

37th Union World Conference on Lung Health: Issues on Access to ART in Low-Income Countries November 2, 2006

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LUCY CHESIRE: Good afternoon, everybody, and we really want to take this opportunity to welcome you all to this session and for the interest of time, despite the little quorum, I think we will just go ahead as people are actually out for [inaudible] because we had this session that actually delayed here. So this afternoon we are going to have an interesting panel of speakers and I need to apologize at this point in time. We are actually expecting a presentation to be done by one of the speakers from Yuma, but since he was not able to travel to Paris, we will just have to go ahead with what we have. Our first speaker is going to be Ian, and we kindly invite him to take the floor.

IAN SANNE: Thank you very much. I can understand that after the global emergency of HDR, the debate around rationing of treatment services is perhaps not as interesting, but I still thank the organizers for inviting me to present this paper that has, in fact, been published in *The Lancet* quite some time ago, but it is hopefully opening or beginning a debate on the rationing of antiretroviral therapy services for AIDS in Africa. And I believe, while this is a TB conference, that the rationing discussion is important in the context of treatment services in resource-poor settings, regardless of the type of disease. And it is the efficiency of a service rationing, efficiency defined as

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the medical outcome preventing death, improving CD4 count including undetectable viral loads and the prevention of opportunistic infections, including TB, that needs to be balanced against the equity of access to treatment for all and, in this whole framework, provide a reality of the number of patients that require treatment.

The overview of the presentation, firstly I will discuss the issue of rationing treatment, why do we need it, how is it currently rationed, the value, some of the rationing systems that are currently in operation, and then discuss the conclusion of the balance between efficiency and equity.

So why do we need a rationing system? I probably speak to the converted. There are 26 million people living with HIV in sub-Saharan Africa. By conservative medical standards, we consider about 4.7 million of those individuals to require antiretroviral therapy today. And if we look at the number of countries that have actually achieved the target of 50-percent of these 4.7 million, in by 2006, by March 2006, none had achieved this target and, in fact, most will not achieve this target within the next two years. The scarcity of funding resources, as well as human resources and infrastructure, will preclude universal treatment access in most countries in Africa.

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If we look at the WHO report from 2006, we see that, in fact, it is Botswana who have achieved 86-percent coverage of their targeted 84,000 patients, with an enormous infrastructure and funding implementations. In my own country, South Africa, despite the large increase in the number of patients on antiretroviral therapy since the roll-out plan was begun in 2004, we have only achieved 21-percent of our targets. This figure comes from the WHO report and today the figure is more like 260,000 patients on treatment. Put into perspective, that is the same number of patients on treatment in South Africa as there are in the entire United States of America.

So, clearly rationing systems are inevitable and are happening and will persist for a number of years, not only because of the large number of patients that we need to put on treatment but because the number of patients will increase with time as more and more patients move from HIV to AIDS. And in addition, as the large number of patients that we successfully treat accumulate, so too the pressure on the rationing system will increase. Rationing may be efficient and successfully achieve its targets of reducing the number of patients on treatment or inefficient. It may be fair or unfair and however, whichever system is introduced as a rationing system, it must be sustainable as treatment failure, and resistance and death clearly cannot be an

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outcome that we wish to achieve. Governments have vast experiences in rationing systems. In health care in particular, we know that dialysis, for example, is targeted to a very respected number of patients in South Africa. We also know that road infrastructure is targeted towards the best possible economic benefits of road infrastructure. And while health and rationing is a conscientious debate, it does require open public policy debate and deliberation of the choices to ensure not only the best medical outcome but also the best social and economic outcomes. This is clearly not a debate that is normal for a health care worker or doctor to lead but, in fact, is critically important as we scale up treatment.

So how will treatment be rationed? Any rationing system is a policy or any policy of practice that restricts the consumption of goods and services where the demand versus the supply is unequal and needs to be equalized. Most of the goods that are rationed in our society, in our free market economy, is based on price. But in health care, we do not wish to put a price on it and so, based on a non-pricing system, we need some sort of criteria to decide who will receive their treatment first. These criteria may be explicit criteria in which we state them up front and control the amount of treatment access, targeting it to particular populations, or they may be implicit arrangements that allow

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for a differential access that becomes implicit because we do not have explicit systems. Rationing is not intent on depriving anybody of treatment - merely applying the scarcity of goods to the correct populations such as the best possible outcomes may be achieved. Non-price rationing becomes inherently political and in an ideal socialist system. Everybody should have equal access but in this instance, as we scale up treatment services, we are not able to provide [inaudible] equal services to everybody at the same time. Multiple types of rationing need to be balanced and, in fact, may prevail at the same time to bring together a complete picture of where the treatment services are applied.

For our presentation, we have applied a definition of a rationing system for HIV treatment as being the use of any public resources that prioritize antiretroviral therapy on the basis of either medical, social, economic or cultural criteria, whether these are explicit or implicit, and where the public resources include resources from government, international donors, et cetera. Important is that we are in the presentation emphasizing the non-medical criteria, because we assume with the advent of treatment guidelines, that medical criteria will be applied equally through the population in society. The state of explicit rationing systems are programatic or policies that are attached to specific populations or there may be conditions that favor

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particular types of populations, whereas implicit are procedures that we undertake to limit access without specifying which population we wish to limit the access to. They may become implicit if they are informal arrangements that become, create criteria for preferential access.

So, some of the programatic or explicit type of systems that are currently in operation today include the provision of treatment for mothers of new infants or the MTCT Plus program supported by the Elizabeth Glaser Foundation. Skilled workers targeted by the health care, by the WHO guidelines, which explicitly state that health care workers should be prioritized for access to antiretroviral therapy. In Uganda, government staff have preferential access to treatment and in many countries, including my own, specific programs for soldiers have been established. Poor and vulnerable populations may be explicitly targeted by programs such as the PEPFAR program now targeting children with 10-percent of its funding or the South African National Antiretroviral Program, which explicitly states that it targets the underserved population and rural populations. Clearly targeting high-risk populations, such as IV drug abusers, truck drivers or sex workers, may have the preference of addressing not only their HIV treatment needs but also a concern around HIV transmission. The WHO criteria

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or guidelines, in fact, specifically address CD4 count as an explicit rationing criteria.

The difference between the WHO guideline and the United States or European guidelines centers around the initiation of treatment of CD4 count 200 vs. 350 in U.S. and European guidelines. That was not done for medical reasons. In fact, in medical terms, the European and United States guidelines are probably addressing the needs of the population better than the WHO guidelines. It was done purely and explicitly for rationing terms. Residents of a designated geographic area [inaudible] of a clinic is in essence an explicit rationing the system. The ability to copay as performed in Uganda is an explicit rationing system and the demonstration to the commitment to come to the clinic, adhere to clinic visits, undergo an education priority before treatment initiation is in essence an explicit rationing system. This is opposed to implicit rationing systems, so we know from employed sector treatment programs where onsite VCT is offered to all employees of the program, that we can control the number of HIV-positive individuals identified for treatment by the amount of VCT access that is given to these employees.

