

HATiP

HIV & AIDS Treatment in Practice

Issue 182 | 06 October 2011



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HIV and non-communicable diseases (NCDs)

By Theo Smart

Key points

- **Non-communicable diseases are diseases without an infectious cause. They include cancers, heart disease, lung disease and diabetes. They are now the biggest cause of death worldwide.**
- **The burden of non-communicable diseases (NCDs) is expected to rise dramatically over the next 20 years in low- and middle-income countries, and there are growing calls for greater action against NCDs.**
- **The growing burden of NCDs – and the growing pressure to do more to combat them – is likely to have an impact on HIV and TB programmes. This could be a negative impact (loss of funding and political attention) or it could be more positive (a greater commitment to investing in health care for chronic diseases, and a willingness to learn from the HIV response to develop better systems for care of chronic health problems).**
- **NCDs are becoming a growing problem in people with HIV as they live longer on successful antiretroviral treatment. Some antiretroviral drugs may increase the risk of heart disease and diabetes, while HIV itself increases the risk of some cancers.**
- **NCDs will develop in people with HIV because they are living longer on effective treatment. Many NCDs are diseases that increase in frequency as people age. They may be present before HIV infection, and could be made worse by HIV and by some antiretroviral drugs, so there is a need to incorporate management of other chronic conditions into HIV care.**
- **NCDs need to be addressed both by care and prevention. Measures to reduce smoking, salt and alcohol intake, together with promotion of exercise and weight loss, and treatment of risk factors for heart disease, are agreed to be the priorities for prevention.**
- **Some researchers are now suggesting that NCD prevention and care need to be integrated into HIV care. Opportunities could include regular screening for high blood pressure, nutritional advice on how to reduce salt and alcohol intake, measurement of blood sugar levels, checking liver and renal function at least once a year, and screening for cervical cancer.**
- **HIV treatment and care has much to teach the rest of the health sector about how to develop and sustain**

high-quality care for people who will need long-term care for a chronic condition. There are many tools and protocols that could be shared with other disease areas, perhaps allowing eventual integration of services.

- **Equity is also a concern: as long as HIV care is better than care for other chronic conditions, others will ask: why does HIV have all the resources? Even if this isn't true, it is important for the HIV sector to take a lead, build alliances and avoid being pitted against other disease areas at a time when resources are being squeezed in many areas.**

Sponsorship disclosure

We would like to thank the International Center for AIDS Care and Treatment Program (ICAP) at Columbia University's Mailman School of Public Health, New York, for sponsoring the attendance of Theo Smart at the meeting *HIV and Health Systems: Leveraging HIV scale-up to Strengthen Chronic Disease Services*. This independent report of the meeting does not reflect the views of ICAP or other sponsors of the meeting.

Leveraging the HIV scale-up to strengthen chronic disease services

"The HIV framework, over the years, has almost been like a laboratory. A laboratory in which we discover, we innovate, that can inform and not just benefit people living with HIV (PLHIV) but can also benefit and inform our response in the general population.

"We have remarkable opportunities in the immense success of the HIV programming and the platform that has been established, to really try to continue the momentum – asking new questions, identifying effective models and then scaling up those models and looking at broader outcomes in terms of maintaining HIV, and optimising HIV outcomes but also optimising outcomes for these other complications," said Professor Wafaa El-Sadr, Director of the International Center for AIDS Care and Treatment Program (ICAP) at Columbia University, speaking at a pre-meeting of IAS 2011 on [HIV and Health Systems: Leveraging the HIV scale-up to Strengthen Chronic Disease Services](#), held July 15 and 16 in Rome.

The meeting was sponsored by ICAP, in collaboration with the International AIDS Society, The Global Fund to Fight AIDS, Tuberculosis and Malaria (The Global Fund), the French National Agency for Research on AIDS and Viral Hepatitis (ANRS), the U.S. National Institutes of Health (NIH) the U.S. President's Emergency Plan for AIDS Relief (PEPFAR), and the NCD Alliance.

The meeting provided an opportunity to foster interdisciplinary partnerships between experts in HIV and other diseases, policy makers, health economists, and health systems experts. ICAP's Dr Miriam Rabkin and Prof. El-Sadr had already published an important paper in *Global Public Health* in April 2011, describing how the HIV response had led to the development of the first model for the large-scale delivery of chronic care in many resource-limited countries – and posited that the tools and approaches, strategies pioneered for HIV could be used to "jumpstart" the development of initiatives to provide prevention, care and treatment services" for other chronic conditions.¹ This year's meeting focused more closely on the intersection of HIV and non-communicable diseases (NCDs), primarily diabetes, cardiovascular disease, cancers, and chronic

respiratory illness, but also chronic kidney disease, mental illnesses and other chronic conditions.

Why NCDs?

In 2008, non-communicable diseases overtook communicable diseases to become the world's leading cause of mortality. Non-communicable-diseases (NCDs) refer to a very complex and heterogeneous group of diseases. What links them is that they share many common risk factors, mainly tobacco use, unhealthy diets (high in fat, salt, and refined sugars), physical inactivity and harmful use of alcohol, and therefore some basic common preventive interventions — such as not smoking.

Contrary to what many people believe, NCDs are not just the afflictions of wealthy countries — with the changes in lifestyle and diet associated with globalisation, the burden of NCDs has been growing in low and middle-income countries — including parts of the world where there is also a high burden of HIV and TB. But in contrast to industrialised countries, which devote the vast majority of their resources for health to managing these conditions, NCDs receive very little attention in resource-limited settings.

“How are NCDs currently managed in the routine health care settings of African countries? In brief, badly,” wrote Harries et al in *PLoS Med*.² “Some of us know from personal experience of running routine diabetes and hypertension clinics in African hospitals that there are no formalised systems of recording how many patients have been diagnosed and started on therapy, how many are retained on therapy, or what proportion have died or developed complications. We treat patients with whatever drugs are available, and consider that our mission is accomplished. In summary, unstructured and unmonitored clinical care and little information about morbidity or mortality from NCDs are mostly the norm in sub-Saharan Africa.”

Although data are limited, it has been estimated that 80% of NCD-related deaths occur in low and middle-income countries. But what is more worrisome, according to Professor K. Srinath Reddy, President of the Public Health Foundation of India, and Professor at the India Institute of Medical Sciences, is that these deaths are occurring at a much earlier age in low and middle-income countries. Speaking at the HIV and NCD meeting, he pointed to data from Tanzania showing that age-adjusted stroke mortality rates in the early 1990s were already three to five times higher than the comparative rates in England and Wales.³

“It is not just the excess deaths that is a cause for concern, but there is a huge amount of prematurity which is a cause for alarm. Frequently, based upon the experience of the developed countries, an NCD-related death is seen as an ‘end-of-life-event’ rather than as a ‘life-ending-event’, and that seems to be a part of the natural history. On the other hand, in the developing countries, the majority of NCD deaths are occurring below the age of 60 years. 90% of the world's people who die *prematurely* from non-communicable diseases live in developing countries.”

Annually, 8.1 million premature deaths (under the age of 60) from non-communicable diseases occur in developing countries. Many believe it is destined to become much worse.

“Between now and 2030 we will see a massive increase in the burden of non-communicable diseases i.e. cancer; ischaemic heart disease; stroke; neuropsychiatric conditions, in particular, depression will demand a heavier toll; and so will diabetes. In 2008 non-communicable diseases accounted for 51% of the global burden of disease. It will be responsible for 56% of the burden of disease by 2015, and for 76% of the burden of disease in 2030.

And this is an exponential increase,” said Dr Joseph Perriens of the World Health Organization's HIV Department at the 2010 [HIV and Health Sciences pre-meeting](#) (preceding the International AIDS Conference in Vienna).

