Fighting HIV/AIDS
The Greatest Epidemic in Modern History.

In these exclusive interviews, we speak to Michel Sidibé (Executive Director, UNAids), Dr. Stefano Bertozzi (Director of HIV at the Bill & Melinda Gates Foundation), Dr. Gottfried Hirnschall (Director of HIV Department at WHO - World Health Organisation) and Brian West (Chair of the European Aids Treatment Group, who has been living with HIV for over 25 years). We look at the very nature of the virus, its impact on society and culture globally, and discuss the opportunities to move to a world free of HIV/AIDS.

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There are more viruses on planet earth than stars in the known universe. Stacked end-to-end, these viruses would reach out over 100 million light years. As prominent virologist Dorothy Crawford notes, “...microbes are by far the most abundant life form on Earth. Globally, there are about 5 x 10^30 bacteria, and viruses are at least 10 times more common – thus making viruses the most numerous microbes on Earth. In other words, there are more viruses in the world than all other forms of life added together...”

Viruses have existed since the dawn of life itself, and are thought to be (at least partly) responsible for the shuttling DNA between species that gave rise to the biodiversity of our planet, the existence of different species and evolution itself. Over hundreds of millions of years, our ancestors have been accumulating retroviral DNA within our own. Research now shows that around 100,000 elements- or around 8 per cent- of the human genome that can be traced to a viral ancestor. Given that only 1.2 per cent of our genome directly encodes proteins, we are more virus than human. (Tomonaga et. Al, Nature 463, 84-87). Journalist Carl Zimmer also notes that "...viruses are unseen but dynamic players in the ecology of Earth. They move DNA between species, provide new genetic material for evolution, and regulate vast populations of organisms. Every species, from tiny microbes to large mammals, is influenced by the actions of viruses.

Viruses extend their impact beyond species to affect climate, soil, the oceans, and fresh water...” (A Planet of Viruses, 2012)

Our rather narrow understanding of life has hampered our view of viruses which- by most accounts- are neither organisms nor alive. In his seminal paper “The Not so Universal Tree of Life”, Harald Brüssow notes that, “...Biologists have a tacit understanding of life and their definition is in many ways philosophically not very sound. A frog or a sunflower is living material while a rock or clay is not. However, this emotional understanding of the obvious does not replace a clear definition. What about frogs that are completely frozen during hibernation? Are these metabolically frozen frogs alive? What about plant seeds with little or no metabolic activity? When distinguishing storage forms for potential life from actual living forms, we must be aware that we create a rear door for viruses to enter the living world...” It is this changed philosophical understanding of life which now means that scientists argue viruses necessitate their own unique domain for life alongside bacteria, archaea and eukarya (thought to be the groups in which all life on the planet existed).

While the majority of these co-inhabitants of earth are relatively harmless, the fact remains that a subset of these viruses significantly impact human welfare, affecting the lives of over one billion people on the planet. Their rapid evolutionary capability, and ability to jump between species also means that occasionally new viruses emerge that change everything. As Zimmer wrote”...Every week, the Centers for Disease Control and Prevention publish a thin newsletter called Morbidity and Mortality Weekly Report. The issue that appeared on July 4, 1981, was a typical assortment of the ordinary and the mysterious. Among the mysteries that week was a report from Los Angeles, where doctors had noticed an odd coincidence involving young (otherwise healthy) men who had contracted the same rare disease- pneumocystis pneumonia. Commenting on the report, the editors of Morbidity and Mortality Weekly Report speculated that the puzzling symptoms of the five men “suggest the possibility of a cellular-immune dysfunction.” Little did they know that they were publishing the first observations of what would become the greatest epidemic in modern history.” That epidemic was HIV/AIDS.
In these exclusive interviews, we speak to Michel Sidibé (Executive Director, UNAIDS), Dr. Stefano Bertozzi (Director of HIV at the Bill & Melinda Gates Foundation), Dr. Gottfried Hirnschall (Director of HIV Department at WHO - World Health Organisation) and Brian West (Chair of the European AIDS Treatment Group, who has been living with HIV for over 25 years). We look at the very nature of the virus, its impact on society and culture globally, and discuss the opportunities to move to a world free of HIV/AIDS.

Mr Michel Sidibé is the Executive Director of UNAIDS, the Joint United Nations Programme on HIV/AIDS. An outspoken advocate with a people-centred approach, he has called for the elimination of new HIV infections among children by 2015.

Mr Sidibé’s passion for advancing global health began in his native Mali, where he took up the cause of the nomadic Tuareg people. His tireless efforts to improve their health and welfare evolved into a role as a country director for the international development federation Terre des Hommes. Since those early days, Mr Sidibé has spent more than 25 years in public service. In 1987, Mr Sidibé joined UNICEF in Zaire (now the Democratic Republic of the Congo). In his 14 years at UNICEF he oversaw programmes across 10 francophone countries in Africa. In 2007, he was appointed as UNAIDS Deputy Executive Director of Programmes and Assistant Secretary-General of the United Nations. With this new mandate, he led UNAIDS’ contributions to regional and country responses as well as its efforts in global policies, evidence, and monitoring and evaluation. In 2010 Mr Sidibé received the Emerging Leader Award from the UN Foundation and the United Nations Association of the USA in recognition of his leadership in advancing UN causes. He was named one of the 50 personalities of the year in 2009 by the newspaper Le Monde, and in 2007 he was awarded an honorary professorship at Stellenbosch University of South Africa. He is a Knight of the National Order of the Legion of Honour of France, an Officer of the National Order of Mali and was awarded an Order of Saint-Charles by Monaco. He earned two Post-Master’s Diplomas in Social Planning and Demography as well as in Development and Political Economy from the University of Blaise Pascal, Clermont-Ferrand. He holds a Master’s degree in economics.