Similarly, the transport costs limiting patients returning to the clinic or initiating the first clinic visit may be an implicit rationing system that prefers individuals

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who have the resources to come to the clinic from those who do not. In most clinics across Africa, the first-come, first-served motto applies where when we have limited resources and there are a limited number of slots available for antiretroviral therapy. Those who know first about the clinic and attend first will have the preference of being treated in the long term and cuing is a phenomenon all over the world which does preference those who are unemployed as the opportunity costs of attending the clinic is less than those who are employed and may not be able to attend three clinic adherences before initiating antiretroviral therapy, meaning four days of work and, in essence, the danger of losing their jobs.

If implicit rationing systems are applied and explicit rationing systems do not prevail, then the next phenomenon is [inaudible] which does preference those who have the ability to negotiate and bypass the queue, or else a black market for antiretroviral therapy develops and selling of drugs has become a phenomenon across Africa.

So in evaluating the treatment systems or the rationing systems, we considered six categories to find a balance between these different systems. The first is effectiveness. How good is the rationing system at leading to an outstanding medical outcome? And therefore, it is a ratio

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of successfully treated patients to all the treated patients in the population.

What about cost minimization? Can the rationing system be applied and save costs at the same time or which is the most cost-effective? Cost saving for patient treated relative to a high-cost standard was considered. Is the system, the rationing system that we wish to introduce feasible? Is the probability that the human and infrastructure resources are available to implement the program, are available to implement the program? Economic efficiencies, these are efficiencies that consider the next human capital gain or retention from the rationing system and do not consider cost or feasibility as part of economic efficiency. And then social equity. Is the probability that poor or disadvantaged populations will have equal access to treatment the same as those advantaged populations? And then, can we actually control the number of patients attending the clinics?

Other criteria that may become available or considered in the future may include impact on HIV transmission, sustainability, and the effects on the health care system. There is a whole balancing the needs of HIV against other health priority needs so we tabulated this to consider high, medium and low as effectiveness of the rationing and as an example - I won't go through each one of

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these but, as an example, the MCTC Plus program is considered medically neutral. It is not particularly effective in addressing the needs of the population. It is cost-neutral because we certainly can cost effectively implement it. It is very feasible because we are identifying patients through the DMTCT programs and VCT and already have a targeted population and therefore can introduce treatment very rapidly. It is efficiency as measured in human capital we in our opinion and from our value system have established that it does retain human capital because it is a head of household program and does prevent, potentially prevent if we can start treatment early enough the transmission of mother to child and also maintains or prevents HIV orphans from occurring. Equity, we rated it as low because it is a mothers' and women's program and disadvantages men, and in terms of rationing, well we probably do have a rationing, it does provide some rationing but it doesn't, it is not high and doesn't target the populations successfully. On the other hand, if we look at the bottom line here, adherence commitments, it is an effective system because it targets those who can come to the clinic and do attend the clinic regularly before initiating antiretroviral therapy. It is extremely cost effective because it doesn't cost much to introduce a number of lay counselors who go through the education process with patients before they initiate

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treatment. It is clearly feasible and, in terms of human capital, it actually is neutral because it is one of the systems that is extremely equitable and so both disadvantaged poor populations as well as advantaged skilled workers can access the same clinic if they go through the adherence commitment state and therefore we rate it as a poor rationing state. It doesn't produce the number of patients that come to the clinic and that is our experience in Johannesburg, South Africa, where we have some of the largest clinics with patients on antiretroviral therapy. Implicit systems, on the other hand, lead, if we look at the first countries served, all the queueing system are certainly effective. We place a barrier and say we are only going to see 300 patients today and tough if you come and you are patient number 301. You will have to come tomorrow. It doesn't cost us very much. It is certainly feasible. It is done all over the world. However, its efficiency is extremely poor and as we are not addressing the needs of human capital retention at this level. It is, however, equity-neutral as disadvantaged populations - in fact, we classified it as neutral because we considered that skilled workers would have less of a chance to access treatment in a queueing or first-come, first-served system than unskilled workers. It is an effective rationing system that leads to a lot of queue jumping.

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So, some comments on the evaluation, these evaluation demands and how they are interpreted are the ratings that reflect our own values and experiences and are made to in fact open a debate. Some of the ratings are well grounded on prior experience. An example here is the treatment of skilled workers does preserve human capital. Some of the ratings are high speculative. Some can be affected by research and we will change these ratings as we conduct our own research. We know, for example, that copayments, we expect it to improve adherence because people will have a buy-in to the system. We now know that it discourages adherence and in fact when people don't have money, they don't come to the clinic. Effects on HIV transmission will become more and more important as time goes by and may become important reasons for targeting particular populations and then important to consider is that these domains do interact. We know that something that is extremely costly may not be feasible, but we also know that a highly inequitable system that is not politically defensible will also not be sustainable.

So in conclusion, the efficiency of a rationing system shown here on the Y-axis may be high but, in most cases with a high efficiency, equity is extremely low. What we do need to avoid is the block at the bottom here, which is both inefficient and inequitable and those are the first

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come, first serve plus queue-jumping or queueing plus queue-jumping, and consider some targeted programs that improve efficiency such as those from other skilled workers and copayment, at the expense of equity. We do know that in the national rollout program in South Africa, which I am very much involved in, that the commitment to adherence provides high equity and moderate efficiency.

Most important is the question of how equity will be achieved and, in fact, what the base strategies of rationing area. And I really wish to come to the last slide and this is the emphasis of the presentation, the debate, and that is few will decide which rationing system will be applied. If it is at a government level through legislation regulation and resource allocation, that is the ideal. It may come through international ballot or agencies and the donor agencies apply the particular criteria as to which programs they will support. If these two fail, it is down to the health care managers and financiers who, through their facility policies and procedures, will need to address the rationing. And failing that group, it will be down to the frontline health care provider through the standards of triage and informal and personal arrangements that they decide to who will receive treatment and who will not. Clearly, leaving it down to the health care worker who has an ethical debate each day is not the ideal and will not lead to the benefits of

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rationing targeted to particular populations and targeting the based medical, social and economic outcomes.

I wish to acknowledge my coauthors, and this publication is available online through the Boston University Web site and, in fact, we are not taking questions now, so I thank you for your attention and we will have question time later. Thank you very much.

[Applause]

LUCY CHESIRE: Thank you very much, Ian Sanne, from South Africa. And for those who have just joined us, we are looking at issues in access to ART in low-income countries and we have just been able to look at the South African experience, whereby we are talking about rationing ARC in HIV and AIDS settings in a scenario more so whereby the demand actually exceeds the supply. And I was just wondering since, I think we still have a lot of time, we could actually take some five questions or one to five questions. It's just that you were ahead of time and we don't have the speaker from Yuma, so we could take some questions and then move on to the next session.

IAN SANNE: I must say I was very surprised that I was ahead of time. I would really appreciate some questions.

MALE SPEAKER: [Inaudible], University of [inaudible], thanks, I enjoyed that presentation very much. Two quick comments, if I may. The first is to draw your

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attention to some work by Norman Daniels and James Sabin on what they call accountability for reasonableness. It is a mechanism for explicit priority setting or explicit rationing, if you like, that is open and explicit and transparent and accountable and involved all the stakeholders in a way that makes it acceptable. So I draw your attention to that and I can provide you with the reference for that.