Growing calls for action against NCDs

Responding to the increasing concern about non-communicable diseases, the WHO launched the 2008-2013 Action Plan for the Global Strategy for the Prevention and Control of Non-Communicable Diseases.

Indeed, this launched a growing movement to marshal a response to NCDs in low and middle-income countries. It was followed by the formation of the Global Alliance for Chronic Diseases by leading research institutions, and of an advocacy organisation, the NCD Alliance, a partnership of the International Diabetes Federation, the World Heart Federation, the International Union against Tuberculosis and Lung Disease, and the International Union Against Cancer and others — almost 900 non-governmental organisations. All of this was meant to build up momentum towards a high level meeting at the United Nations in New York, in September 2011, that organisers hoped would focus attention of the world's leaders and policy makers on the neglect of NCDs. This it may have done, though many advocates felt that the result was somewhat “underwhelming”, amounting to a missed “opportunity to create political cohesion to tackle the biggest health challenge facing future generations”, according to *Lancet Oncology*.⁴

It should be noted, however, that some question whether the “epidemic” of NCDs in resource-limited settings is being overstated, considering the scarcity of data. According to an editorial in *Nature* magazine: “Projections of NCD mortality are too often accepted without question, even though they are based on rudimentary models that rely on patchy data from poorer countries, combined with historical trends on the incidence of ailments in wealthier countries and simple parameters such as expected GDP growth. Projections of NCD mortality in poorer countries should be treated with healthy caution. The [UN] summit's call for a way to improve monitoring and data collection on NCDs is therefore welcome and long overdue.”⁵

Prof. Reddy, however, did make a fairly convincing case, illustrating how the rates of NCDs have clearly grown in many countries with an increase in the use of tobacco and processed foods, mostly harming the poor. “As socio-economic and health transitions advance within each country, the social gradient for NCD risk factors and for NCD events progressively reverses *till* the poor become most vulnerable,” he said. And it seems hard to imagine that sub-Saharan Africa wouldn't be similarly affected. Moreover, an article in the same issue of *Nature*, which also questioned whether NCDs should receive as high a priority as communicable diseases in low-income settings, nevertheless, noted that if low-income countries would fail to mount an adequate response, NCDs could easily overwhelm underdeveloped and dysfunctional health systems.⁶

What do NCDs have to do with HIV and TB?

But what does any of this have to do with people who work in HIV and/or tuberculosis (TB) in resource-limited settings, where communicable diseases are still the most common cause of morbidity and mortality, and which account for far more of the years lost in life?⁷

As already noted, the epidemiology overlaps significantly, and “the impact of these co-morbidities in Sub Saharan Africa is likely to

be large”, predicted Young et al in one recent review. If nothing else, a growing burden of NCD could place severe demands upon the region’s weak health systems — and could clearly compete for the limited resources for health. A recent article by [IRIN PlusNews](#) reported some HIV activists in the region are afraid this could already be happening:

“NCDs are sexy now, last year it was maternal health; there doesn’t seem to be a genuine commitment by government to fully address any of these issues... where are the results? The government must not forget about people living with HIV,” James Kamau, coordinator of the Kenya Treatment Access Movement was quoted as saying.

This trouble is coming, unless some way is found to mobilise enough resources for everyone, or respond to these health issues more efficiently.

“This is the large tsunami that’s going to hit the countries, and we need to ensure that these are addressed simultaneously,” said Rifat Atun of the Global Fund, at the IAS pre-meeting’s opening.

There also appears to be more direct interaction between certain NCD and communicable diseases. Even though there are no data from the Sub-Saharan African region, Young et al reported that elsewhere in the world, diabetes significantly increases the risk of active tuberculosis (including in middle income countries such as Mexico and India), and the co-morbidity is associated with poorer outcomes.⁸ According to a recent WHO analysis, in four cohort studies, the pooled relative risk of TB in diabetes patients was 2.52 (95% CI 1.53–4.03), while in ten case-control studies, the odds ratios ranged from 1.16–7.81, with a summary OR of 2.2.⁹

Of course, there are no similar data suggesting that NCDs increase the risk of HIV disease, though it should be kept in mind that children and people living with, or at risk of HIV, live in communities, and together in families. In resource-constrained settings, responding to NCDs leads to catastrophic health expenditures for many families, according to Prof. Reddy. For example, in a study of 4739 stroke survivors in China, 71% experienced catastrophic out-of-pocket health expenditures, pushed 37% of patients and their families below the poverty line; 62% without insurance went into poverty.¹⁰ Meanwhile, a study of the impact of CVD on households in Kerala, India, reported that catastrophic health expenditures were experienced by 72% — and 50% had to sell their property.¹¹

In settings where there is a high burden of HIV, catastrophic health expenditures may increase vulnerability of wives and daughters especially to HIV, or strain the household’s ability to cope with other illnesses such as HIV or TB.

What is certain, however, is that as people live longer with HIV on ART, they are likely to develop NCDs at least as frequently as the general population, and there are data to suggest more often.

“In a growing number of people on antiretroviral therapy for many years we start seeing very frequent, serious complications that we would categorise under the umbrella of non-communicable diseases,” said Professor Peter Piot of the London School of Hygiene and Tropical Medicine in an opening address at the HIV/NCD pre-meeting. “The evidence for high-income countries is quite strong. A physician taking care of AIDS patients in Europe or North-America now spends most of their time dealing with these kinds of complications. The risk and the clinical spectrum of various NCD complications in people on long-term antiretroviral therapy in low and middle-income countries is not as well documented — but what is even less well understood is, what can we do about it in a resource-poor setting?”

Clinical research demonstrating the growing importance of NCDs for people living with HIV

The issue may not seem pressing to some HIV care providers in resource-constrained settings, because of the urgency of identifying and getting people living with HIV onto ART, and responding to the overwhelming burden of opportunistic infections and TB among PLHIV presenting late for care. But this could be what is coming. According to Dr Judith Currier of the University of California Los Angeles, who has been caring for people living with HIV since the early days of the epidemic, clinicians in the US have had to learn to manage many different complications in people living with HIV since the introduction of ART.

“Our understanding of the spectrum of HIV-related illness has evolved over the past 30 years,” said Dr Currier in her talk at the HIV and NCD meeting, “and NCDs have emerged as an important cause of morbidity in both untreated and treated HIV infection.”

Dr Currier presented an extensive review of the clinical research that has documented this changing clinical picture and investigated whether ART-related complications, HIV-disease itself, or traditional risk factors were more responsible for the growing burden of NCDs in PLHIV.

Cardiovascular risk

For instance, in the D:A:D Study, a large longitudinal cohort study of people on ART (N = 23,468), several traditional cardiac risk factors were common in the HIV-infected population.¹² At baseline, over half of the cohort were smokers, elevated total cholesterol was found in 22.2% and elevated triglycerides in 33.8%. But data also clearly show that some of the antiretrovirals have negative effects on lipid levels. For instance, one meta-analysis looking at the impact of different nucleoside analogue (NRTI) backbones and boosted protease inhibitors found the percentage change in lipid levels (from baseline to week 48 was significantly greater in people taking d4T/3TC or abavacir/3TC than those taking tenofovir/FTC.¹³ The percentage increase in lipids was worse in people taking ritonavir-boosted lopinavir (*Kaletra*) or boosted fosamprenavir than those taking other boosted protease inhibitors.