Dr. Stefano Bertozzi, director of HIV at the Bill & Melinda Gates Foundation, oversees grants in HIV vaccine development, biomedical prevention research, diagnostics development and resistance monitoring, and strategies for introduction and scaling-up of interventions. Bertozzi worked with the foundation in his previous roles at UNAIDS, the World Health Organization (WHO) and the World Bank. He was with the National Institute of Public Health (INSP) in Mexico from 1998-2009. As the director of its Center for Evaluation Research & Surveys, he led economics and statistics teams that conducted impact evaluations of large health and social programs in Mexico, and elsewhere in Africa, Asia and Latin America. He also led the INSP’s AIDS/Sexually Transmitted Infections research group, is a member of the Global Fund’s Technical Evaluation Reference Group and UNAIDS’ Economics Reference Group, and chairs the Steering Committee of aids2031.

Dr Gottfried Hirnschall is Director of the HIV Department of the World Health Organization (WHO). In this role, Dr Hirnschall oversees the organization’s HIV mandate to provide countries with vitally needed normative and policy guidance to deliver HIV services and build health systems. From 1991 to 2000, Dr Gottfried Hirnschall coordinated WHO’s support to countries in the area of child and adolescent health. He then joined the HIV Department to develop evidence-based policy recommendations on wide-ranging technical and strategic issues. Between 2005 and 2007, he directed the Caribbean HIV programme of PAHO (Pan-American Health Organization), based in Trinidad and Tobago. He then served as WHO/PAHO Senior Adviser for Latin America between 2007 and 2009.

Throughout his career, Dr Hirnschall has given utmost importance to building consensus and fostering collaboration among partners, including the UN family, the Global Fund to fight AIDS, Tuberculosis, and Malaria, the World Bank, bilateral partners, civil society organizations and other advocates.
Brian West is chair of EATG - The European Aids Treatment Group. He is a medical writer and HIV advocate who is involved in promoting the sexual health and well being of people living with HIV in Scotland and across Europe. He has been living with HIV for 27 years. He currently works in several different capacities; trustee/director of Scotland’s largest charity for people living with HIV and Hepatitis C – Waverley Care, and steering group member of Gaycon, which runs a biennial conference on the sexual health of gay and bisexual men. Outside Scotland, he is a steering group member of the UK Community Advisory Board (UKCAB, a network for community HIV treatment advocates across the UK), and he is one of the proofreaders for the monthly edition of the National AIDS Manual’s Treatment Update. In Europe.

Q: What is HIV/AIDS?

[Michael Sidibé] HIV is the virus that causes AIDS. HIV can be transmitted from person to person through sex, through blood and from mother to child during pregnancy, childbirth or breastfeeding. Unless HIV is treated, people gradually lose their ability to defend themselves against a wide range of other infections and it is these HIV-related diseases that constitute AIDS.

[Dr. Gottfried Hirnschall] The Human Immunodeficiency Virus, HIV, is one member of the class of viruses we call retroviruses. It infects the cells of the human immune system- specifically CD4 cells which are positive T cells and microphages. The virus destroys or impairs their function, and therefore impairs the immune system. The infection with this virus results in a progressive deterioration of the immune system, leading to immunodeficiency.

HIV is a very clever virus, that’s one of the reasons we don't have a cure yet and one of the reasons we don't have a vaccine. The virus very easily escapes, mutates and changes.

Q: How did you feel when you received your diagnosis of being HIV positive?

[Brian West] I felt completely floored, like I had my entire life dragged away from under my feet, and that my life had virtually come to an end.

You must remember though, when I was diagnosed... it was 1985, a very different time... in those days, HIV equaled death to a certain degree. You talked in terms of having only a few years left to live...

The health system was as supportive as it could have been. In those days, the best that the health service could do was manage your decline. They couldn’t hope for anything else, and were only really trying to see if they could 'put out fires' rather than treat the HIV itself. They were dealing with what they perceived was a terminal disease. Given HIV was a new disease, there were also a lot of worries and concerns over how you could catch it. A lot of education needed to be done for the health service staff and the general community.

In terms of my family and friends... I wasn't in a particular rush to tell my family- I felt it would be devastating for them. I edged very slowly with that. It’s not like Cancer, you do worry what people will think of you when you tell them you have HIV. I told my close friends first, eventually my brother and then my family.

Q: What is the psychological and emotional impact of HIV for people living with it?

[Brian West] It's almost like there are two things going on with an HIV diagnosis now.

On a level where we consider the body as an object to be treated, we are winning the battle. The drugs we have now are pretty good, and even when people find out for the first time that they're living with HIV, they don't think 'death'.

The other side of HIV carries an immense stigma with it... the immense sense where some people feel almost ashamed to have caught it as the virus is associated with certain groups who are stigmatised anyway, such as gay men, sex workers, intravenous drug users, ex intravenous drug users and so on...
The psychological and emotional impact of taking on a disease that has such a huge aura of stigma that comes with it - that is almost quite separate from how people feel about the medical side of their diagnosis.

Q: What was the origin of HIV/AIDS and how did it enter the human system?

[Michael Sidibé] In 1981, the first reports were published of a rare form of pneumonia among gay men in Los Angeles – this was later known to be HIV. By 1983 the Pasteur Institute in Paris presented evidence that AIDS is caused by a virus and that same year the World Health Organization convened the first meeting to discuss the international implications of AIDS.