The second point I want to make is that you know we are facing at this conference at the moment the problem of multidrug resistant tuberculosis and XDR TB and, of course, this is what is on the horizon for HIV. It won't be long before we have multidrug resistant HIV and XDR resistant HIV. And so it would seem to me that one of the features that you have to bring into your priority-setting mechanism is the ability to sustain treatment - not only adhere to it initially, because there is the defaulters and those who start and stop that are going to cost you a bit, I would imagine, most to the development of resistance, although I am no expert in that field. So I would suggest to you that you need to consider the possibility of emergence of resistance as a factor that needs to come in to your rationing system.

IAN SANNE: Thank you very much for that question. Clearly, we do consider resistance part of the medical outcome. We did focus in this opinion piece, particularly on the non-medical criteria because we feel that the guidelines

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would have established some sort of basis on which the medical criteria would be dealt with in all different systems of rationing. Resistance or the successful, the definition of treatment success, medical outcome success, would include the prevention of the development of resistance because the number of patients who would be retained with an unmistakable viral loads and immune reconstitution defined as CD4 count increases. And so, clearly, I think, as an HIV-treating clinician, what the treatment guidelines in South Africa and in principle in the WHO treatment guidelines has done is provided for first- and second-line treatment options. Once patients have developed significant resistance to the second-line treatment option, the current way of handling those patients is to maintain the ongoing treatment of that second-line regimen. That, however, may not be the best possible rationing system in terms of resistance, and we should consider that patients as a balance to this consider that patients who have failed their second-line treatment regimen are, in fact, taken off treatment.

The difference between TB and HIV is the rapid evolution back in HIV to the dominant population being the wild type, non-resistant population where as in TB clearly the transmission of resistance is of ongoing concern. Very contentious and Professor [Inaudible] emphasis from Capetown

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University, in fact, was our examiner, my examiner a while ago. [Laughter]

LUCY CHESIRE: Thank you very much, Ian. I have another question and I was just wondering, when you talked about the implicit system, how do you manage the queue-jumping? Secondly, I was just considering that, due to the high demand, are you faced in a scenario whereby it actually - you end up compromising the quality of care in relation to the number of patients you see on a daily basis?

IAN SANNE: Yeah, so I think this is exactly the debate, exactly the problem. [Inaudible] clinic is our main site in Johannesburg. We have six and a half thousand patients on antiretroviral therapy and we initiate approximately 250 a month. We attempt not to have a cuing system, a waiting system, but in fact have a cuing waiting system that is currently at about 2.5 months. We have tried to address queue-jumping by looking at who needs to queue-jump and have introduced specific clinics for patients with low CD4 count and AIDS, defining opportunistic infection or mothers with a CD4 count less than 200, pregnant women with a CD4 count less than 200, and so, in essence, have introduced explicit queue-jumping systems.

And that kind of thinking is what each clinic needs to consider to efficiently address the treatment needs. In terms of quality of care, we try and maintain the maximum

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number of appointments per day to try and make sure the system doesn't become overwhelmed, but clearly, our clinic is an example of where the accumulation of patients leads to additional pressure on the rationing system. And so, while we hope our outcome measure in terms of patients' undetectable viral loads still addresses the efficiency in quality of the service, it is in time to come that we will be able to measure as the pressure increases how quality reduces.

LUCY CHESIRE: Thank you very much, Ian. Okay, the last question?

MALE SPEAKER: Thank you. This is [Inaudible] from India Office of the Union. I would like to ask you two questions. The first one is like when you talk about rationing off ERTs for HIV/AIDS in settings where demand exceeds supply, now, do you think this would lead to a kind of complacency in the system where they would like to exist within the available resources rather than increasing the excess, putting in more resources for ARV access? And the second part is, like you briefly mentioned, how do we address the ethical issues when we say it should be an equal access of treatment to everyone?

IAN SANNE: Okay, so to the first question, clearly within our system and we have multiple forms of treatment delivery under the program that I manage under [inaudible], we are putting pressure under every one of those, on every

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one of those clinics who are health care worker providers to, in fact, perform in excess of their comfort zone. In other words, we are not making it easy and letting people see 10 patients a day. There are consultations, the number of consultations [inaudible] to exceed 300 per day on most days. And so, in fact, once we understand what the maximum number of patients that a clinic can see and we are achieving those targets, we need to put more pressure on more infrastructure, more money, more human resources. But those are not equally available at the same time distributed across the country. And so, even in the ramp-up phase, some sort of rationing and targeting of populations has to occur.

And to the ethical debate, that this is exactly an open ethical debate and while we have positions, you know, the first idea, I think that each center needs to in fact have this public debate, this open debate, to address their own balance in ethics and to discover which patient populations they wish to address first but it needs to be debated. For us, the question is if you don't debate us, then all that happens is that you get these implicit rationing systems and queue-jumping and so that is exactly the issue. Who do we address first? And an economist will address, will support looking after skilled workers and maintaining human capacity in society whereas [inaudible] would say that it has to be absolutely equal and the

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rationing system has to ensure absolutely equal access and a lottery would be the best way to, in fact, decide who should get the treatment service placed.

MALE SPEAKER: Thank you.

LUCY CHESIRE: Thank you very much, Ian. I'm just going to request if you could hold, I can see the two questions that are coming up, if we could just move to the next session, then we could take up your questions if you don't mind. We will still have the panelists.

IAN SANNE: See how contentious this is?

LUCY CHESIRE: I can see. [Laughs]

FEMALE SPEAKER: The question is when you are rationing within a family, if two members are HIV-positive and if you are going to give only one member in a family, sharing of the drugs, it is more going to be more complicating even leading under [inaudible] assistance and possibly there is more causing damage rather than doing something good?

IAN SANNE: Okay, so on one of the slides that I skipped was exactly that issue, that, in fact, targeting family members and we have a study in South Africa called "Safeguard the Household," funded by the NIH, which is targeting entire households rather than just family members for treatment with the idea that, in fact, treatment adherence will improve if there are multiple members within

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the family both disclosed to each other and on treatment and so, in fact, adherence will improve.

Our experience in South Africa is that treatment sharing actually is not a common phenomenon. With good education up front, patients understand that they need to take their own tablets themselves and treatment sharing is not an option. We are not finding much treatment sharing occurring.

LUCY CHESIRE: Thank you very much, Ian. Over to the co-chair, Rita.

FEMALE SPEAKER (RITA): Thank you very much, Lucy. I am Rita [Inaudible] and am HIV coordinator for the union based in Zimbabwe. I regret to inform you that our second speaker, Irene [Inaudible] was unable to join us here in Paris. However, the good news is that Grace Bongololo has agreed to come in and speak on provision of ART issues as they pertain to Malawi, and title of her presentation is whether provision of ART can be equitable when the whole health system is inequitable. Grace Bongololo is the social science researcher based in [Inaudible] Malawi and working for REACH Trust. Over to you, Grace.

GRACE BONGOLOLO: Good evening, ladies and gentlemen. As the chair has already stated, I am making this presentation on behalf of Irene [Inaudible] who, due to some other factors beyond her control, she couldn't make it to

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Paris. The presentation is based on our experience. That is, the time [inaudible] was provided at [Inaudible] and from the time when antiviral therapy was provided free of charge at the point of delivery. It is believed by many that Malawi is like, provides like a flag whereby the demographic indicators, they give, they symbolize the situation in most of Sub-Sahara and our country but I also believe that experiences from Malawi can also act as an example of some of the countries in the Subsahara region and I believe that experiences from Malawi can be also adopted in some other countries within the region.