There have been increasing reports of cardiac events such as acute myocardial infarction (MI), or heart attack, in people living with HIV. In the Administrative Hospital Database study, which included 3851 HIV-infected and 1,044,589 age-matched uninfected patients in care over the period of 1996 to 2004, the acute MI rate was significantly higher in HIV-infected than HIV-uninfected patients: 11.13 versus 6.98 per 1000 person-years.¹⁴ Some of this increased risk appeared to be due to treatment — after adjusting for the risks related to traditional risk factors in the D:A:D study, an increased risk of myocardial infarction was likely to be associated with cumulative exposure to protease inhibitors (PI) more than non-nucleoside reverse transcriptase inhibitors (NNRTIs): (PIs: adjusted risk ratio = 1.16 (1.10-1.23, p<0.001), NNRTIs: adjusted RR = 1.05 (0.98-1.13, p=0.17)), but the greatest risk was on indinavir or *Kaletra*.¹⁵

A lot of the research “around this time, from 2000 to 2005”, said Dr Currier, was focused “on the role of ART in some of the complications increasingly being seen in people living with HIV”. She said there has been a growing recognition that long-term tenofovir exposure was associated with low rates of subclinical renal disease and bone loss; ritonavir was known to be associated with

triglyceride increases; the thymidine analogues, especially d4T, were clearly associated with subcutaneous fat loss, and there were probable associations between ART and the accumulation of visceral fat. Finally, there was evidence that ART, specifically efavirenz, was associated with vitamin D deficiency – which is a risk factor for a variety of non-communicable diseases.

HIV as a risk factor for non-communicable diseases

This understanding of the relationship between HIV and non-communicable diseases was complicated by the results of the SMART study, which had been designed to evaluate whether it might be possible to reduce the complications of ART, and preserve the drugs, by delaying treatment or taking people off of treatment when their CD4 cell counts were above 350. People living with HIV (N = 5472) (most of whom were taking ART whenever the study started) were randomised to continuous versus intermittent ART (not treating if the most recent CD4 cell count was above 350).¹⁶ The study had to be halted early (after a follow-up of only about 18 months) after the unexpected finding of a significant excess of morbidity and mortality among those randomised to no or intermittent treatment.

This study was a turning point in the recognition that what people got sick from and died from when they stopped ART, was not always an AIDS-defining illness, but included a surprising number of non-AIDS events. Significantly more individuals in the intermittent ART arm developed major cardiovascular, renal, or hepatic disease than those in the continuous ART arm (hazard ratio 1.7 (95% confidence interval 1.1-2.5), p=0.009). Mostly this was cardiovascular disease (more total events) and renal disease (which actually had a much greater hazard ratios 4.5 (1.0-20.9)), but individually, each finding was of borderline significance (p=0.05).

Around the same time, epidemiological studies were beginning to show a shift in the causes of death among PLHIV. One of these was a study in New York City, which reported that between 1999 and 2006, HIV-related deaths were decreasing but non-HIV-related deaths had increased primarily due to CVD, substance abuse and non-AIDS-defining cancers.¹⁷ Among individuals \geq 55 years, CVD was the leading cause of death.

“Now, if you treat HIV disease successfully, it doesn't seem surprising that once you've reduced traditional opportunistic infections, that these non-AIDS events (or non-communicable diseases, depending upon one's perspective) would be more likely to occur,” she said – noting that so far these studies had mostly focused upon cardiovascular, renal or hepatic events).

Consequently, an analysis of the Johns Hopkins Cohort, looking at cumulative mortality in over 5000 HIV-infected people, found that non-AIDS related deaths occurred more frequently than AIDS-related deaths, particularly in individuals with higher CD4 cell counts.¹⁸ Even so, “Non-AIDS defining events *do* appear to become more common at lower CD4 cell counts as well,” Dr Currier added.

Premature mortality has declined dramatically since ART, but not completely. For instance, in the Cascade Study, which followed 16,534 HIV-positive individuals for a median duration of 6.3 years (range, 1 day to 23.8 years) before and after the introduction of ART, there were 2571 deaths over the entire study period, compared with 235 deaths that one would have expected in a matched general population cohort.¹⁹ The excess mortality rate (per 1000 person-years) decreased from 40.8 (95% confidence interval [CI], 38.5-43.0); before the introduction of ART (pre-1996) to 6.1 (95% CI, 4.8-7.4) for the period of 2004-2006. This continued excess mortality wasn't observed in the people who had seroconverted

within the previous five years, it was occurring in those who had been infected longer.

Another analysis of data from 24 cohorts in developed countries suggested that the increased risk of mortality in people living with HIV cannot be entirely blamed on complications due to ART because it is observed in people who are not yet on treatment, even at CD4 cell counts above 350.²⁰ In this review, 487 deaths were recorded; an incidence of 4.9/1000 patient-years. Of these, 79 (16.2%) were deemed HIV-related, 235 (48.3%) were non-HIV-related, and the cause of death was unknown in 173 (35.5%). The study also concluded that the risk of death decreased with higher CD4 cell counts.

While mature ART programmes continue to see some AIDS-defining events over time in people on ART (people do fail on treatment, due to poor adherence or other reasons), the cumulative probability of non-AIDS defining events has become a much more significant cause of complications in people on ART, according to the findings of the APROCO/COPILOTE (ANRS CO8) Cohort Study.²¹ The estimated probability of AIDS-defining events accumulates very gradually to around 10% after 8 years on treatment. ART-related complications are twice as likely, but the probability of developing a non-AIDS event is much higher, at around 40%. This study provided a breakdown of these non-AIDS events: 23%, were bacterial, 9.5% were cancer, 9.5% were due to CVD, psychological: 8.6% , neurological: 5.9%, gastrointestinal 5%, rheumatological: 3.4%, and viral 3.2%.

Elevated cancer risk

Cancer is also considered an NCD, and has always been observed in people living with HIV – many malignancies are AIDS-defining events. So a large meta-analysis was performed to assess what effect the decline in HIV-related mortality was having on cancer rates. The analysis included 372,364 people living with HIV, followed from 1980-2006, whose records were linked to corresponding cancer registry records. Three questions were asked 1) What was the cancer risk 3-5 years after developing AIDS, relative to the general population? 2) What was the five year cumulative incidence of AIDS-defining cancer (ADC) and non-AIDS-defining cancer (NADC)? 3) What proportion of deaths among people with AIDS were attributable to cancer? The cohort was predominantly male (79%), with a large proportion being non-Hispanic black (42%), and 42% were MSM. The median age at the onset of AIDS was 36 years.

The cancer risk in years three to five after AIDS onset was elevated not only for AIDS- but also for non-AIDS defining cancers relative to the general population. Of the non-AIDS-defining cancers, cancer of the anus, liver, lung and Hodgkin lymphoma were found more often in the HIV-positive population (but there was no adjustment for smoking which is found more frequently in HIV-positive cohorts).

“This is suggesting that chronic inflammation or chronic coinfection with some other virus may be contributing to this increased cancer risk,” said Dr Currier.

Of course, the risks could be much different in African settings – but since ART programmes have only recently been scaled-up, there are few long-term data available yet. However, in a study just published, researchers in Botswana found that the rates of non-AIDS defining events in ART-treated patients (from a clinical trial population) were actually higher in that country than in the US.²² These events were mostly CVD and cancer, There was little difference in reported renal events, and hepatic events were more

common in the US probably because of the prevalence of hepatitis C.

The emerging burden of NCDs in sub-Saharan African populations living with HIV

Data suggesting PLHIV in Kenya may be at greater risk of NCDs were reported at last year's HIV and Health Systems meeting by Dr Frank Mwangemi, deputy director of the AIDS, Population and Health Integrated Assistance (APHIA II) programme.²³ According to data from Kenya's Ministry of Health, NCDs contributed to 50% of the morbidity and 32% of the mortality in the general population (72% of these were due to CVD, hypertension and diabetes). With funding from FHI 360, screening of almost 5800 clients from the APHIA II programme in two provinces found higher rates of CVD risk factors, particularly, high blood pressure, in people living with HIV than the general population, levels that were increased with time on ART, particularly on alternative and second-line ART regimens. There were also indications that second-line therapy is associated with higher blood glucose levels.