[Dr. Gottfried Hirnschall] There has been much speculation, but one thing we know is the HIV virus had been seen as early as 1959. It was detected in the blood sample of a man living in Kinshasa. At the time, we didn’t know how the man got infected or how the virus travelled. In 1983, HIV was discovered by US and European scientists- we then knew it was the cause of AIDS- and the pandemic started soon after that. What was very long believed was that the origin of HIV was primates. It was not until 1999 that researchers confirmed that link. They established the similarity of the Simian Immunodeficiency Virus (SIV) - found in Chimpanzees - and HIV-1 (the most common human HIV virus). We don’t have proof, but we believe the virus entered the human system when hunters became exposed to infected blood from Chimpanzees who were infected with the simian virus and- through mutations- it became the human immunodeficiency virus.

Q: What is the individual, social and economic burden of HIV/AIDS?

[Michael Sidibé] Since the peak of the epidemic in 2005 there has been a significant decline in AIDS-related deaths, mainly due to expanded access to antiretroviral therapy which his helping to keep people alive, healthy and productive. Despite the declines, in 2011, 1.7 million people worldwide died from AIDS-related causes—70% were in sub-Saharan Africa.

From an economic perspective, without access to treatment, HIV and the onset of AIDS has a considerable impact on a person’s productivity levels. For example one study in Kenya showed that tea pickers living with HIV who did not have access to antiretroviral therapy worked 15-27% less productively than their co-workers who did not have the virus. However, once they began antiretroviral therapy their production levels were on par with other workers.

Antiretroviral therapy has a significant impact on employment and hours worked. For example in western Kenya, one study showed that six months after starting antiretroviral treatment, there was a 20% increase in patients’ likelihood to participate in the labour force and a 35% increase in weekly hours worked.

The AIDS epidemic has had a high impact on businesses, particularly in Africa, but access to antiretroviral therapy has shown to be an excellent investment. In Côte d’Ivoire for example, an Electric Company offering access to antiretroviral treatment resulted in net cost savings. After starting treatment, HIV-related absenteeism decreased by 94%.

HIV has resulted in not only a heavy economic but also a societal and individual toll – especially if untreated. People living with HIV and their families face expenses for health and social care, often resulting in high out-of-pocket expenses; they face loss of income and lower productivity and high demands for care and support. These demands often influence the entire household, since they can limit access to education—especially girls for girls—and the daily lives of caregivers.

[Dr. Stefano Bertozzi] According to a recent UNAIDS report, worldwide approximately 34 million people were living with HIV (the virus that causes AIDS) at the end of 2011. This equates to eight of out every 1,000 adults aged 15-49. Put another way, 34 million equals more than half the population of the United Kingdom and is more people than every state in the United States except California. While the number new infections has fallen since 2001, 2.5 million people acquired HIV in 2011.
Injection drug users (approximately 22 times more likely to be infected), men who have sex with men (13 times), and female sex workers (also 13 times) are at greater risk than the general population. Sub-Saharan Africa is particularly affected. There, 49 of every 1,000 adults are living with HIV, and one in five adults is living with HIV in some countries. To understand the scale and intensity of the epidemic in some sub-Saharan African countries relative to the rest of the world, consider this: the average woman in South Africa lives at greater risk of acquiring HIV than a commercial sex worker in Bangladesh.

Q: Why has HIV/AIDS (and our battle against it) become so culturally significant?

[Michael Sidibé] The response to HIV has been unique. Over the past 30 years, AIDS has united the world in a way that few other crises have. It mobilized the world to come together and break the conspiracy of silence and created a social movement, speaking out for the human rights of some of the world’s most vulnerable people. Since the very early days of the epidemic, the AIDS response has been led and driven by people living with HIV. Without their activism we would not be seeing the successes we are experiencing today. People most marginalised in society came forward to demand respect, freedom from discrimination and equality in access to services. The AIDS response has been a journey through human rights and social justice, about ending discrimination and the criminalization of people living with HIV; about ending gender violence and inequality; and about ending stigma against people most at risk because of how they live.

[Dr. Stefano Bertozzi] It is nearly impossible to overstate the cultural impact of the HIV/AIDS epidemic. It has fundamentally transformed the way we talk about the rights of the ill and advocate for health. I was a young doctor when AIDS emerged in the early 1980s, and I was a first-person witness to how AIDS advocates fundamentally changed the way that doctors, researchers, governments, and biotechnology companies engage with patients and their champions.

David France, a longtime journalist and AIDS activist, has produced a powerful Academy Award-nominated documentary, “How to Survive a Plague,” that really captures what AIDS activists achieved. They mobilized one of the most influential social revolutions in human history in which patients stood up and demanded a direct role in decision-making at every level. AIDS activists demanded a seat at the table, and they got one. It was a watershed moment not only for health policy but also for human rights activism, and we still need that passion today to ensure that we continue to make progress.

[Brian West] The one thing that was very evident at the beginning with HIV/AIDS was the presence of an activist movement. People weren’t going to take it lying down! People stood up and immediately pushed for better health promotion campaigns (about condoms, safe sex and so forth). That activism carried through to getting drugs into clinical trials, and out into the general population as safe as it was possible to do so.

Activists also said that it wasn’t enough for these drugs to be used in the rich west; we had to get these drugs into places where everyone said it couldn’t be done. I was at the World AIDS Conference in Durban (2000) where it was quite clear that we had ‘turned the tide’ and that people were accepting that we needed to get these drugs into some very poor African countries. They realised that if we didn’t? …there would be devastation through entire generations.