Just a quick outline of the presentation. I present to you the [inaudible] system in Malawi, then [inaudible] that is the [inaudible] and African region [inaudible] equity in the provision of [inaudible], what it is then in Malawi for example in the Sub-Saharan region and lessons learned lastly but not list recommendations. The [inaudible] system in Malawi is inequitable, whereby we are experiencing severe shortage of health personnel, whereby we have 1.1 doctors per 100,000 population to in fact [inaudible] 100,000 population. That is, according to WHO 2004 and most public health care facilities, they like capacity to deliver essential [inaudible] package [inaudible] where the services are available. And we have a situation whereby the actual poor, they spend close to 7.4-percent and 10-percent of their

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annual consumption on health. So from this, you can see that they are spending more on health. What they have as [inaudible] and access to healthy services is also a problem where by we have 84-percent of the population having access to health care facilities within a radius of eight kilometers but this does not take into consideration some of the district which are like, which are [inaudible] so it is like the access to health care procedures is problematic for them.

With limited resources available for HIV and AIDS treatment programs, there are some major issues on equity. For example, on equity of treatment programs, we will have access which programs have [inaudible] maybe you can say [inaudible] having access, but what categories of women are having access? And again, the other issue that is mostly [inaudible] is the impact of antiviral therapy on the wider health care system, is it a vicious circle whereby antiviral therapy programs and drawing resources from the entire health system or the resources that are pulled into the antiviral programs, are they having a positive impact on the health care system whereby they are strengthening the health care system [inaudible]?

Just a quick run-through of some of the terminologies that we use. By equity, we mean addressing differences in healthy status that are judged to be unnecessary, avoidable, and unfair [inaudible] systems mean all activities that

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promote, restore or maintain health. This is just a picture [inaudible] saying impact or [inaudible] on HIV programs in the health care delivery system, is it a vicious cycle, for example, whereby the services in the ARV program, [inaudible] services from the health care system or are the services in the ART program, are they contributing - that is, strengthening - the health care system [inaudible]? That is a vicious cycle and a vicious cycle.

Now, looking at the equity initiative on the equity in provision of antiviral therapy, EQUINET conducted studies on issues allocating [inaudible] health care centers processed to HIV/AIDS. Some licenses were lent from the studies and through a legion of consultations, policies and principles for equity [inaudible] and indicators for monitoring equity were developed. We had two areas of equity, justice and accountability whereby we were looking at how to police the ART policy, how was it developed? Is it possible to monitor it? Was there process fair? Who was consulted, for example, because we know that different groups in the society, they have different needs so if many [inaudible] segment of the society was consulted, leaving out the other, where could bring the consensus of them into the development of their policy?

Also looking at the targets, are they realistic? Are they achievable? And we also had five areas of

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sustainability and efficiency, having this policy, will the programs be sustainable and will the services, are they efficient?

Now, just a quick outline of the ART and health care system monitoring status that is experienced from Malawi. Working with key stakeholders, we conducted an equity analysis of data whereby we generally collected data and we did [inaudible] analysis and also a synthesis of findings from operation and qualitative research had key [inaudible] and we also do participate in taking [inaudible] groups. In Malawi, we aimed to have 80,000 people on ART by 2005 and having a total of 250,000 by the end of 2010. As earlier on I alluded to in the previous slide, antiviral therapy is provided free of charge in public sectors, including, that is, Christian [inaudible] hospitals, these are hospitals which are funded partly by the different churches in Malawi in a first come, first serve basis. The number of people [inaudible] increased from about 4,000 patients in June 2004 to about 57,000 patients by the end of June. This number is like when antiviral therapy was provided at a fee and this was when antiviral therapy was provided free of charge on first come, first serve basis.

After introducing the free ART, the [inaudible] percent for men [inaudible] percent were women and 94-percent were others, only 6-percent were children, [inaudible] 10-

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percent - that is, close to 9,633 patients - who were on ART were coming from TB programs and only 1-percent were women who were referred from PMTCT programs.

Free ART has improved access for the poor and the vulnerable as you saw in the previous slide, after ART was provided at a fee, many people were unable to access that treatment but after it was provided free on first-come, first-come basis, many people came forward and some maybe also had high CD4 count, they also wanted to access treatment so access was a little bit improved. However, qualitative research findings reviewed the following barriers to access and adherence. Most of the time, the situation is like when services are free of charge. We expect people to be accessing treatment without problems. But the qualitative study that was done at the site whereby antiviral therapy was provided free of charge and also some other services to decentralize treatment, these are some of the barriers that we found to be there: A lack of food for example, transport costs for patients and guardian to and from the hospital, stigma and discrimination, long distances to the health facilities, and [inaudible] at the health care facilities.

What lessons were learned in access to ART in Malawi? Free ART at point of delivery enhances access. That is, user fees hinder access for the poor and reduce long-term adherence. That is, if somebody doesn't have transport to go

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to the hospital to access treatment, there is no way that person can go to access treatment, that is he or she is going to default [inaudible] to he or she accesses transport to ground access treatment. We also have [inaudible] main access and treatment [inaudible]. That is, we also need to consider access [inaudible] by gender, that is, is the access by need, it can happen that we have many women who are in need of treatment than those who are accessing treatment. And it can happen that the men who are also on treatment a lot more are not accessing treatment, so this is a point that has to be considered when we are analyzing access to antiretroviral therapy. Services are biased towards urban areas, whereby most of the ART services, that is starting with [inaudible] and testing as well as antiretroviral therapy clinics are all, most of them are concentrated in the urban areas. But 15-percent of the population in Malawi lives in the urban areas whereas the total of 85-percent lives in the rural areas. [Inaudible] that shows that prevalence of HIV/AIDS is high in the urban areas than in the rural areas, but from the population that lives in the urban and in the rural areas, you can see that if you have the 5-percent from 85-percent and 5-percent from 15-percent that is living in the urban areas, you find that the figures are going to be high in the rural areas despite that the services are concentrated in the urban region.

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As you saw from the previous slide, child uptake of treatment is low. A lot more has to be done on the pediatric patient who are in need of antiviral therapy and free treatment assistance [inaudible] basis may serve the urban, higher educated and then poor people and involvement of the private sector. We have AIDS private facilities who are providing antiretroviral therapy at the high risk of [inaudible] fee and these private facilities they help to like lesson the burden on the private facilities as well, providing antiretroviral therapy.

And on human resources for ART, human resources crisis is a key challenge for scaling up. I think this song has been sung for many countries and I think the situation in Malawi is not different from other countries within the region and HIV/AIDS impact from staff workload in Malawi of patient exposure to HIV/AIDS, in situations whereby health care workers are afraid of contracting the virus by treating the patients. This is a barrier whereby they are more likely to neglect some patients who are HIV-positive. The Malawi human resource emergency relief plan cost close to \$273 million U.S. dollars with funding from global fund, GFID, and [inaudible] intends to expand training capacity by 50-percent on average, improve retention and [inaudible]. That is, those health care workers who retired, they are being called back to train the health care system and increasing top-up

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salaries by 52-percent for 11 critical [inaudible], that is, clinicians, nurses, and other technical positions. There is also a stopgap extended support for critical posts, for example for volunteer doctors and nurse tutors.