These data would seem to suggest that, as treatment programmes expand and mature, non-AIDS defining events or NCDs could well become the most common complications in people living with HIV in Africa as well (notwithstanding the NCD crisis that many say is unfolding).

Indeed, during the 6th International AIDS Society Conference in July 2011, Dr Cissy Kityo Mutuluza, Deputy Director of the Joint Clinical Research Center in Uganda, warned during a session on the long-term complications of ART, "60% of people on antiretrovirals are in Africa, so if we are going to see long-term complications, we'll see it mostly in Africa."

NCDs are also likely to become more common as the population on ART continues ageing. As the ART programme continues to expand the delivery of successful treatment (and prevention) of HIV, it is expected that there should be fewer young people becoming infected, so the proportion of older people on ART should grow. Dr Currier shared one modelling exercise that showed that over time, the proportion of people on ART over the age of 50 in South Africa is expected to increase and become predominant.

"HIV disease, ART and host factors *all* contribute to non-communicable diseases in people living with HIV," said Dr Currier and with the growing awareness of the importance of NCDs, "Research is underway to untangle the interactions between the virus/immune system, host/lifestyle, treatment side effects and now ageing in populations with HIV to understand the relative contributions of each of these factors to the pathogenesis of complications in HIV and to inform the development of strategies for prevention and treatment."

These include studies investigating the contribution of immunodeficiency, viral load/replication and the resulting inflammation and immune activation (which appears to persist even in people on suppressive ART), as well as the use of different biomarkers to predict the risks of specific NCDs. One focus of research is to determine whether starting ART earlier at higher CD4 cell counts reduces the increased risk of NCDs, or conversely, whether treatments that reduce immune activation could have an impact on NCDs in the setting of HIV disease.

In the meantime, it might be wise for HIV programmes in resource-limited settings to consider whether existing NCD management strategies should be made part of the package of care offered to their patients living with HIV ([as Botswana has recently done](#)).

The key activities and strategies needed to improve the management of NCDs in low and middle-income countries

But what needs to be done to improve the management of NCDs in resource-limited settings? The first priority, as set out by WHO's 2008-2013 NCD Action Plan, would be advocacy to raise the priority given to addressing NCDs at global and national levels, and the integration of NCD prevention and control into national policies and strategic plans. But the overall purpose of the Action Plan was 1) to improve *research* into NCDs and their determinants to develop an evidence base for guidance to support and monitor the prevention and control of NCDs, 2) reduce exposure to the common modifiable risk factors for NCDs (in other words, *prevention*), 3) and strengthen care for people with NCDs by developing norms, standards and guidance for cost-effective interventions, and re-orienting health systems so that they can better manage chronic diseases.

The cost of implementing interventions to tackle 5 major risk factors for NCDs

	Interventions	Cost per person per year (US \$)		
		China	India	Russia
1. Tobacco use	Accelerated implementation of the WHO Framework Convention on Tobacco Control	0.14	0.16	0.49
2. Dietary salt	Mass-media campaigns and voluntary action by food industry to reduce consumption	0.05	0.06	0.16
3. Obesity, unhealthy diet, physical inactivity	Mass-media campaigns, food taxes, subsidies, labelling and marketing restrictions	0.43	0.35	1.18
4. Harmful alcohol intake	Tax increases, advertising bans and restricted access	0.07	0.05	0.52
5. Cardiovascular risk reduction	Combination of drugs for individuals at high risk of NCDs	1.02	0.90	1.73
Total cost per person*		1.72	1.52	4.08

*Excludes any cost synergies or future treatment cost savings

"Prevention must be the cornerstone of the global response to non-communicable diseases," according to the Political Declaration from the UN Summit – and the key strategy to prevent NCDs has

long been to reduce people's exposure to the lifestyle and behavioural determinants of these illnesses.

"Up to 80% of heart disease, stroke, and type 2 diabetes and over a third of cancers could be prevented by eliminating shared risk factors, mainly tobacco use, unhealthy diet, physical inactivity and the harmful use of alcohol," according to WHO's action plan.

According to Professor Piot, one of the aspects of the NCD field that had attracted him after leaving UNAIDS was that for both HIV and NCDs "the determinants for the disease and infection are deeply grounded, either in sexuality, in our lives, in eating, structural drivers requiring structural interventions," he said.

In the case of NCDs, though, "There's also been a very strong reluctance in societies to deal with and to address the causes through effective policies. For governments tobacco and alcohol are major sources of revenue and strong lobbies. Plus, we have to drop a lot of pleasurable things. In the case of HIV, at least we can still have pleasure with safer sex, but with NCDs, there is often a total lack of dealing with it. One example, in the UK, when the government increased VAT for almost everything, alcohol was exempted, and also cigarettes. There is a big fight around that on how to deal with that. And we know that increasing the price through taxes has a major impact on consumption," he said.

"We have to debunk the myth that there are no cost-effective interventions – there are quite inexpensive ways of dealing with NCDs, when it comes to primary and secondary prevention," he said.

When it comes to diagnosis treatment and care for NCDs, the course is not as clear cut in resource limited settings. The different NCD specialities may benefit somewhat from the massive funding that has gone into developing management strategies in well-resourced countries, but the emphasis has often been on individualised management strategies rather than algorithms and public health strategies that could be implemented in low and middle income settings.

In addition to the need to strengthen systems for diagnosis and health service delivery, there is a clear need for some specific treatment interventions. Prof. Piot mentioned the need to roll-out the anti-cancer vaccines, medicines for chronic respiratory diseases and pain relief. He noted many NCD advocates were keen to provide access to combination therapy for those at highest risk of cardiovascular disease, the poly-pills. But he believes something else should be prioritized:

"The fact is that a basic medicine such as insulin – and all medications for diabetes – are not available everywhere. Far more sophisticated drugs, like antiretroviral drugs, are available in many places today. But with insulin, there is no sustained guaranteed supply of it. And that kills people!," he said.

Dr Kaushik Ramaiya of the International Diabetes Federation, underscored this inequity in his opening address at the HIV/NCD pre-meeting. He noted the HIV response has shown just what sort of progress is possible in terms of health delivery, and what sort of programmes can be implemented for chronic care, even in resource limited settings.

"One thing that has been learnt from the HIV response is that it is possible to give care to a lot of people if you have the right programmes in place; if you have the structures in place which are very well planned i.e. with the supply logistics, the training component, making sure that you are able to provide care right up to the outreach programme with home-based care, with disability care, after-care. *It is possible!* And the difference that strikes those of us coming from the NCD world or coming from the diabetes world, is that the antiretroviral programmes are free of cost. People had

free CD4 tests, free ART access; they have free access to other medicines. Whatever is there is available, *free of cost*," he said.

"Insulin was discovered 90 years ago, but in the African region, in a lot of developing countries, a lot of children are dying because of a lack of insulin. And that is not acceptable. Insulin should be available to whoever needs it. It is lifesaving in children," he continued.

"Furthermore, a lot of children don't even reach our [diabetes] clinics. When they become sick, when they have ketoacidosis, they are diagnosed in the district or in the primary care clinics as having pneumocystis pneumonia or broncho-pneumonia. Because those clinics don't have a glucometer to look at the blood glucose, the first treatment that is given is an antibiotic, *Septtrin*. And this child dies because he has not been tested on blood glucose or the urine ketones have not been tested. And if the blood glucose has been tested, probably the appropriate IV or insulins are not there to manage this child," he said.