Q: What is the scale of stigmatisation and discrimination as a result of HIV/AIDS?

[Michael Sidibé] Much has been accomplished in addressing stigma and discrimination since HIV first appeared, but much work still remains to be done. We still see fear, ignorance and abuse around the world. People who have been dismissed or can’t find work because of their HIV status, or even their suspected HIV status. Children with HIV who have been excluded from the classroom. Women living with HIV who have been forcibly sterilized because of their HIV status, denying them their right to bodily integrity, their reproductive rights, their right to found a family.
There are 44 countries, territories and areas that still have some form of restriction on the entry, stay or residence of people living with HIV, even though we know that such restrictions are discriminatory and do nothing to protect the public health.

Removing the barriers which are formed by stigma and discrimination are essential to achieving UNAIDS’ vision of zero new HIV infections, zero discrimination and zero AIDS related-deaths. It will require a concerted effort and heightened political will to break down these barriers which are preventing us from reaching our goals.

[Brian West] You still get people who feel you brought it upon yourself.

When I was younger, there was a clear delineation between people who had caught HIV ‘innocently’ (people who may have caught it through transfusions, or mother to child) and the ‘guilty’ ones. I think there’s still a huge element of this in every area of society. I’m a gay man, and even if you look in the gay community- people still don’t feel particularly comfortable. HIV has been in the gay community for over 30 years, but there’s still a stigma against HIV itself.

I think the workplace is a different thing... We have had some very successful political battles over the years, not just for people living with HIV, but for anyone termed to be disabled in any way. People feel more secure at work, certainly in the UK - but this is not the case for everywhere in the world.

Also, even if you feel there is legal protection in the workplace, you may still not feel comfortable talking about your HIV status with other people. All the anti-discrimination legislation we’ve had makes it theoretically against the law to discriminate against a woman, someone who is black, and so on... but that doesn’t mean it doesn’t go on. The fear of discrimination, even with these legal frameworks, is still there....

Q: What is the link between HIV/AIDS and geopolitical factors such as poverty, inequality and conflict?

[Dr. Stefano Bertozzi] There is no doubt that there is a strong link between HIV risk and poverty and inequality. There is a strong geographical correlation. HIV incidence is highest in the poorest regions of the world. It is also highest among the poorest populations in middle-income and high-income countries. That’s why it’s so important to understand how to address micro-epidemics effectively, delivering support to those with the fewest resources to mitigate their HIV risks. Labour migration and other regionalized conditions of economic development can also increase risk. In southern and eastern Africa, where labour migration remains common, the movement of certain populations elevates risk and increases incidence. Working with the Indian government and various NGO partners over the past decade, the foundation invested in identifying the most effective ways to reach and engage those who are most at risk of HIV infection – men who have sex with men, commercial sex workers, and transgendered populations – and linking them with the testing, counselling and support services that they need to reduce their risk. These programs had a clear impact in helping to reduce HIV incidence by empowering poor and socially marginalized communities with resources to understand their HIV risk, negotiate condom use, and come together as communities of interest to advocate for their rights. We need further investment in tools and strategies that can help women and men gain sustained access to effective HIV prevention through products such as microbicides, pre-exposure prophylaxis and dual protection methods that women can control and which can protect against both HIV infection and unintended pregnancy. Finally, an HIV vaccine would be a great equalizer. In recent decades, we have had a dramatic reduction in child mortality despite a global increase in income inequality. Increased access to safe and effective vaccines has been a major factor accounting for these broad health gains.
Q: Are there any differences in the HIV/AIDS pandemic between the developing and developed world, and is there any difference in incidence between nations?

[Dr. Stefano Bertozzi] The primary differences between HIV/AIDS in the developing versus the developed world relate to prevalence (the % of people with HIV) and the availability of treatment. While many places in the developing world have prevalence rates similar to (or below) the United States, the epidemic is still highly clustered in low and middle income countries – 97% of infected individuals live in these countries, driven largely by sub-Saharan Africa. In terms of coverage, many countries have made great strides in increasing the percentage of their eligible population on anti-retroviral treatment, and this is reflected in the fact there are greater differences in the availability of treatment among some countries in sub-Saharan Africa than there are between the United States and Kenya, which has made great progress in scaling up access to treatment. It would be an oversimplification to say that access to treatment is strong in high-income countries and weak in low-income countries in Africa. Access to treatment is strong in African countries that have committed to scaling up access. Finally, issues regarding stigma and retention in care are universal across the globe.

Q: What has been the impact of the internet and social media for those living with HIV/AIDS?

[Brian West] It’s made a huge difference. Even in the 1990s you waited around for this monthly magazine to arrive telling you what was new in the world of HIV/AIDS- and the 90’s was a brilliant period where we started to get combination drugs coming along.

By the time the internet came along, you didn’t have to wait till the end of the month or quarter for a magazine to come along. The news was up there and updated regularly! There were wonderful websites like NAM, The Body and more. They brought together the medicine and people affected by the disease. People could pick up the latest information on the drugs they were taking, other people’s experiences of those drugs, and news on what was new. It also allowed people to discuss their experiences of living with this particular disease, and how it was affecting their lives.

The internet has been fantastic, but it also has been a double-edged sword. While it is a good medium for getting good information... it’s a good medium for getting across drive! You still get a lot of AIDS denialists and other views which are not backed up in any way by good science. ....

>> Transmission & Prevention

Q: What are the sexual transmission methods of HIV/AIDS and how can the risk of transmission be reduced?