However, [inaudible] and members of staff are not [inaudible] in the [inaudible] system raises a lot of equity questions. Are they not health care workers? What can be done for them? And also have a critical [inaudible] for communities and volunteers in the provision of antiretroviral therapy. Involving community members and people living with the virus can make services accessible to the poor and marginalized and can also help to reduce stigma. That is to say, if people see somebody who is like them, somebody who is not like somebody from above, like the [inaudible], somebody telling them about antiretroviral therapy, they are more likely to comply instead accessing treatment than somebody from above. They say ah, maybe this one is saying this because he is a health care worker or maybe because this one is saying this causes some other pathology in the society, but if they can be told some experiences by somebody just like them, they are more likely to come forward on access treatment.

And, involvement of the community and volunteers is particularly critical in this area whereby we are experiencing critical health worker crisis. They can also

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help to encourage involvement of community health workers has been critical in some other interventions, for example in immunization procedures, and there is a need to develop their role in improving treatment access to strengthen the primary health care.

Now, looking at who is [inaudible] antiretroviral therapy in Malawi, treatment activism has not affected increased funding for antiretroviral therapy. However, there is high donor dependency. This is necessary but it raises our [inaudible] to say if the donors pull out, what could happen, and the high donor [inaudible] is also associated with slow displacement of funds, where most of the times the funds becoming chance regardless of what has been done on the ground and [inaudible] global fund [inaudible] which is funding antiretroviral therapy program, the program ends in 2008. We need a holistic view of financing. For example, as I alluded to in the previous slide, patients are faced costs where antiretroviral therapy is provided free of charge at the point of delivery and there is also a need to [inaudible] health expenditure as a percentage of total income. This has to be lower for the poor and we need adequate and long-term funding for healthier systems.

What recommendations are we putting forward? There is a need further decentralization of services with focus to rural areas, that is the primary [inaudible] level. As I

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said, most of the services are concentrating in the urban areas than in the rural areas. There is a need to strengthen [inaudible] programs, especially our PMTCT, through maternal health services whereby the mothers are incorporated within the system and they know most of what can be done for them also to access ART, for them not to infect their unborn babies. Monetary impact of ART in our socioeconomic status, this can help to reduce the high spending of the poor on health services. Monitoring of equity in ART programs and impact of ART on whether [inaudible] systems, that is equity. Monitoring has to be at all levels in the health system and including simple equity and health system monitoring instead of routine monitoring and diversion system. That is, whenever monitoring and diversion is done, there has to be some indicators on equity, for example, who is accessing services? Which corporation, is it for example by gender and sex? So that we know if equity is in access to the services? Thank you very much for your attention.

[Applause]

FEMALE SPEAKER (RITA): Thank you very much, Grace. I think we heard a very comprehensive presentation of your experience and that of REACH Trust in Malawi. Are there any imminent questions from the audience? The gentleman to my right, please introduce yourself and mention which country you may be coming from.

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MALE SPEAKER: Yes, good afternoon, everybody. I am [Inaudible] from Zambia. I am a patient. In fact, I was a patient, I'm a TB patient and I am on [inaudible]. I just want to find out from the audience, I mean from the panel, how much on ARVs are you going to [inaudible] because this money seems it is coming from the donors. If the donors stop, who is going to guarantee our [inaudible], that is my question. The other question is [inaudible], what are the other safety measures are you coming up this [inaudible]? The other question is -

FEMALE SPEAKER (RITA): Thank you, [Inaudible]. Thank you. I think two questions from one person perhaps, if you allow me, it's enough, thank you.

MALE SPEAKER: Thank you.

FEMALE SPEAKER (RITA): Grace, would you like to comment on these rather tricky questions from our colleague from Zambia? Or should we leave them for Stewart Reid that will come from Zambia? Perhaps we will hear how you tackle the same issues in Malawi.

GRACE BONGOLOLO: Yeah, as I said in my presentation, a lot more children who are in need of antiretroviral therapy they left out. However, much is being done to incorporate the pediatric patient for them not like die or because they are children. That is why at REACH Trust, we like focus on equity, as I said. We can be happy with the figures, say for

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the first 1,000 on treatment, but who is on treatment for example? Is it men, is it women? Are they children? What ages are they? And on high dependency on donors, I think I said that in the presentation that there is high dependency on donors. If the donors pull out, would the ART programs be there? Are we going to maintain the rolling out of antiretroviral therapy? In short, that is how I can tackle his question.

FEMALE SPEAKER (RITA): Thank you. Let's entertain one more question from the audience and then we shall move on.

Thank you. My question would be you started your presentation with can provision of ART be equity but when the whole health system is inequity but what exactly is your conclusion from Malawi experience, can this be done? Because I found there are two parts in your presentation. In one part, you mentioned that adding incentives, adding extra money, topping of the salaries, that creates inequity within the system because if you have special focus on the [inaudible] when you are making those final recommendations for the programs or whatever, improving ART access, they are only for ART access. So from your experience, you want to say that we can have an ART equitable access when the whole health system is inequitable, or it is not possible?

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GRACE BONGOLOLO: Thank you very much. When I was pointing out to say the salary top-out for health workers is specific for some [inaudible] and not others, just we pointed out that there are some other motivational factors or some other incentives which are not necessarily the monetary in nature which can motivate health workers and these other [inaudible] who are also critical in the provision of antiretroviral therapy, for example we have health surveillance assistance who are critical in the provision of counseling and testing. We cannot talk of antiretroviral therapy without talking of counseling and testing because we know that CT is the entry point to ART. So when you talk of motivational factors, we don't have to like critically consider money, but there are some other things which can be also added to motivate our, bend out our health workers.

And in terms of having an equitable, inequitable health system to provide equitable services, the thing I am trying to make is like I think I say that the most critical challenge in the ART rollout is the lack of health workers which means that there are some other populations within the society which are failing to access treatment because we don't have the health workers to rule out treatment. I think I said in some of the barriers to access, say, long distances for example, long waiting times which means that somebody can work up until it is dark and he or she is coming from very

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faraway place, he or she is likely not to access treatment so something that, a lot has to be done on both, like having for example health workers who have the resources who are motivated and they also have the treatment to rule out, so it's somehow tricky to have a health system which is [inaudible] to provide services which are equitable. I don't know if I have tackled your concerns.

MALE SPEAKER: Thank you.

GRACE BONGOLOLO: [Inaudible] sending [inaudible] for health care workers, the [inaudible] are therefore all health care workers within the public health system and this is basically targeting clinicians, nurses and medical doctors and the other [inaudible] are excluded, so I just wanted to clarify that, because I think there were some misunderstandings.

FEMALE SPEAKER (RITA): Thank you very much for that additional information and very many thanks to you, Grace, for your presentation. Thank you.

LUCY CHESIRE: Thank you very much. Our next speaker is going to be Stewart Reid, who comes from the Center for Infectious Disease Research based in Zambia and he is currently the medical director for [inaudible] program in Zambia and he is going to present to us a very interesting session on human resource, which is a critical factor for the success of ART scale-up, especially in resource-limited

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settings. I will take up this opportunity to invite you Stewart.