The poor access to care for people living with NCDs in resource-limited settings is particularly galling in light of the tremendous resources that the industrialised countries pour into the development of advanced technology, drugs discovery, imaging, diagnostics and management of NCDs. It is worth noting that when a similarly profound treatment gap was observed between HIV care and treatment in industrialised countries compared to Sub-Saharan Africa, that AIDS activists from the US, UK and Europe drew attention to it, and acted in solidarity with activists and people living with HIV in the Global South.

What can the global HIV and TB response, and national HIV and TB programmes, do about NCDs?

The inequity between the HIV response and the services for diabetes and other NCDs is quite real in many settings, and a failure to respond to it could be at our own peril.

"How do we deal with this?" Dr Perriens asked at the 2010 meeting. "We must realise that in global public health HIV has risen from a small stakeholder to a major force. Even if funding for HIV is not enough, the expectation is now that other health outcomes should also benefit from investment in HIV. People working on HIV can ignore this expectation but this will do their cause no good. Therefore HIV should deliver on this expectation to the extent possible by supporting a more inclusive health agenda, HIV can continue to be the game-changer in public health that it has been and still is."

1) Learning from each other: HIV could share its experiences, offer technical expertise, open source tools and approaches that could be adapted for use by the NCD field

NCDs could benefit by learning the lessons from all the improvements that the HIV response brought to public health regarding advocacy, resource mobilisation, human-rights based approaches and multisectoral approaches targeting key populations, task shifting, community and peer-based approaches to support adherence and retention in care, counselling and testing, according to Lampthey.

But, "In the context of a health system, what unites HIV and NCDs is chronic care – the need for long follow-up, re-visits, referrals, counselling, social support systems, and multi-sectoral actions," said Dr Reddy. And as Rabkin and El Sadr described in their *Global Health Policy* paper, the model of chronic care that has

been introduced for HIV into resource-limited settings is something new.

“The platforms that were built in most of the settings that PEPFAR was in, were in communities and in societies that did not perceive of themselves as being part of a chronic-care delivery system. The medical delivery system did not think of itself as anything other than an acute care capability — they were not set up to follow patients longitudinally; out-patient clinics were hard to find in just about every country we work in. The concept of ‘follow-up care’, appointments, medical systems that follow people over years that were linked to labs, were not existent,” said Ambassador Eric Goosby of PEPFAR during a panel discussion at the HIV/NCD meeting.

Furthermore, when antiretroviral treatment was introduced, the apparatus required to deliver continuity chronic care was backed up with policies, standards of practice, tools and systems. NCD services often do not have such systems in place, wrote Rabkin and Nishtar in a recent JAIDS supplement:

“In Swaziland, for example, a structured site assessment exploring diabetes and hypertension services demonstrated the near-absence of appointment books, defaulter tracking, patient counseling, appropriate medical records, standardized treatment protocols, referral networks, and linkages to laboratory and pharmacy services—all critical for continuity care—despite the availability of all of these systems in the HIV clinics of the same health facilities.”^{24, 25}

“As countries strengthen and expand non-communicable disease services, they can draw on the lessons learned by HIV programmes and review and adapt HIV programme approaches (peer programmes, defaulter tracing initiatives, multidisciplinary teams and community engagement), tools (registers, charts, forms and medical records) and systems (monitoring and evaluation, improving quality, supply chain and procurement, referring people and processing of specimens),” Rabkin and El Sadr wrote.

One example of this is the adaptation of ICAP’s HIV care model for diabetes care at an outpatient clinic of a district level facility in Ethiopia, according to a presentation that Dr Rabkin made later at the IAS meeting, which was [reported in the last issue of HATIP](#). Even though the study was presented in a conference session on integration, and included in a HATIP on that topic, there was no actual integration of services involved. Rather, the HIV programme lent their approaches, their expertise and tools for adaptation. The approach worked, leading to a dramatic improvement on a number of indicators for chronic diabetes care — without any negative impact on HIV care at the facility.

Points 2 to 5 propose different models of integration to leverage the HIV response to strengthen the HIV response

“The AIDS response has also been criticised for ‘working in isolation,’” said Prof Piot, but he added that that was necessary in the beginning. “If we would have started with an integrated approach, we still would be nowhere with providing antiretroviral therapy. But today, I think we have to come together.”

That being said, integration can take various different forms. Recognising that there is political and economic pressure to integrate services (as described in the last HATIP), any integration should be carefully considered and plotted out, with monitoring and evaluation of implementation, and operational research planned to assess whether interventions improve outcomes and are cost effective — and that the time and effort put into delivery of other services does not reduce the quality of HIV care that can be delivered.

2) Upstream integration or collaboration:

Even when aspects of service delivery may be kept separate, there may be efficiencies to be gained from integration (or working together) on other components of healthcare programming, including financing/resource mobilisation for health, planning, human resources, laboratory infrastructure or electronic patient data management systems development and utilisation. UNAIDS describes this as “a systematic and unified approach used for developing guidelines, training, the roles and responsibilities of health workers, patient support, procurement, health records, monitoring and evaluation and measuring quality improvement. This ensures that lessons are shared, systems are harmonized and efficiency is recognized.”²⁶

It is not clear that upstream integration has to occur in each of these areas, or that integration rather than collaboration would really be necessary. However, there are obvious areas of the health system where HIV and NCD programmes would have a common interest in joint advocacy and capacity development. For instance, at the 2010 HIV and Health Systems Meeting, Dr Perriens drew attention to the investments that are required to meet different health needs, describing the incremental costs to reach the Millennium Development Goals and provide a package of essential health services in 49 low-income countries, between 2009-2015 (over and above the \$31 billion that was already spent on health in the year 2008).

“From 2009 to 2015, a total of \$251 billion of fresh funds would be needed — 26% of the incremental cost is to scale up specific programmes and services, including 6% for essential HIV and AIDS interventions and 4% for preventing and treating non-communicable diseases. However, what makes the pie so big is that three-quarters of the incremental cost is needed to strengthen health systems: more than a third for infrastructure, equipment and vehicles; almost one quarter for health workers; and 6% for supply chain and logistics operations,” he said.

Looking at the same data, spread out over time, the “investment in infrastructure, equipment and transport is enormous and it is obvious. Along with the health workforce, this is a component of the health system that has suffered most from years of neglect,” Dr Perriens concluded.

Making certain the needs of other health services are included in the expansion of laboratory capacity, or data/patient management systems, for instance, could reduce the likelihood of waste. So could developing training programmes in order that the same healthcare workers can provide services for more than one indication. Similarly, it may make sense to consider integrating procurement and supply chain management systems if they are separate.

In a climate where there has been decreased interest in funding for HIV, there may also be a benefit for the HIV response in joint advocacy to find innovative financing for health and resource mobilization to meet common needs — since developing improved capacity to support the delivery services for several illnesses at once may increase chances for the campaign’s success.

3) Partial integration of certain services at some service delivery points:

Although care and treatment services may remain separate, there may be benefits from introducing screening for the behavioural determinants of NCDs into HIV counselling and testing services (which are targeting the entire adult population in many countries) — much as TB screening is performed using a simple symptom checklist.

Challenges for NCD advocacy

During his presentation, Dr Ramaiya noted that the achievements of the HIV programme are not simply due to it having more financial resources – but to a factor that NCD programmes have yet to develop in resource-limited countries: patient engagement and advocacy.

“The HIV response has been successful because of the multi-stakeholder partnership. It has been a partnership between different donors, different organisations – but the most important thing has been the advocacy, advocacy at the patient organisations. Unfortunately in a lot of developing countries the patient organisations for hypertension or diabetes are very weak structurally. They are not able to do advocacy, because they have yet to become organised. And that seems to be the major shortfall why the NCD agenda is not going forward in developing countries.”