[Michael Sidibé] All of the risks of transmission (outlined in the first question) can be reduced or even eliminated. Sexual transmission can be reduced by reliable use of male or female condoms; by reducing the number of sexual partners and the frequency of unprotected sex; by regular testing for HIV that allows people living with HIV to seek HIV services and access antiretroviral treatment that, if taken appropriately, not only prevents the onset of AIDS, but also can prevent the onward transmission of the virus. HIV testing also allows men that are not infected with HIV to choose to be circumcised, as circumcision can reduce the chance of a man becoming infected through sexual intercourse by up to 60%. Effective treatment for other sexually transmitted infections, particularly those that cause genital ulcers can also lower the chance of both acquiring and transmitting HIV.

The risks to people who inject drugs can be minimised through harm reduction approaches such as the provision of drug substitution treatment and through the provision of sterile injecting equipment, supportive legal frameworks and less stigmatising environments.

Stopping new HIV infections in children starts with ensuring that future mothers can protect themselves against HIV and that they have a full range of contraceptive choices and can plan their pregnancies. Pregnant women who are living with HIV must have access to antiretroviral therapy for their own health and also during pregnancy, childbirth and breastfeeding to protect their child from the virus.
Q: What is the scale of the HIV/AIDS epidemic in children?

[Michael Sidibé] Around 330,000 children were born with HIV and 230,000 children died from AIDS-related illnesses in 2011. This is unacceptable.

More than 90% of new HIV infections among children happen because women are inadequately supported during pregnancy and breastfeeding. With the right care, respect and support for women living with HIV, new infections in children are almost 100% preventable.

We believe that by 2015 children everywhere can be born free from HIV and their mothers can remain healthy. In 2011, UNAIDS and partners developed a plan to Eliminate New HIV Infections among Children by 2015 and Keep their Mothers Alive. This plan sets ambitious targets including reducing the number of new infections among children by 90% and reducing the number of women living with HIV dying of pregnancy-related causes by 50% by 2015.

The Global Plan has the backing of countries, international organizations, civil society and networks of people living with HIV. The elimination of new HIV infections among children is a realistic goal and is now a political priority for countries.

Q: What is the link between HIV/AIDS and other priority health conditions?

[Dr. Stefano Bertozzi] There is a strong link between HIV/AIDS and other priority health conditions, which is why concerted global efforts to reduce HIV incidence and expand affordable access to treatment are so critical to making broad gains against morbidity and mortality. This is especially true in east and southern Africa, where HIV prevalence still exceeds 20 percent among sexually active adults in many countries. As a condition that causes immune deficiency and opportunistic infections, HIV infection can fuel the growth of other serious infectious diseases, especially tuberculosis, which is the leading cause of death among people living with HIV. In South Africa especially, HIV and TB have established a deadly synergy that has increased the spread of TB and helped to increase the incidence of multi-drug resistant and extensively drug resistant TB strains that are difficult to cure and extremely costly to treat.

Investments in HIV treatment have also helped to strengthen the performance and impact of health systems in many countries. Rwanda, for example, has leveraged its investments in improving HIV services to reduce maternal and child mortality from all causes.

[Dr. Gottfried Hirnschall] In one way, the HIV epidemic is unique. From a programatic perspective, however, it has similarities with other diseases and other programme areas.

From a pathophysiological perspective we find this is a very clever virus. We still don’t have a cure or vaccine even though we have effective treatment. From a societal perspective, this is an epidemic that affected certain populations very early. Coincidentally these were populations that had been stigmatised and excluded and often ostracised. In the beginning, the virus was known as ‘the gay epidemic’. We know it also affects sex workers, injection drug users and so on. That’s quite unique from a societal perspective, we have no other pandemic that has these characteristics.

Q: What are the key priority areas in HIV/AIDS prevention?

[Dr. Stefano Bertozzi] There are two broad types of HIV/AIDS prevention – biomedical prevention and behavioral prevention. In the last few years, there has been an increase in the number of effective biomedical tools for prevention – including voluntary medical male circumcision (VMMC), which can lower HIV risk by 70 percent, pre-exposure prophylaxis, and treatment as prevention. Studies are underway to determine the effectiveness of combining these approaches to measure their effectiveness in “real world” trials. The challenge with these interventions, especially VMMC, is increasing the demand for and supply of them to enable increased uptake. We believe, in the long term, that a vaccine remains a vital prevention tool.
Q: How is the global health framework responding to the HIV/AIDS pandemic?

[Dr. Gottfried Hirnschall] One very unique thing happened in the course of this pandemic. Initially everyone was confused and wondering what was going on. It was a terrible thing that was happening, and it was impacting individuals, families and whole countries. There was nothing much we could do about it....

When the first antiretroviral drugs became available and- ultimately- triple therapy came to the market- it became clear that could not remain a therapy only available to the rich world (which initially it was). Our Director General took the lead and started initiatives to take therapies to countries that couldn't afford them. This kicked off an international movement of solidarity which had previously never been seen. The only comparable short-lived movements were around hunger crises and so forth. The HIV/AIDS movements did not go away- and continued. With the creation of The Global Fund, this went beyond good will and semantics and the resources followed. This has been instrumental in bringing down the numbers of people dying, and bringing down the numbers of new infections. It has also helped to turn perceptions of this virus from being a terrible terminal disease into something chronic that people can live with. It has also helped to address some aspects of the stigma.

There is also increased coordination between the global players. The funding instruments, World Bank, UN, WHO and so on.

What is also unique is the incredibly strong participation of civil society- the infected and affected. These are groups such as the gay networks in the United States, injection drug users and so on. These groups started early, were strong advocates, were heard, and have influenced the course of action over the years.