STEWART REID: Good afternoon. I would like to thank the organizers for inviting me to speak here this afternoon. I would also like to acknowledge at this time my colleagues from the Zambian institute of health and from the Lusaka branch of CDC.

Some of the information that I have been listening to in the last half-hour are very similar to the situation which we have in Zambia. As you all know, we are moving towards universal access for antiretroviral therapy by 2010 and that is not far away, that is less than three years away. And I am going to start with my conclusion, which is that scarce resources is the major barrier to scaling up ART and HIV care and treatment in sub-Saharan Africa. I am going to talk a little bit about the task ahead of us, give you an idea of the magnitude of this task, and then talk a little more about the shortage of health workers in Zambia in particular and then about some short-term solutions, but I emphasize these are short-term solutions and that we shouldn't become complacent. I will show you that we are able or it is possible to scale up antiretroviral therapy in a resourceful [inaudible] setting, but we are at the limits of what we can do at the present time with the existing human resources.

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Zambia, as many of you may know, is a landlocked country in the southern cone of Africa and is one of the most heavily affected countries with the HIV epidemic and with the health care worker shortage. We have 11.5 million people, of which 16-percent or about 1.1 million people are HIV infected. In 2003, 90,000 people died of HIV-related causes and just over a quarter of a million people are in need of ART today. Life expectancy is around 37 years, and this is Zambia right here. You can see we are surrounded by seven neighbors. Despite the challenges in the last slide, you can see that rapid scale-up has been proceeding fairly well in Zambia, with a lot of supports from the Ministry of Health and political buy-in as well. Three years ago, we had three centers and 3,000 people on treatments. Today, we have 110 centers with over 100,000 people enrolled and 70,000 on ART. There is a footnote at the bottom here which shows that despite putting on approximately 36,000 people on treatment each year, another 80,000 become eligible for ART, so the challenges for prevention are significant.

This slide shows the estimated people needing ART and I am going to focus on sub-Saharan Africa. Right now, there are about 4.5 million people who are in need of ART today and there are approximately 25-percent or 1 million people as of June '06 who are presently on ART, which gives us a treatment gap of 3.5 million people to achieve by 2010, and this is

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going to be a major challenge in the era of health care worker shortage.

The map on the left shows you areas with critical health care shortage and that is considered health care worker less than 2.8 per 1,000 population. You can see that North America and Europe have 18 to 24. Most of sub-Saharan Africa is in this dark color here except for our neighbors in South Africa, Botswana and Namibia [misspelled?]. And unfortunately, many of our workers from other parts of Africa have migrated south to those countries. If you look at the map on the other side, you can see that the areas [inaudible] prevalence of HIV is in very similar countries, and so this dual burden of high HIV prevalence, low health care workers is a challenge we face.

Let me focus for a minute on Zambia and show you that, in general, the number of health care workers is less than one per 1,000 population, except in the urban areas which, as Grace mentioned, is part of the issue of equity of distribution of health care workers. Our absolute deficits of doctors, nurses, and clinical officers is around 75-percent of those required, although compared to Malawi, we look like we are fairly well off at seven per 100,000 of doctors. Zambia graduated 1,600 doctors from its medical school and somewhere between 400 and 600 are remaining in the country.

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I am going to talk just very briefly about why we have a shortage, and I understand there will be sessions on Saturday which will describe this in more detail, but if you look at this graph here, you will see that the countries with the arrows are those countries in the southern cone. And you can see that between 60- and 80-percent of the physicians that have been trained by those countries have migrated and left those countries and most of those will not return. So migration is a huge concern for countries in Africa, both migration within Africa and migration overseas.

Another area of major concern to us is premature death of our health care workers. In sub-Saharan Africa, somewhere between 18- to 40-percent of the health care workforce are HIV-infected. The range here is rather broad because health care workers don't test. Testing is still stigmatized and accessing treatment is even more difficult for them as well. You can see in the three categories of doctors, clinical officers and nurses, the average age of death is around 37 years. This column here looks at the potential career that is being lost due to premature death and somewhere between 46- to 56-percent of health care workers' career is lost due to premature death and the effect on the systems and the ability to care for patients in the public health system is affected by this.

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Another issue is that of absenteeism in the last year of life. As patients become more debilitated and sick, they become unable to work, and this is also affecting our ability to scale up ART care.

Let's shift gears for a minute and talk about lessons that we have learned in Lusaka with our rapid scale-up. And I will talk a little bit about how we have been able to scale up despite the enormous restrictions in terms of numbers of health care workers. Lusaka has 1.5 million people, with a prevalence of 22-percent which is higher than the national average. They have about a quarter of a million HIV-infected people, of which 56,000 are in immediate need of ART and 28,000 become eligible each year. The ART scale-up in Lusaka is very similar to that which I showed you in Zambia. Exponential growth in the numbers of patients who are enrolled and on ART and to maintain this group of patients with chronic life long therapy is a major challenge. This has occurred in the last two years.

I'd like to talk a little bit about the patients that we are enrolling in care, because I think the degree of illness and the advanced nature of the patients' illness also affects the amount of care they require. And you can see in this slide that most of our patients are stage III with CD4 counts of less than 150, so it tends to be a sick population - especially in the initial part of the scale-up, most of the

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patients were quite sick. The median age is 35 with 61-percent, very similar to Malawi, are female; 10-percent presented with a hemoglobin of less than 8 and 15-percent had TB in the last year. The mean CD4 count of all patients and this was a group of 15,000 patients was 143; 21-percent had CD4s of less than 50- and 56-percent had CD4s between 50 and 200, so this is a sick group of patients. It raises many challenges in terms of care, in terms of drug toxicity, side effects, immune reconstitution, and coinfection with TB. It is a challenging group of patients to look after in any environment, in particular in Zambia.

What I would like to do is focus in on one of our clinics and give you an idea of the magnitude of the patient load we are attempting to care for. At the present time, we have about 27,000 visits in Lusaka each month. We have had over half a million visits for care just in the ART clinics in the last 30 months. I would like to talk about leukanemia compound, which is one of the larger compounds. It is a bit of an outlier in that it is a very large clinic but it is not completely unrepresentative of what we see in general. It is an urban compound or a shantytown with a [inaudible] population of 130,000 and an HIV prevalence of 22-percent as I mentioned before. In this one clinic, we presently have about 7,000 patients enrolled in care and about 4,000 on ART.

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The daily work load includes follow-up visits, enrollment, pharmacy visits, a total of about 215 visits per day.

What I will talk about now in the next few slides is basically the problem which is how do we provide quality care for large numbers of patients with significant health care shortage? And I will talk about some short-term solutions that we have used to try to achieve this. The first one is improving clinic efficiency, expanding clinical roles or cost shifting involving the community, dealing with issues of overtime payment, and the last one has disappeared. There we go: electronic database, which is another approach that we have used.