Most of the NCD advocacy, on the other hand, has been led by institutions and medical specialists, Dr Ramaiya explained.

“Certainly one of the weaknesses of the NCD community, from my perspective, is the lack of involvement of people affected by the various issues,” said Prof. Piot. “Because that has been a strength of the AIDS community. Without that activism I don’t think we would have made it, regardless of what some of our medical colleagues may think.”

HIV civil society and people living with HIV and AIDS helped the AIDS response expand beyond the traditional health actors, and to develop task shifting as a way to expand the reach of service, care and support. In addition, Prof. Piot stressed the importance of engaging PLHIV in the development of policies that affect them. “They have shown you can do nothing for the people without the people. We can have scientific breakthroughs – but if the people are not involved, it’s not going to work,” said Prof. Piot.

Prof. Piot called for joint advocacy, and the development of a common agenda that could benefit both communities.

Notably, the AIDS activist community became quite involved in the advocacy campaign in the run-up to the UN meeting in September 2011. One of their rallying cries concerned something that Prof. Piot said had been a game changer for the HIV response: “Breaking the taboo that drugs that are still under patent can be made available at lower prices as generics in low-income countries”.

In the run-up to the UN NCD Summit, AIDS activists demanded that the Political Declaration recognise the right of countries to exercise the flexibilities permitted

by international trade regulation that allow the compulsory licensing and importation of essential lifesaving generic drugs for the prevention and treatment of NCDs – just like antiretroviral therapy.

“People with HIV need access to antiretroviral therapy, but we all are also susceptible to non-communicable diseases, which also need treatment. Although I have HIV, I am on antiretroviral therapy and thus am more likely now to die of non-communicable diseases like cancer, heart disease or stroke than AIDS,” said Gregg Gonsalves of the International Treatment Preparedness Coalition in one press release. “Whether we are advocating for access to HIV medicines or to NCD medicines, this is a battle for medicines for all.”

Other activists involved with the UN Summit, are presently developing an NCD patient rights charter.

Dr Ramaiya told HATIP he was eager to see partnerships with HIV and TB activists develop with NCD patients and support groups to see whether South-South mentorship and training to help could nurture patient-engagement in the advocacy response regarding NCDs.

WHO has recently produced its *Collaborative Framework for Care and Control of Tuberculosis and Diabetes*, which in many ways echoes the *Policy for Collaborative HIV and TB Activities*. It emphasises the establishment of upstream mechanisms to coordinate diabetes and TB activities, conduct surveillance and monitoring and evaluation of TB and diabetes activities; and, good TB infection control practices in facilities treating people living with diabetes, the implementation of TB screening and linkages to TB diagnostic services and care for those who screen positive. Conversely, TB programmes should screen for diabetes in their patients and ensure that they get care, either by co-managing the conditions while the patient is receiving TB treatment or referral. Clearly however, there will be a dilemma when there are no adequate diabetes services to refer patients to.

4) Integration of NCD services (prevention and care) for people living with HIV.

Dr Ramaiya described a case study of what might happen to a person who is otherwise doing well on ART if he or she develops diabetes and must rely on currently available services:

“A 50 years old patient with HIV/AIDS attends an ART clinic and gets everything free of cost. After four or five years, the same patient develops diabetes or hypertension. So now when he comes to the treatment centre, he has to pay for the blood glucose measurement, he has to pay for the drugs, he has to pay for whatever measurements are done. These patients often fail therapy because there’s an economic challenge – the cost of supplies and the cost of getting access to those medications is very difficult. Sometimes the diabetes clinic is about 100 kilometres away, so he has to go to the diabetes clinic every 3 months or every 6 months. So despite doing very well with HIV/AIDS, when it comes to diabetes and hypertension or ischaemic heart disease, he is not able to manage the disease because of the cost, access, everything,” he said.

“HIV care programmes ought to develop a care strategy or approach for NCDs in people living with HIV that is feasible and cost-effective for the population,” said Prof. Piot. Dr Currier agreed that “there are many opportunities for developing interventions for optimal screening, treatment and prevention of NCDs in settings with high prevalence of HIV disease.”

Dr Wafaa El Sadr asked her what sort of clinical opportunities she sees in her practice.

“There are several simple things,” she said. “For example, we take vital signs of the people we see in clinical settings, but often when dealing with HIV disease, as long as the blood pressure is not low, we don’t pay much attention to it, so I think screening for hypertension is a very easy thing to incorporate into clinical settings, and then acting upon it when it is really high.” She also suggested giving nutritional advice, on questions such as how to reduce alcohol consumption and salt in the diet – not just focusing on maintaining their weight – “as a part of routine care, getting at the underlying traditional risk factors for many chronic diseases, making that a cornerstone of HIV care, would be a first step.”

Even in her well-resourced clinic in the US, “I see people can come in to see an HIV clinician, and have an elevated blood pressure four or five times in a row, that nobody really notices because they are focused on their multi-drug resistant HIV, and trying to get the person on the AIDS drug assistance programme, or get them a voucher for the bus, So I think having a more holistic approach about primary care in settings with HIV is a first step. Monitoring renal function with some frequency, understanding patients who might be at risk of developing long-term complications, and then screening for viral hepatitis would be the first things that I would try to add.”

Dr Ramaiya suggested at the very least, incorporating just three components in existing clinics providing HIV services. “One is the blood pressure, the second one is the blood glucose measurement, and the third is when you are monitoring your drugs – looking at the liver enzymes or renal profiles once or twice a year, depending on the drugs you are using – if you do those three things, then you have screened for 50-60% of the complications that could develop,” he said.

The management and treatment of some other NCDs can be complex and usually involves specialists in well-resourced settings. This led some, such as Dr Chewe Luo of UNICEF to call for the development of more specialists in Africa, to develop a cadre of people to deal with some of these complications (like metabolic complications of ART in children). Dr Lamptey noted there many questions remain about how best to manage NCDs in HIV patients in resource-limited settings, however (see box on *Gaps in Knowledge*).

Ambassador Goosby said he believed that there was “a moral imperative of treating what the patient in front of you has.” He said that PEPFAR was looking at addressing this through enhanced training, and the development of laboratory capacity that would allow healthcare providers to better diagnose illness, rather than continuing to rely on syndromic management of illnesses.

But while developing increased expertise in some disciplines could be useful, others stressed that only standardised public health approaches are really practicable in the more remote resource-limited settings, and called for point-of-care diagnostics, and the development of algorithms for better case management at the more peripheral primary health care setting where most of the long-term care for HIV and NCDs will need to be delivered.

“Some cardiovascular diseases and cancers may be considerably harder to diagnose and treat at the health center and

community levels,” wrote Rabkin and Nishtar. Some less common needs/services may simply be too expensive for the programme to integrate without jeopardising its core services to clients.

If the HIV programme begins to provide care for its patients that would be unavailable otherwise, there is also the potential for ethical dilemmas to develop. For instance, if an HIV programme decides to provide diabetes management at the ART delivery site, what would happen if a patient on ART is receiving diabetes care, but her sister or neighbour in the same catchment area who doesn’t have HIV, either can’t access diabetes care or has to travel a long way for it, or cannot afford to pay for it?

