected hand when he was diagnosed with drug-resistant TB in 2007, Atlanta lawyer **Andrew Speaker**, Senior Partner at Andrew H. Speaker, P.C., offered insight into a complex and interesting chapter in his life and in U.S. public health history.

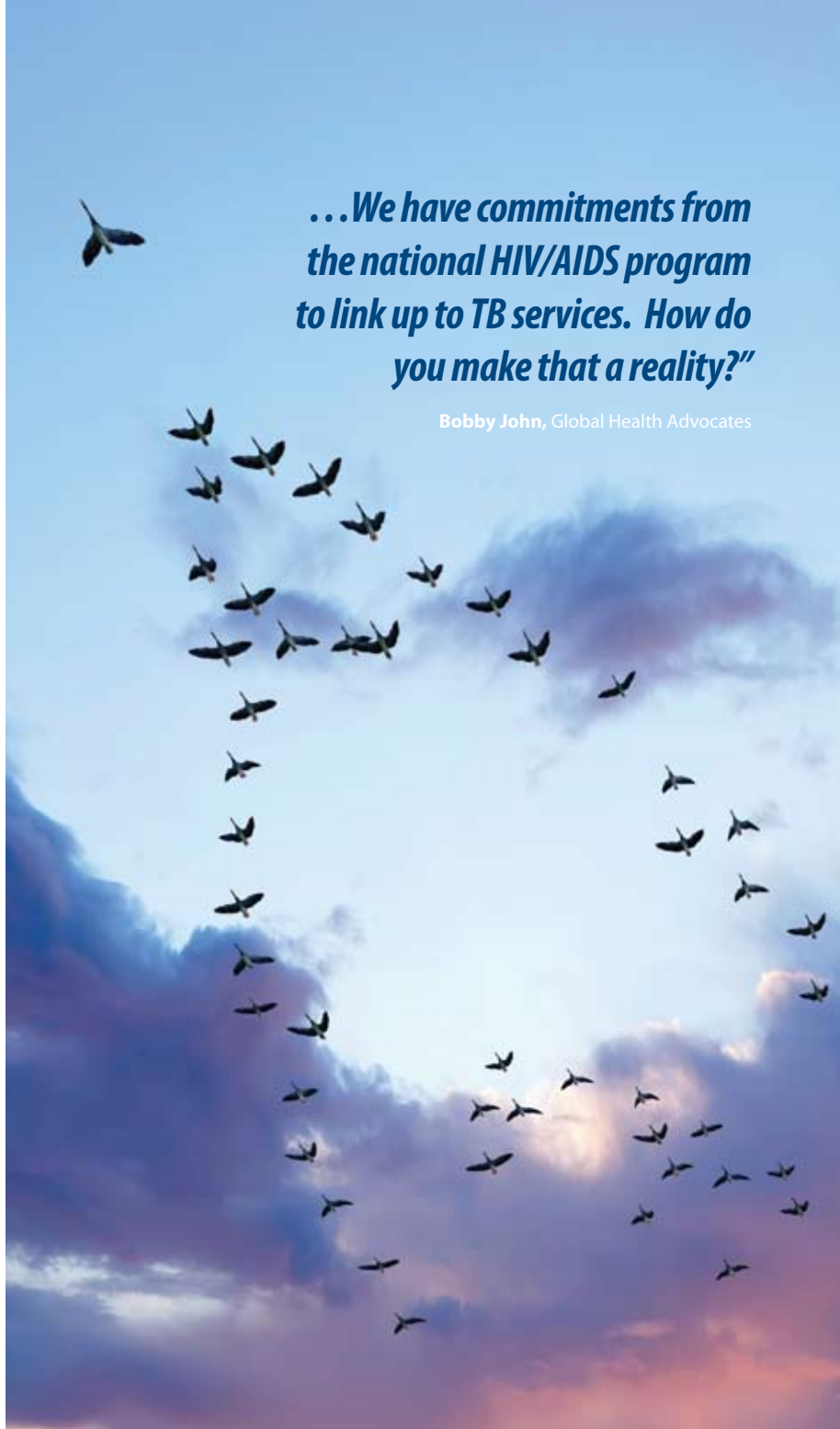
“I’m not the typical face of TB,” Speaker explained, recounting his experience and his recovery. But after two years of grueling MDR-TB treatment and great personal upheaval, Speaker offered himself as an advocate for tuberculosis. “TB affected every single part of my life; it was extremely difficult to go through treatment, and I was one of the lucky ones.”