Let's talk about clinic efficiencies. To care for this large number of patients, we had to work with the Ministry of Health to try to improve the efficiencies of the clinic to not only care for large numbers of patients but to care for them in a chronic care form which was not familiar in Zambia. We worked with and mentored the sisters in charge of each clinic in their managerial and organizational skills and we helped them to organize the patients in terms of, clinics in terms of patient flow and triage. This required, in many cases, building extra space, providing equipment, and developing patient care forms that help the clinicians to work through complicated patients in a systematic way and also provided long-term follow-up for these patients. We

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worked on the issues of supply chain management both as it relates to reagents and to drugs. Training was centered on issues of patient monitoring of chronic care, proper record keeping that would improve patient care, adherence counseling and these are the schedules. We engaged in the issue of task-shifting, which is shifting tasks from specialized to less specialized health care workers and then to the community and to the patients to the direction of transfer of responsibilities is this way and the direction of referral is this way. So the doctors transferred their responsibilities to the clinical officers, the clinical officers to the nurses for monitoring and continuation visits, the peer educators became involved in clerical work, adherence, health education, and the patients became involved as well. This allowed us to transfer the responsibility for non-medical activities to the lower categories of health care worker or patient.

Part of what we did was to recognize that nurses were the group of health care workers who we had the largest opportunity to increase skills and training, and we organized triage training skill and we are at present organizing advanced nurse training to train nurses in critical thinking and problem solving, simple physical examination, and management of simple problems. The goal was to have nurses who could look after stable patients in the continuation

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phase. We are working with the Ministry of Health to expand these roles and to make this a part of the Ministry of Health policy. This is the continuum of care and, as you know, patients, when they are just enrolled into care, tend to be quite sick with multiple complications, drug toxicity, side effects, immunity constitution and breakthrough OI's and this care is done primarily by the clinical officers and where available medical officers. Once we get through the initial phase of early treatment, we get into the routine continuation phase, where the patients tend to be quite stable and the major issue at this time is looking for evidence of treatment failure, and this is the phase where we tend to heavily involve nurse and the community.

Once we have worked with the nurses, we also wanted to work and increase the capacity of the clinical officers in particular because this is the group where we have again the second largest number of health care workers and we felt that it was important to increase their skills again in chronic care and we used a number of modalities to do that including bedside teaching, management rounds, general [inaudible] morbidity and mortality rounds, and then we did a lot of in clinic mentoring with Zambian physicians and with [inaudible] and nurse practitioners. We also developed a dedicated training center for clinical officers, which was a high-quality, low-volume clinic that was run by care counseling,

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and you can see that we trained large numbers of staff, most of whom are nurses and clinical officers. The areas that the clinical officers became involved in were treatment initiation, management of immune reconstitution syndrome, treatment of opportunistic infections, the diagnosis of treatment failure which has become more and more critical as time goes on and the initiation of second line treatment when appropriate. We also taught them management of TB coinfection and ART use in pregnancy. The clinical officers became our major clinical players in the clinic.

The role for the community, as Grace has also mentioned, and for peer educators has become more and more important to reduce the work burden on medical staff and try to improve patient flow. We have, as I mentioned, large numbers of patients in these clinics and to prevent long waiting times we have employed the community and peer educators. They are involved in registration, demographic information, weighing completion of forms, filing, and most importantly adherence counseling and you can see this is the group of staff, again in this group mostly nurses, mostly peer educators and community workers have been trained.

To enable rapid scale-up in a setting with a very severe shortage of health care workers, we implemented an overtime model. This was a way of trying to create health workers in an environment where they didn't exist. We

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presently are supporting 260 shifts a month at a cost of \$25,000 and, unfortunately, 80-percent of our clinics are now run on overtime shifts. Some of the disadvantages of this is that it is perceived as a project of an NGO. It creates a two-tiered system with those that receive overtime and those who don't and that can create some unhappiness. We are concerned about staff burnout because, as Dr. Sanne said, we are pushing our health care workers to the limit right now and we need to look carefully at the issue of burnout. I don't believe that this is a sustainable way to keep the system going, but it is a stopgap measure to allow rapid scale-up to occur. The staff like it because it gives them extra income.

The last thing I wanted to talk about was our electronic database and this is a way to use technology to improve efficiency and to reduce the amount of clerical tasks that health care workers do and allow them to concentrate on their medical tasks. The electronic database is used both for patient management but also the help of quality control. It can generate the Ministry of Health and donor reports. It will generate daily schedules for the nurses. We can do outcomes analysis. It helps us to reinforce the treatment algorithms that we use. For quality control, it will generate late lists, which then allow us to send out tracking nurses or tracking community workers to find the patients who

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are late. It allows us to monitor CD4s to see if patients are showing evidence of treatment failure and it will also monitor critical lab values so that if patients have severe abnormalities, hemoglobin for example, we can track those patients. We developed an algorithm for treatment failure and we are just implementing that now to try to identify patients who are either CD4 is not increasing appropriately or CD4 is dropping or they may have changed the WHO stage while on therapy.

Let's look back at kenyama clinic which we talked about at the beginning with the 7,000 patients and 4,000 on ART. This is the group who looks after that cohort of patients. You can see that the word nurse here figures very prominently. In fact, most of this clinic is run by nurses and peer educators in community, 76-percent of the work load is handled by non-clinicians or non-physician clinicians. We do have farm techs, lab techs and some clinical officers who are providing especially the clinical officers most of the clinical care but we have been able to have this clinic function with this group of staff, primarily nurses, community and peers.

Now, what is important is outcomes and how are we dealing with this group of patients in this setting? This slide looks at the CD4 response of about 7,000 patients over a period of two years - sorry, one year - and you can see

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this line here represents, as I mentioned, initially the baseline CD4, the mean CD4 was 143 and we have seen an increase of 155 CD4 cells at six months and 175 at 12 months. The mean CD4 is around 300 at six months and around just over 300 at 12 months. There is a plateau phase here with a late increase so this is a reasonable increase in CD4 rise I think in any environment and we were pleased that we were able to see this outcome in our setting.

Let's look at mortality on those starting antiretroviral therapy, if you look at stage I and stage II, most of these patients, we have a less than 5-percent mortality. Things that changed significantly in stage IV mortality is anywhere from 10- to 15-percent, as high as 20-percent, depending on the CD4 count. The highest mortality of course is in the group with CD4 less than 50 in stage IV and we are not absolutely sure of the cause of the mortality here and we are looking into that. We suspect it is related to undiagnosed TB, probably some drug toxicity and immuno constitution syndrome. Our overall mortality is 16 per 100 patient years, we have a high early mortality of less than 90 days of 26 per 100 patient years, but after 90 days, our mortality is five per 100 patient years, which is comparable to rates in other countries.

Adherence is an important issue. We have difficulty measuring adherence, so we look at timeliness of drug

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collection, so do patients turn up on time to collect their drugs as a surrogate of adherence and in 16,000 patients the typical patient was one day late, 32-percent were not late at all and 11-percent were eight or more days late. Our data on treatment failure is still pending, but I think that this will be extremely important thing to monitor in terms of the success of the program.

Let me summarize. Over the short term, we have found that it is possible to expand ART access with good clinical outcomes in a setting with extreme health care worker shortage. Like feeding efficiencies in clinic flow, expanding workers' roles, providing overtime and enlisting community and patients in care provision. However, we have to acknowledge these are interim efforts and they should not distract us from working with Ministries of Health for long-term sustainable solutions such as reducing migration, testing and treating health care workers for HIV and other diseases, and improving training and working conditions. \

In conclusion, there is no precedent in global health for the remarkable process that has been made to date providing ART in sub-Saharan Africa. However, the human resource crisis is the most critical factor to the success of further scale-up. If we do not make progress in resolving the health care worker shortage, we will limit the benefits, the public health benefits of expanding ART access in our

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attempts to bring universal access to treatment when reported.