This is not just about treatment- although that is very important. We aim to reach 15 million people by 2015, and we're already more than half way. We're quite confident that with sustained efforts, we should be able to get to that figure. If we want to go beyond that figure, we need to have broader use and eligibility for antiretrovirals.

That requires simpler better testing to make sure people get diagnosed. When people are being treated, they are monitored- and we need to make sure that point of care CD4 and viral load tests are also cheaper and easier to access. To be frank, this has been limping behind over the years. The diagnostics agenda was not taken seriously against drugs and medicines. It is now gaining recognition as a key factor.

Q: Is it realistic that we aim for 'zero new infections'?

[Michael Sidibé] I strongly believe that UNAIDS’ vision of zero new HIV infections, zero discrimination and zero AIDS-related deaths is an achievable goal, ambitious yes but achievable definitely.

Our vision of zero has been echoed by the United States in their call for an AIDS-free generation. The US continues to play a major role in responding to the epidemic but achieving our collective goals will require shared responsibility and the engagement of all countries and all sectors. The science and the knowledge exist to make getting to zero a reality, but no one can do this alone.

[Dr. Gottfried Hirnschall] My personal conviction is that it is not just realistic, but an absolute must. I really feel we now have the means to get serious about ending HIV infection.

The global discourse about ending AIDS - by which we mean ending HIV transmission- about thinking about an AIDS free generation where no more kids are infected- is real. If we don’t think about it now, we’re missing the boat and we have to take it seriously.

WHO for example, is rethinking its entire treatment guidelines to make treatment broadly available and ensuring that those who need access and for whom it is appropriate (such as children and pregnant women) receive it faster, cheaper and more easily.

We need to think about a world free of HIV/AIDS. It won’t happen in the next couple of years, but if we don’t put the framework in place now to ensure it can happen? it never will.
>> Detection

Q: What are the challenges and opportunities concerning HIV detection?

[Michael Sidibé] Diagnosing HIV is the gateway to most of the prevention options discussed already. Both people living with HIV and people who do not have the virus can then make informed choices about their lives that reduce the risks of transmission and reduce the chances of going on to develop AIDS. On the one hand the advances in HIV testing technology are one of the greatest successes of the biomedical era, with rapid, accurate, easy-to-use test kits available. On the other hand, many people still are still not getting tests and their HIV infection is only detected too late when they are already ill or even dying. Understanding the context and appreciating the stigma that still surrounds HIV is vital if we are to develop appropriate testing strategies. Nonetheless, testing facilities have not always been decentralised to the point that everybody has easy access to a test. Innovations, such as home-based testing and self-testing programmes are being developed. As with all technological advances, quality assurance remains vital.

[Dr. Stefano Bertozzi] We need to do a better job in high-income and low-income countries at testing those who are at greatest risk for infection. Depending on the country, estimates state that 30 percent (Kenya) to 70 percent (Congo) of HIV-positive individuals are undiagnosed. One potential barrier is that the performance of testing sites is measured by the number of tests provided, not by the number of HIV positive individuals linked to treatment. With the new research indicating that treatment not only improves the health and life expectancy of the individual but also can reduce the spread of the virus within populations, the importance of early detection is even greater. Other barriers include difficulty accessing testing centers in remote areas, HIV stigma, lack of user-friendly tests, and potential loss to follow-up when results are not provided immediately. The technology to detect HIV is continuing to evolve with a major milestone, the first FDA approved self-test, going on sale in developed country markets in 2012.

>> Treatment

Q: How is HIV/AIDS treated, and how has treatment progressed since the virus' discovery?

[Michael Sidibé] It is a triumph of medical science that in the 30 years since AIDS was first identified we have developed a wide range of effective medication that can halt the progress of the virus, even though we cannot yet cure it. The tragedy is that until recently these drugs were beyond the reach of the vast majority of those that needed them due to economic and political obstacles. Over the past ten years the situation has evolved rapidly, in 2003, just 400 000 people had access to the lifesaving treatment. By 2011, that number had risen to more than 8 million.

It is increasingly clear that people who take the treatment correctly are very unlikely to transmit the virus further. Nonetheless, there is still a sobering challenge. More people are becoming infected each year than are starting treatment, so the imperative remains to achieve better combined prevention approaches and to reach out to people most affected by the virus for whom services are often out of reach and for whom stigma and discrimination are daily companions.

[Dr. Stefano Bertozzi] Global statistics and national goals have been concentrated on increasing the number of individuals on treatment to more than 8 million in 2011. While many still do not have access, the scale-up during the past few years has been dramatic. We are trying to reconcile this success with the continued high number of deaths worldwide. With the rapid increase of people on treatment and the proven efficacy of antiretrovirals, shouldn’t the mortality numbers be falling faster? The nature of our current treatment for HIV requires daily administration and strict adherence. Less-than-strict adherence can cause sickness, just as it does with other health problems such as diabetes and hypertension. But for HIV it is worse because poor adherence leads to resistance, and then the treatment is no longer effective. Therefore, instead of numbers of individuals on treatment, we should begin to evaluate treatment centers by the numbers of individuals who have been retained in care, consistently take their medications, and achieve successful, long-term control of their HIV infections.
[Brian West] Compared to almost any other disease, we’ve done fantastically well. In the space of 30 years, we’ve turned what was a terminal illness, into a long-term manageable disease. Diagnostics go hand in hand with this, they help to guide treatments and assess whether they are working. You can’t do HIV treatment without diagnostics... It’s not like the old days where you had to wait to see if anyone would drop down and start coughing their guts up or something!