Many felt that the publicity around Speaker’s case focused too much attention on one individual and not enough on a pervasive killer that affects millions in developing countries. There is a lot of misunderstanding about the serious challenges posed by tuberculosis. “We don’t hear from the front line stories sufficiently and I think that is a really powerful motivating factor,” declared **Andrew Jack**, Pharmaceuticals Correspondent for the *Financial Times*. “These messages need to be made loud and clear.”

Participants on the front lines of tuberculosis in some of the world’s most challenging health environments came forward to share their experiences, prompting insightful discussions on the

...We have commitments from the national HIV/AIDS program to link up to TB services. How do you make that a reality?”

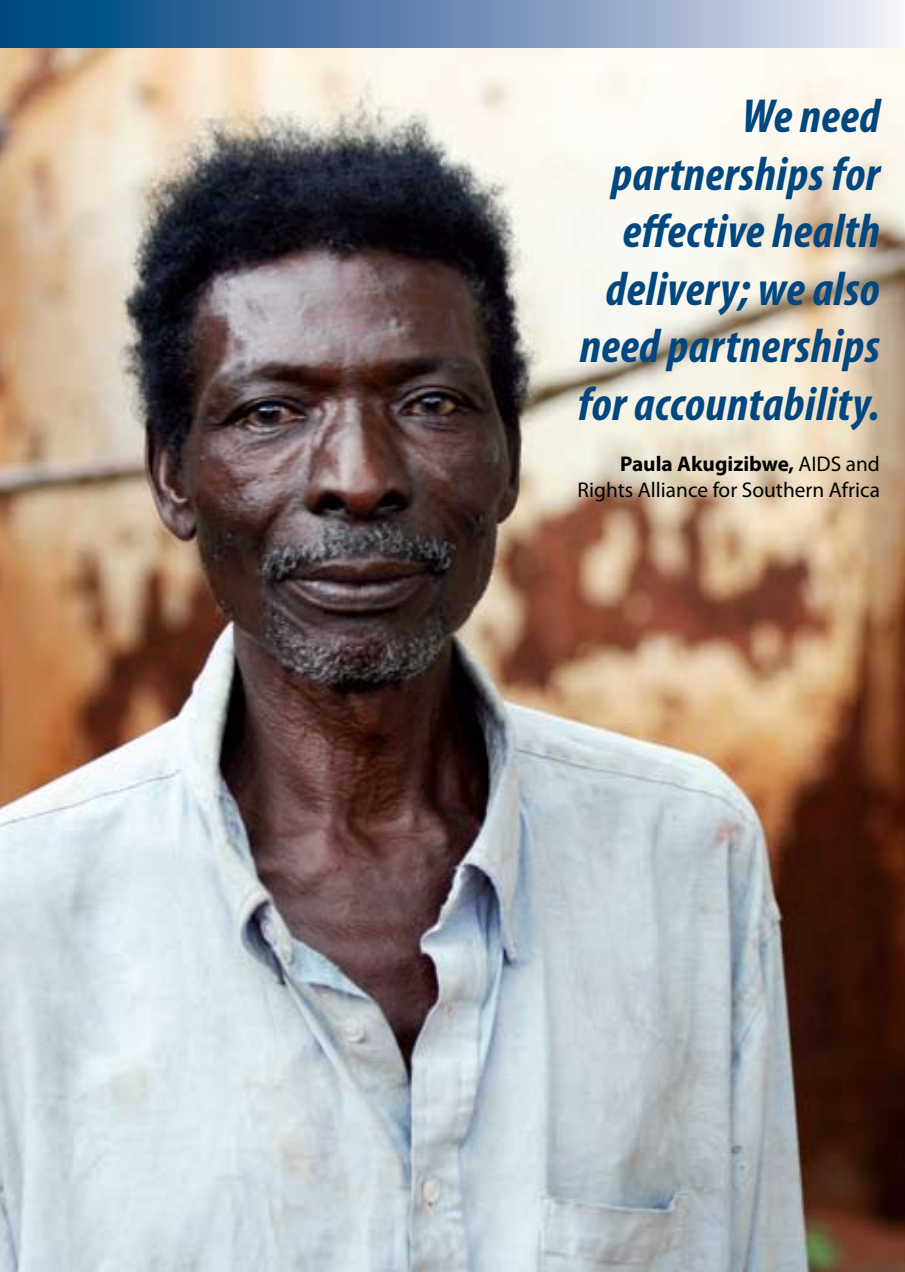
Bobby John, Global Health Advocates



When public-private partnerships are discussed, the private part generally refers to the pharmaceutical companies. What are other agencies doing to encourage innovative partnerships with companies in other global industries, such as automotive, apparel, mining, and IT?

– **Ernesto De La Torre**, Coordinator, Global Public Health, Chevron Corporation





We need partnerships for effective health delivery; we also need partnerships for accountability.