Gaps in knowledge, and future research priorities in resource-limited settings

NCD risk in people living with HIV

- 1 **What is the level of risk of NCDs (such as elevated blood pressure, dyslipidemia, cardiomyopathy and disordered glucose metabolism) in PLHIV in resource-limited settings as a result of:**
 - a) **NCD risk factors such as smoking**
 - b) **HIV disease**
 - c) **ART**
- 1 **Is there a difference in NCD complications in children, and between men and women? e.g. high cardiac mortality in children with maternally-acquired HIV.**
- 2 **Is the NCD risk in PLHIV high enough to warrant routine monitoring in HIV care and treatment programmes?**
- 3 **What is the clinical significance of impaired glucose tolerance in the patients with HIV? Should it be treated, and how?**

NCD Risk and ART

- 1 **Should ART protocol be modified in PLHIV with NCD risk factors in resource-limited settings? e.g. AZT and d4T may affect myocardial function.**
- 2 **Are NCD risks higher in resource limited settings as a result of intermittent ART therapy because of poor adherence (intermittent therapy has been shown to increase CVD risk - RCT)?**

Monitoring of NCD risk in PLHIV

- 1 **What are the recommended metabolic and anthropometric monitoring recommended for PLHIV on care and PLHIV on ART e.g. blood lipids, blood glucose, blood pressure, BMI, visceral fat gain, loss of subcutaneous fat.**

NCD and ART drug interactions

- 1 **What are the possible drug interactions of NCD therapy with ART – e.g. lipid-lowering drugs, anti-hypertensive agents, etc.?**

5) Full integration

Others at the meeting suggested that HIV programmes had something of an obligation to integrate NCD services, or at least help develop them, since these illnesses were affecting people in the same communities and often in the families of people living with HIV in their care.

Dr Ramaiya made a case for more complete integration, calling for HIV and diabetes care sites to become integrated into chronic care delivery sites. He pointed out clear parallels in the types of services required for care of both chronic diseases:

- Counselling and treatment education: "Diabetes education is fundamental because you need to make sure that this patient follows the lifestyle modifications – the diet, the level of activity, the blood glucose and the blood glucose control," he said.
- Monitoring: Viral load, CD4 count monitoring, kidney and liver function detect potential complications. With diabetes, blood glucose and glycated haemoglobin must be monitored.
- Therapy, first- and second-line: Switching from first- to second-line therapy, or changing treatment components may be necessary due to complications. A patient failing on oral hypoglycaemic agent goes from stage one to stage two treatment. If the patient fails hypoglycaemic therapy, insulin must be added to it.

He believes that it should be possible to use the same systems the HIV clinic uses, take advantage of task shifting, training the same service providers (the same counsellor, the same nurse or clinical officer) to deliver both HIV and diabetes care. He also believes that integrating HIV within this general chronic care clinic would provide people living with HIV with anonymity and reduce stigma. Indeed, this was the experience when MSF developed a one-stop service for NCDs and HIV in Cambodia.

Dr Velephi Okello, Coordinator of the HIV Programme in Swaziland, pointed out that integration differs depending according to the level of care. Primary care clinics essentially must service as one-stop-shop. "At the secondary level, we are seeing integration of a different sort. We've seen that TB/HIV integration, where the same patient sees the same doc, works well, so we are looking to see whether we can use and apply those lessons to NCDs at that level. But at the lowest level of the healthcare delivery, the primary clinic, is where we have the opportunity to integrate in most of the countries that have a [largely] rural population."

However, other participants at the meeting stressed there was no guarantee that this would lead to better outcomes. "We are seeing again the risk that services are already overburdened. They are already overstretched and we cannot just add more without doing things slightly differently, and without bringing in elements of task-shifting," said Dr Gottfried Hirnschall of WHO. "Not just task-shifting from the doctor to the nurse but also really into the community level, getting community agents involved and not falling into the same trap that we believe this comes off for free, if we have lay workers and community health agents, they just do this in the way we thought it would happen. We really need to be looking at realistic financing of this aspect as well."

"If as a clinician or a nurse I'm now being asked not only to manage HIV, but also to manage NCDs, am I as efficient? There's a movement to say we should be integrating all these interventions. But I think we have the opportunity along the way to really study what is happening. Is it really cost effective? Does it mean that the clinic can no longer see any new HIV patients?" asked Dr Rabkin of ICAP.

One concern shared by some public health specialists is that NCD services for the general public at specialised ART facilities might simply compound the problems that the HIV response caused for health systems. So warned a paper in the recent JAIDS 'Bridging the Divide' supplement, which urged that such new services not be simply built on top of vertical structures, especially at a time when HIV services are moving towards decentralisation and integration into the general health system.²⁷ And if this should happen, it could lead to a reduction in the quality of HIV care.

Deborah Bix of the CDC's Global AIDS Program asked: "Do we threaten our really high impact communicable disease work by overly integrating products? We have to make sure that our focus on NCDs, country by country, focuses on the most important ones, and can be overlaid in a way where all the health of the country is elevated and we don't threaten each of the individual resources."

One participant at the meeting described a process in which HIV and NCD services were being integrated as a result of the conscious dismantling of the separate HIV service.

"There are three imperatives for integration in a context like Zambia," said Steph Topp of the Centre for Infectious Disease Research in Zambia during the panel discussion. She said their colleagues were developing and conducting a trial model of integrated service delivery by trying to integrate previously vertical HIV clinics back into the primary care and outpatient departments, initially in Lusaka, and now other clinics in other parts of Zambia.

"There is a public health and equity imperative: because the vertical HIV services that we have set up are delivering a quality of care that is so far superior to that which is available to non-HIV patients, that there simply has to be a way to leverage that to improve the quality of care for other outpatient services.

"The second imperative is clinical. Our PLHIV are not just suffering from HIV, it is a syndrome, it includes non-communicable diseases, there are many undiagnosed HIV cases that are presenting with non-communicable diseases, and the continuum of care that is possible in these settings where human resources are so short, is dire. We have these clinic systems that are set up, polarised, and no one is being accompanied between the systems because there is no one to do that. So there is a clinical imperative to provide care at the same service point.

"Finally, there is a system imperative. We don't have workers, and we don't have the clinical and the supervisory support to be able to separate out these things presently."

It is a bit worrying whether they will be able to maintain the same high level of care that people living with HIV require through this process. However, with constrained resources, some programmes may have little choice.

"The mechanics of integration certainly need to be looked at carefully. However, integration is necessary because we are looking at countries where there is a convergence of calamities. We have the double burden of multiple diseases, infectious as well as non-infectious, you have food insecurity and poverty. So all of them have to deal with these problems in the most efficient manner for their systems," said Dr. Reddy.

Others were concerned that programmes were being asked to do this, without increasing the resources for health.

"We can be efficient and creative; we can avoid redundancies and build on the lessons of HIV scale-up. But the idea that because we have invested so heavily in HIV we can somehow treat NCDs for free is a dangerous illusion," Dr Rabkin said in an interview with [PlusNews](#).

Others, such as Dr Bart Janssen who led an MSF study on integration of NCD/HIV services in Cambodia was concerned that this approach could threaten fragile HIV programmes at a critical time. When sites were scaling-up in sub-Saharan Africa, “We didn’t focus on NCDs because of the critical importance of tackling HIV and TB. And out of thirty Sub-Saharan African countries with HIV programmes, only six are providing ART in primary healthcare settings. There is a lot of work still to be done. With recent treatment as prevention data—we now finally have the first real indication the HIV epidemic curves can be tackled. Integration of NCD care at this time runs risk of diluting the HIV response. HIV funds should be ring-fenced completely,” he said.

Dr Hirnschall pointed out that “a key lesson from the scale of HIV care was the need for health equity,” but he also argued against playing one health concern against the other.

“If this is what needs to be delivered in terms of overall healthcare then we cannot say ‘Oh well we had a decade of HIV and now we have a decade of NCDs.’ We really have to have a realistic price-tag; and obviously have to have some consideration of who will pay for that,” he said.