It’s always been a disappointment that we’ve never had a vaccine for HIV. In the long-term we will never be able to control HIV without a vaccine. It’s always been “ten years away” or “around the corner”. I don’t think it’s for a lack of effort or finance, but HIV is such a complicated and evasive virus, that it was always going to be very difficult- nigh on impossible- to do something about it.

What’s really interesting is a renewed focus on the cure. There was a lot of discussion around “The Berlin Patient” who had leukemia and had his entire immune system wiped out for a bone marrow transplant. He showed in theory that you can functionally eradicate HIV from the body.

A lot of this is in the future, but what we have now is the knowledge that if we can diagnose people as early as possible, and give them good treatment when they need it, we can measurably improve their lives for the better.

Q: What is the state of access to treatment around the world?

[Michael Sidibé] In 2011, 8 million people had access to antiretroviral therapy in the developing world, a further 7 million were in urgent need of treatment. In the 2011 United Nations General Assembly Political Declaration on HIV/AIDS, countries committed to ensuring that if we can diagnose people as early as possible, and give them good treatment when they need it, we can measurably improve their lives for the better.

However, international assistance, which has been stable in the past few years, remains a critical lifeline for many countries. Countries must take steps to reduce the high dependency on international assistance, particularly for HIV treatment programmes.

Another challenge is to assure access to second/third line treatments, for patients who have developed resistance to first line drugs. Due to intellectual property barriers, among others, newer drugs are not broadly accessible for developing countries. The monopolies over those products make it difficult for generic versions enter into the market, impeding competition, one of the triggers of price reduction.

In 2010, UNAIDS and WHO launched the treatment 2.0 programmatic approach, a comprehensive initiative to address the five pillars which sustain access to treatment programmes: drug optimization, simplification of lab monitoring tools; price reduction; adaptation of health services; and community mobilization.

Q: What is the role and impact of philanthropy in the battle against HIV/AIDS?

[Dr. Stefano Bertozzi] Philanthropy can play a key role in the battle against HIV/AIDS. Private philanthropies can focus their investments in areas where existing funds are scarce, their support can have potentially catalytic impact, and they are better positioned than governments or biotechnology companies to assume risks. The foundation, for example, seeks to address the continuing need for novel prevention methods that can provide more people with affordable and sustainable access to effective HIV prevention. We need new methods to accelerate progress against the epidemic. We also believe that a safe and effective HIV vaccine is our best hope to end the global HIV epidemic, and we dedicate a large portion of our resources to vaccine research. At another level, we fund operational research and clinical trials that are designed to help health ministries in developing countries normative institutions like the World Health Organization make well-informed decisions about how health care providers can use precious health dollars more effectively.
One of the great stories of the past 15 years has been the growing capacity of programs to stretch the impact of every dollar invested in HIV. The cost of treatment has declined by more than 99 percent, and we have identified major efficiencies in everyday service delivery as well. Philanthropic investments in operational research can help governments draw on key insights and lessons learned to enhance their lifesaving impact. Strategic co-investments in large-scale randomized controlled trials—such as the three trials that helped to demonstrate that voluntary medical male circumcision reduces a man’s risk of acquiring or transmitting HIV by up to 70 percent—can also help hyperendemic countries invest in proven prevention strategies that can significantly reduce HIV incidence over time.

Q: How close are we to having an effective HIV/AIDS vaccine?

[Dr. Stefano Bertozzi] Work to develop an HIV vaccine is gaining momentum. Following the positive results of a large vaccine trial in Thailand, we are hopeful about a similar trial with an improved but similar vaccine candidate in South Africa due to start in the next few years. Similarly, other initiatives are undergoing with the potential to revolutionize the effort as well as our understanding of vaccines across diseases. That being said, the most optimistic estimate for the earliest an HIV vaccine would be ready for licensure would be ten years, while a more likely scenario would be 15-20 years.

Q: Is it realistic that we aim to ‘cure’ HIV/AIDS?

[Michael Sidibé] Finding a cure for AIDS is a critical innovation gap but I am optimistic. In July last year I joined Françoise Barré-Sinoussi, the co-discoverer of HIV, to launch an new scientific strategy—Towards an HIV Cure—a collaborative effort which we hope will constructively move HIV cure research forward.

I believe that we have already achieved remarkable biomedical advances, and that we can find a cure to HIV in the future. If we are to do so, we will need continuing support for sophisticated, expensive science with long-term horizons. History suggests that the benefits of such investment will be felt much more broadly than by the HIV field alone.

Nonetheless, the breakthroughs of the last few years have given us hope that we can make a real impact on HIV and begin to envisage an AIDS-free generation even before a cure becomes a reality for the millions who need it today.

[Dr. Stefano Bertozzi] A cure would be transformative, and there have been some recent scientific advances that have increased optimism that a cure could be found someday. Unfortunately, no one believes that that day is imminent. While we play a very small role as a funder of cure research, we are glad to see increased interest by the National Institutes of Health as well as by private industry in early phase research.

>> Policy & Education

Q: What is the role of education in our fight against HIV/AIDS?

[Michael Sidibé] Young people are key to leading the HIV prevention revolution. In 2011, about 2 400 young people were infected every day with recent surveys suggesting that only 24% of young women and 36% of young men in low and middle income countries have an adequate knowledge of HIV prevention and transmission. Addressing the needs of young people and keeping them educated and informed encourages them to make responsible choices and drastically decreases their risk of being exposed to HIV.