Paula Akugizibwe, AIDS and Rights Alliance for Southern Africa

collaboration needed to truly tackle all forms of the disease.

In sub-Saharan Africa, said **Paula Akugizibwe**, Regional Treatment Advocacy Coordinator for AIDS and Rights Alliance for Southern Africa, “we will not stop TB through technologi-

cal advances only: we need to address the day-to-day realities and challenges faced by people living with TB.” She illustrated the hand dealt to patients in rural areas where health systems are weak and there is little infrastructure. “I don’t know if anyone here would be willing to walk 16 kilometers every day for their medication,” she said. “We need partnerships for effective health delivery; we also need partnerships for accountability.”

“In South Africa’s province of KwaZulu-Natal, **Krista Dong**, Director of Integration of TB in Education and Care for HIV/AIDS (iTEACH) at Edendale Hospital, works at the epicenter of the co-epidemic. “Even basic infection control measures are lacking, including sufficient supply of N95 masks and the ability to isolate individual TB suspects.”

“Isolation,” she says of the practice at the second-largest hospital in the province, “means that you put every suspect who may have drug-resistant TB into one room together. If you didn’t have [TB] when you went in, you will very likely have it when you come out.” She added that if a typical government hospital from KwaZulu-Natal were dropped in Seattle, “...it would immediately be wrapped, quarantined, and burned, because of the TB risk.”

Vivid and compelling accounts from the field offered important insight and a more comprehensive understanding of how tuberculosis unfolds in some of the world’s highest-burden countries.

VOICES OF THE SUMMIT



We mustn’t be complacent by thinking we’ve got one new drug coming on board—we need to continue the pressure to develop others while making sure that people with TB today get access to the drugs we already have.

– Virginia Williams, TB/MDR-TB Project Director, International Council of Nurses

MDR/XDR-TB: Capturing the struggle to live

"I'm aghast and saddened that those pictures represent our modern world," said **Sally Davies**, Director-General of Research and Development at the UK Department of Health and National Health Service.

The photo exhibit, Davies noted, gave participants at the Summit "no hiding place," and showcased the visionary work of documentary photojournalist, **James Nachtwey**. Displayed throughout the conference center corridors, 40 images offered an intimate and haunting glimpse of M/XDR-TB and its impact throughout the world.

"I try to put a human face on a critical health issue that is not well understood," Nachtwey said, urging participants to view the press, with



A boy experiencing severe pain from TB meningitis is comforted by his mother at Svay Rieng Provincial Hospital, Svay Rieng, Cambodia. Family members provide much of the personal care at hospitals in the developing world.

its capacity and reach to tell the world's important stories, as a partner and a resource.

"I'm your ally, but I'm only a messenger," Nachtwey concluded, and with a nod to Summit participants he added, "*You* are hope. This room is full of hope."

These accounts also prompted participants to consider how some of the new developments in diagnostics and anti-tuberculosis drugs being discussed at the Summit could be used safely and effectively in the face of severe capacity and resource constraints.

The key, Dong emphasized, is to be "innovative and harness technology, but also to design interventions with resource-constrained settings in mind, ensuring they are widely accessible where they are needed the most."

"Let's hope that optimism can be evidence-based," declared **Susan Dentzer**, Editor-in-Chief of *Health Affairs*, noting that a decisive commitment to defeating tuberculosis was the clear message to emerge from Summit discussion.



Yu Wang, Nigel Crisp, Peter Neupert, Edward Cox (left to right)

It is critical to support and implement very strong public-private partnerships, product-development partnerships, and the capability of manufacturing plants—both public and private—in emerging economies.

– **Jorge Bermudez**, Executive Secretary, UNITAID



Impact

As a result [of the Summit], we'll see vital collaboration and fruitful partnerships emerge, bringing important progress and viable solutions.

Paul Farmer,
Partners In Health

"This meeting is about complexity," concluded Mark Walport as the Summit drew to a close. And this, he noted, is a cause for optimism: "The great advantage of complexity is that we can all start somewhere."

Harnessing and mobilizing the collective expertise in the room, the Summit successfully brought together leaders from science, policy, and industry to affect positive change and bring new energy in the fight against an old foe.

In a post-Summit survey, over two-thirds of participants reported that their experience at the Summit resulted in new collaborations and partnerships for their organizations. More than 85 percent said that the Summit gave them the opportunity to engage with people and stakeholders they would have never otherwise met.

With fresh motivation and renewed commitment, participants agreed the Summit provided a deeper well from which to draw in order to maintain the hard-won momentum against tuberculosis to date. This year's Summit theme, "MDR-TB: Overcoming Global Resistance," also highlighted tuberculosis' entrenchment in other diseases and how it can be addressed through the lens of overarching global health goals.