The meeting didn’t reach consensus around this point, but these are still early days in the consideration of HIV and NCD integration. Dr El Sadr stressed that having these discussions, and exploring the ramifications of these different approaches was significantly different from the approach different health sectors had taken in the past.

“With HIV, we scaled up and asked questions later (retrospectively), here we have an opportunity to think ahead,” she said.

In the meantime, HIV programmes can take a more active role in sharing their model, as Dr Rabkin and colleagues demonstrated; low cost behavioural preventive interventions (messaging) can be introduced for people living with HIV who are stable on ART. There may, in fact, be a number of ways to pursue joint advocacy provided HIV advocates and NCD advocates find a way to not compete for resources, particularly pushing for the mobilisation of resources for health at the national government level.

This HATIP could only review some of the presentations and rich discussions at the meeting; these can be viewed in their entirety [online](#).

Further resources

- **HIV and Health Systems: Leveraging HIV scale-up to Strengthen Chronic Disease Services**
; HIV and Non-Communicable Diseases Pre-Conference, 15th - 16th July, 2011 Rome, Italy,
<http://www.iasociety.org/Default.aspx?pagelid=555>
- **2010 Meeting: BRIDGING THE DIVIDE: INTERDISCIPLINARY PARTNERSHIPS FOR HIV AND HEALTH SYSTEMS;**
HIV and Health Systems Pre-conference Meeting, July 16-17 2010, Vienna, Austria,
<http://www.iasociety.org/Default.aspx?pagelid=42>
- **Bridging the Divide Special Supplement in JAIDS:**
<http://journals.lww.com/jaids/toc/2011/08012>
- **Lost Output due to NCDs: Twitpick**
<http://twitpic.com/6neuuy>
- **NCD Alliance:**
<http://www.ncdalliance.org/>
- **WHO Resources on the United Nations high-level meeting on noncommunicable disease prevention and control:**

http://www.who.int/nmh/events/un_ncd_summit2011/en/index.html

- **The Role of HIV in Serious Diseases Other Than AIDS,** Andrew N. Phillips; James Neaton; Jens D. Lundgren;
<http://www.medscape.com/viewarticle/584050>
- **The Lancet on WHO's framework targeting the tuberculosis—diabetes link:**
<http://www.thelancet.com/journals/lancet/article/PIIS0140-6736%2811%2961527-4/fulltext>

References

- [1] Rabkin M, El-Sadr WM. Why reinvent the wheel? Leveraging the lessons of HIV scale-up to confront non-communicable diseases. *Global Public Health* 6:3 (247-256), 2011.
- [2] Harries AD et al. Adapting the DOTS framework for tuberculosis control to the management of non-communicable diseases in Sub-Saharan Africa. *PLoS Med* 5(6): e124. doi:10.1371/journal.pmed.0050124, 2008.
- [3] Walker R et al. Stroke mortality in urban and rural Tanzania. *Lancet* 355: 1684-1687, 2000.
- [4] Two days in New York: reflections on the UN NCD summit. *The Lancet Oncology*. doi:10.1016/S1470-2045(11)70272-8, 2011.
- [5] Nature editorial. Disease priorities. *Nature* 477:250, 2011.
- [6] Butler D. UN targets top killers. International summit considers how to stem the rise in non-communicable diseases. *Nature* 477:260-261, 2011.
- [7] Ibid.
- [8] Young, F et al. A review of co-morbidity between infectious and chronic disease in Sub Saharan Africa: TB and diabetes mellitus, HIV and metabolic Syndrome, and the impact of globalization. *Globalization and Health*, 5:9, 2009, doi:10.1186/1744-8603-5-9.
- [9] WHO. Collaborative framework for care and control of tuberculosis and diabetes. Geneva, 2011.
- [10] Heeley E et al. Role of health insurance in averting economic hardship in families after acute stroke in China. *Stroke*, 40:2149-5, 2009.
- [11] Huffman MD et al. A cross-sectional study of the microeconomic impact of cardiovascular disease hospitalization in four low- and middle-income countries. *PLoS ONE* 6(6): e20821. doi:10.1371/journal.pone.0020821, 2011.
- [12] Friis-Møller N et al. AIDS. Cardiovascular risk factors in HIV patients - association with antiretroviral therapy. Results from the DAD Study. *AIDS*. 17:1179-1193, 2003.
- [13] Hill A et al. Meta-analysis of first-line HAART with NRTIs plus boosted PIs in 2801 patients: effects on rises in lipid parameters. XVII International AIDS Conference, Mexico City, Abs THPe0167, 2008.
- [14] Triant VA et al. Increased acute myocardial infarction rates and cardiovascular risk factors among patients with human immunodeficiency virus disease. *J Clin Endocrinol Metab*, 92:2506-2512, 2007.
- [15] Worm SW et al. Risk of myocardial infarction in patients with HIV infection exposed to specific individual antiretroviral drugs from the 3 major drug classes: the Data collection on Adverse events of anti-HIV Drugs (D:A:D) study. *J Infect Dis*. 1;201(3):318-30, 2010.
- [16] El-Sadr WM et al. The Strategies for Management of Antiretroviral Therapy (SMART) Study Group. CD4+ count-guided interruption of antiretroviral treatment. *N Engl J Med* 355: 2283-2296, 2006.
- [17] Sackoff JE et al. Causes of death among persons with AIDS in the era of highly active antiretroviral therapy: New York City. *Ann Intern Med*. 145:397-406, 2006.
- [18] Lau B, Gange S, Moore RD. Risk of non-AIDS related mortality may exceed risk of AIDS-related mortality among individuals enrolling into care with CD4+ counts greater than 200 cells/mm³. *J Acquir Immune Defic Syndr* 44:179-187, 2007.
- [19] Bhaskaran K et al. Changes in the risk of death after HIV seroconversion compared with mortality in the general population. *JAMA* 300:51-59, 2008.
- [20] Lodwick R, et al. Age- and sex-specific death rates in ART-naive patients with CD4 count above 350 cells/mm³ compared with the general population. 15th Conference on Retroviruses and Opportunistic Infections, Boston, 2008, abstract 141.

[21] Ferry T et al. Uncontrolled viral replication as a risk factor for non-AIDS severe clinical events in HIV-infected patients on long-term antiretroviral therapy: APROCO/COPILOTE (ANRS CO8) Cohort Study. *J Acquir Immune Defic Syndr* 51(4): 407-15, 2009.

[22] Wester CW et al. Non-AIDS defining events among HIV-1 infected adults receiving combination antiretroviral therapy in urban settings in Sub-Saharan Africa and the United States. *AIDS* 25 (12) 1471-9, 2011.

[23] Mwangemi F, Lamptey P. CVD/HIV Integration Initiative: Kenya case study. HIV and Health Systems IAS Pre-meeting, Vienna, Austria, 2010.

[24] Rabkin M, Nishtar S. Scaling up chronic care systems: leveraging HIV programs to support non-communicable disease services. *J Acquir Immune Defic Syndr* 57: S87-S90, 2011.

[25] Koler A et al. Leveraging HIV scale-up to strengthen non-communicable disease services in Swaziland: a situational analysis of NCD service delivery systems. Presented at: Swaziland National Health and Research Conference; Mbabane, Swaziland. October 2011.

[26] UNAIDS. Chronic care of HIV and non-communicable diseases. How to leverage the HIV experience. Geneva, 2011.

[27] Grépin K. Leveraging HIV programmes to deliver an integrated package of health services. Some words of caution. *J Acquir Immune Defic Syndr*. 57 Supp 2: S77-S79, 2011.

about HATiP

A regular electronic newsletter for health care workers and community-based organisations on HIV treatment in resource-limited settings.

The newsletter is edited by Theo Smart (Cape Town) and Keith Alcorn, NAM's Senior Editor (London).

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