Education has to be at all levels. It’s more than just education about how the virus is transmitted and how to take medicines but it’s also about understanding society, people, gender roles, sexuality and social norms. This has to happen at the individual, community and political levels.
Q: How can governments, policy makers and corporations contribute to the fight against HIV/AIDS?

[Michael Sidibé] I see four major areas of contribution: 1) Leadership at the highest levels on AIDS 2) Policy development—to have the right policies that enable access to HIV prevention and treatment services. 3) Investments—ensuring that financial and human resources are made available in time. 4) Accountability—ensuring that the right to health is a reality for all people and that governments monitor and track implementation of its programmes so that universal access to HIV prevention, treatment and care is achieved.

Q: What is the role of education in the fight against HIV/AIDS?

[Brian West] How well we are doing in education all depends on how you define we. There are some parts of the world like South Africa and Zambia where there is a massive education programme about HIV/AIDS aiming to correct many myths, and encourage awareness. I think it’s dropped off the radar in the United Kingdom... Sexual health and education about HIV/AIDS is pretty low on the UK’s priority list, and such education is usually focussed on target groups such as gay men who are sexually active. Someone somewhere, or some group of people feel that ‘we have this under control’ and determined that while the disease is not curable, and nor can we put it back in the box... it won’t explode into the wider population...

We need to be focussing far more on HIV/AIDS education in the richer western countries...

Q: How effective have policy mechanisms been in the fight against HIV/AIDS?

[Brian West] We always need to do more in terms of policy.

You could easily look at certain countries and ask yourself the question as to why HIV is such a problem in that country? In theory the country may have a decent amount of money, a reasonable education system... but something is not happening. The problem is that someone, somewhere thinks that it’s not a problem they (as a country) should be addressing.

If we look at Eastern Europe, some countries seem to think they can ‘do an ostrich’ and put their heads in the sand about HIV/AIDS. Policy makers need to accept that this is an issue affects people in their country, rather than just ignoring it and hoping it will go away. An HIV epidemic can explode at any time without good needle exchange programmes, safe sex education and so on...

I don’t think there’s a direct link between policy and the drug discovery pipeline. Drug discovery is linked to whether pharmaceutical companies and academic institutions think there is something they can do, and whether that ‘thing’ will make money. Policy is not the key driver for drug discovery now... Policy primarily affects the delivery of drugs to people who need it. It also affects the delivery of prevention schemes and programmes. I should note that this is really only true of countries where the health system can afford to pay for drugs.

There is a real issue with drug patents in the resource poor companies. The drug patent pool is a great opportunity for companies to create and deliver cheaper drugs, and easier regimes for Africa, India and so on. I truly believe this is something that pharmaceutical companies should sign up for. The only one who has signed-up for this so far is Gilead - and ViV Healthcare is in negotiations to join up. They should be congratulated on this if they do so.

Q: What are the key pieces of advice you would give to someone living with HIV/AIDS?

[Brian West] Sometimes I think that when you get the HIV positive diagnosis, you see it as if someone has put a huge brick-wall in front of you. What I would actually say is that it’s not a brick-wall, but rather a pile of bricks for you to climb over! It may seem overly straightforward, but what can seem initially as an obstacle can easily be broken down into parts that are easier to chew. I’ve always felt that if you’ve got HIV/AIDS you will feel like someone has just absolutely hammered you with the news that you’ve got it. People need to realise that there is a future, a good future after the diagnosis. You can hope to have a very good life. There are people out there living with HIV/AIDS that you can talk to, there are clinics where you can get good support and treatment... and it’s not as bad as you think when you first find out!
It’s utterly incomprehensible for us to picture the billions of years of evolution that led from our last universal common ancestor (the hypothetical entity from which all life descended) to a species able to comprehend its own origins and place in the universe.

What we do know, however, is that we have achieved this position thanks- largely- to our capacity for thought. We are physically vulnerable, but cognitively brilliant- and this factor has ensured our species ability to overcome the majority of challenges it faces. In fact, read in retrospect- the story of humanity is a chronology of war and competition against- and for- our position in the domain of earth. Assessing our success or failure therefore cannot be done without consideration of how we approach and engage in such battles.

Humanity has many reasons to be fearful against existential threat, but viruses should not be one of them. These microbes are such an intrinsic part of life, and such an inevitable outcome of biology, that fearing them would be akin to fearing the night at the end of each day.

Instead of fear, we must therefore approach the battle against viruses such as HIV/AIDS in the way we engage with many of the world’s other most pressing issues- such as climate change, poverty and hunger- bringing together science, policy, advocacy and culture to mobilise resource and win... and there is a precedent... Smallpox had been a part of human life since 10,000BC, affecting practically every country in the world, and killing 300-500million people during the 20th century. Campaigns of vaccination, education and advocacy meant that in 1979 the WHO certified that this disease had been eradicated. Global efforts have in the past decade, reduced incidence of this virus by over 99%- saving tens of millions of lives.

These victories are remarkable. The HIV-1 genome, which is about 10,000 nucleotides long, can exist as $10^{6020}$ different sequences. To put this number in perspective, there are $10^{11}$ stars in the Milky Way galaxy and $10^{20}$ protons in the universe.

Even against these astonishing odds, we are incredibly close to having an effective vaccine against HIV/AIDS, turning it into a chronic rather than terminal disease for those living with it and ensuring that potentially within our own lifetimes, there will be no new infections.

Our fight against viruses is a fight for our own place in the story of earth, and it is not a fight we can ever give up. As Winston Churchill said, “…Victory at all costs... victory however long and hard the road may be; for without victory there is no survival…”

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