With 13 million people affected by HIV-TB co-infection, there are many lessons to borrow and build on. "If we can get genuine harmonization of these two disease strategies, beyond innovation, beyond new meds, anything, we would

The great advantage of complexity is that we can all start somewhere.

Mark Walport, Wellcome Trust

save literally hundreds of thousands of lives," said **Laurie Garrett**, Senior Fellow for Global Health at the Council on Foreign Relations.

Pointing to the 2008 Summit theme, nutrition, **Ann Veneman**, Executive Director of UNICEF, underscored the additional impact it has on the most vulnerable TB patients: the young. "About 900,000 children under the age of 15 are diagnosed with TB a year," she said, adding that the context of nutrition and maternal and child health cannot be ignored in addressing tuberculosis.

VOICES OF THE SUMMIT



Can we do more with the media in order to reach the decisionmakers, the politicians? As a leverage example, I cite the exposition of James Nachtwey's pictures, which have an important impact on the media. I have a strong feeling that these kinds of things, and multiple [James] Nachtweys, are necessary.

– **Joris Vandeputte**, Senior Vice-President, Advocacy and Fundraising, Tuberculosis Vaccine Initiative



Healthy mothers and children play an integral part of keeping global health goals on track. Looking down the road, the 2010 Pacific Health Summit will take a closer look at the pivotal role of maternal and newborn health.

As the Summit concluded, participants took away new perspectives on their own roles in leading the charge against tuberculosis and how the global health community can take advantage of the promise of the future. Paul Farmer pointed out that while the event was drawing to an end, the discussion was far from over.

The most important outcomes of the Pacific Health Summit are often unknown. They derive from the relationships developed year after year between world leaders with the vision, determination, and resources to solve major health problems. The solutions and collaborations develop in the hallways.

– Lee Hartwell, President and Director, Fred Hutchinson Cancer Research Center

Nutrition and TB: Revisiting the global nutrition challenge



The 2008 Summit theme, “The Global Nutrition Challenge,” ushered in the Access to Nutrition Initiative, a collaborative project led by the Bill & Melinda Gates Foundation and the Wellcome Trust. This will be the first ranking index of its kind to

map the food and beverage industry worldwide.

To bridge the themes of the 2008 and 2009 Summits, participants discussed nutrition in the context of TB infection at a breakfast workshop, where **Marc Van Ameringen**, Executive Director of the Global Alliance for Improved Nutrition (GAIN), said “TB makes malnutrition worse, and malnutrition weakens immunity, thereby increasing the likelihood that TB will develop into active disease.”

Malnourishment and HIV-TB co-infection is called “triple trouble,” said **Ellen Piwoz**, Senior Program Officer at the Bill & Melinda Gates Foundation. It presents complex problems. “I start from the premise that the challenge is to get a fully balanced diet,” said **Benoît Miribel**, Director-General of Foundation Mérieux.

“The most exciting prospects are yet to come,” he said, energized by the frank debate among key stakeholders, including those that extend beyond the TB community. “As a result [of the Summit],” he concluded, “we’ll see vital collaboration and fruitful partnerships emerge, bringing important progress and viable solutions.”



Pacific Health Summit 2009 leadership

Throughout the Summit, many participants highlighted the importance of leadership in meeting the challenge of improving global nutrition. Leaders are needed who not only can inspire change, but are willing to put themselves and their work on the line to make change happen. We would like to acknowledge and thank the many leaders who helped bring the Summit to fruition.

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William H. Gates, Sr.



Lee Hartwell

Thanks and Gratitude

In early 2004, George F. Russell, Jr., Chairman of The National Bureau of Asian Research, and William H. Gates, Sr., Co-chair of the Bill & Melinda Gates Foundation, met with Lee Hartwell and Michael Birt to brainstorm on how emerging science focused on the prevention and early detection of disease could transform healthcare. The Pacific Health Summit emerged from those discussions.

As the founding co-chairs of the Summit's Senior Advisory Group, George and Bill guided the Summit at every step along the way with their unique blend of leadership, passion, and vision for a healthier world. Without them, the Summit never would have been launched.

In addition to critical support since the Summit's founding, Lee Hartwell provided critical leadership as Chair of the Summit's Executive Committee in 2009. We offer thanks to Lee for all that he has done for the Summit.

We are delighted to announce that Mark Walport will serve as Chair of the Executive Committee for the 2010 Summit, which will take place in London and focus on the theme of maternal and newborn health.

For information about Summit discussions and participants, as well as
information on resulting initiatives and collaborations, visit

www.pacifichealthsummit.org



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The Summit would also like to thank the following organizations for their critical support.

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