I would like to acknowledge the health care workers of the Zambian ministry of health as well as the Zambian ministry of health itself, Lusaka district health management team, and the sider's team. Thank you. [Applause]

FEMALE SPEAKER (RITA): Thank you very much, Stewart, for that very interesting presentation. Do we have any questions? Please remember to introduce yourself, thank you.

MICHAEL CURRINE: Yes, Michael Currine from U.S. Great talk, Stewart. Can you expound a little bit - since this is a TB meeting - a little bit about how you deal with screening for TB in the clinic and specifically the referral of patients from TB corner to the ART clinic so that the system of expediting care?

STEWART REID: Thank you, Michael. I left that slide out because of issues of time, but I am glad you brought it up. About 70-percent of our TB patients are HIV-infected and of those, about 80-percent of them are eligible for ART and we tried to create an expedited flow of patients from TB clinics to the ART clinic. As soon as the patients are diagnosed with HIV, we do a CD4 count right away and then they are immediately sent for enrollment in the HIV clinic. And we have special enrollment procedures for TB patients to get expedited enrollment into care and so they are seen in

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the afternoon in a place where they are not going to pass on their TB infection and they are quickly enrolled into care. TB clinics, I think, represent a very nice place to access large numbers of HIV-infected patients, almost all of whom are eligible for ART therapy, so the link between the TB clinic and the ART clinic, I think, is very important.

FEMALE SPEAKER (RITA): Thank you very much. Ladies first.

RENEE ROUSEN: Renee Rousen, Gates Foundation. The early mortality is something that is interesting and surprising or shocking actually and it is not surprising because a lot of people are seeing it and the comment that potentially it is caused by undiagnosed TB, you may be in a situation. I would like to hear your thoughts about, firstly, making attempts to diagnose TB in these patients and what that might be, but secondly, something that has been talked about which is by a couple of people, Kevin Nacock being one of them years ago, about starting people who are appearing to be failing up on TB therapy as empiric with the realization that extra pulmonary disease is very difficult to diagnose at times.

STEWART REID: Yes, thank you for that question. Clearly, TB in our setting is very difficult to diagnose. We have a lot of atypical presentations of TB. Really, our only diagnostic tool is smear and we have some limited test X-ray.

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Our laboratories are overwhelmed with numbers and I suspect that the amount of time that they are able to spend on reading smears is quite limited. So we do have a lot of difficulty in making diagnosis of TB in our setting and we do treat empirically, for instance, if someone is enrolled or started on ART and they are clearly not doing well, even though we are not able to make a firm diagnosis of TB, one of the next things that we will do is start TB treatment empirically and that is the reality of working in an environment with little diagnostics and almost no health care workers.

We don't have the data now, but we are starting culture system, liquid culture system, in Lusaka in the next couple of months and so we hope to have more data. We also are doing a study to look at the causes of early mortality in our cohorts, working with university teaching hospital where we take a group of patients who are very, who tend to be in stage IV with CD4s less than 50, and we will intensively look at them to try to figure out what the coinfections are that may be causing death in this environment.

FEMALE SPEAKER (RITA): Over to you.

DR. GABE: Okay, Dr. Gabe, Institute of Human Virology in Nigeria. Well done for a job on the very [inaudible] circumstances. My question is, again, these mortalities. You are seeing patients representing at very

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late stages just like we do, and I was worried in the sense that it is like your human resource burden is much more urgent than seemingly ours in Nigeria, and I was worried in the sense of diagnosis of TB, which is extra pulmonary, which [inaudible] sources that see 70-percent of your patients, are you really, in the strategy to using the best strategy to approach this, particularly in the case of diagnosing extra pulmonary TB and empiric treatment for TB. And I am presuming that the first-line regimen you are using is regimen that is, well, popular all across Africa, and with an 11-percent sort of failure to come for [inaudible] and missing drugs, with a regimen that is most likely high with the incidence of resistance, are we creating a mega problem?

STEWART REID: I think this is something that we struggle with every day. The public health approach to ART scale-up has to be, that has to be tempered with the quality of care that you can provide in a setting with limited resources both diagnostic and human. We struggle. Your question is a very important one because I think we struggle with numbers and quality and we know that we are pushing our nurses and our clinical officers to provide care for a population which really does require specialist care but it is not available. So I struggle with your concerns about the quality of care, about creating resistance and about getting

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numbers of people on treatment, and I don't really have an answer for you, but I share your concerns.

LUCY CHESIRE: Thank you very much. I will request that we hold those two questions until after the last presenter has just shared his experience, thanks.

FEMALE SPEAKER (RITA): Thank you, Lucy. It is my pleasure to introduce the fourth speaker for the symposium this afternoon. It is Dr. Francois Boillot, who is a consultant working with the International Union Against Tuberculosis and Lung Disease. He is based here in France. The topic of his presentation today is the state of health systems in low-income countries and access to ART: What is the way forward? Over to you, Francois.

FRANCOIS BOILLOT, MD: Thank you very much, Rita. Well, creating a general topic as this one, especially at the end of such a symposium, carries the risk of getting lost and I will try not to do so, at least not too much in the following minutes. According to the World Bank, the [inaudible] and low-income countries are those countries with a gross national income lower than \$875 U.S. dollars per capita per year, but the next class of economies is called lower middle income. So for practical using public health analysis, the limits of the low income category are not so simple as by the definition these-low income countries make a group of 54 countries among which there is already a tenfold

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national income difference and only half of these countries [inaudible] group, 34 are considered fragile states and two countries have the nuclear bomb. A common denominator among these countries is the difficulty to generate nevertheless accurate information at country level and this makes analysis difficult and they run the risk of growing on the growth conclusions that we not [inaudible] to the reality of individual countries. The burden of HIV/AIDS also varies highly among those countries and sub-Saharan Africa includes the highest number of countries with a generalized [inaudible]. The challenges posed by the access to ART may be quite different across countries.

However, the past year it has already been mentioned that seeing spectacular acceleration in access to antiretroviral therapy. The WHO estimates today that the number of people receiving treatment in low and middle income countries increases by 300,000 every six months. However, sketching out a way forward, as it was requested from middle scale-up ART in low-income countries health systems, faces the difficulty to draw lessons from experience has published data on the effectiveness on the cost effectiveness of existing approaches are extremely scarce and information on the cost associated with reaching these outcomes is almost always lacking. We will examine access to ART from the point of view of the challenges posed to medical techniques and

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technologies, organization of care, human resources, finances and policy and institutional capacity. By doing so, we are not likely to provide definitive answers as there may not be a ready made solution but rather try to give you the questions and issues to which a response adequate for the local context has to be given.

Speaking of medical techniques and technologies, one characteristic of the AIDS field is the first evolution of the medical techniques involved in diagnosis, treatment and follow-up in a context where not applying the latest techniques may be criticized as under medicine. [Inaudible] ART programs will double up from [inaudible] in industrialized countries, scaling up efforts in poor countries with a high HIV burden have highlighted the benefits of using standardized approach inspired from those used for tuberculosis. A clinical approach for initiating the ARV is demonstrating its value in Malawi for many patients, and while activist action is permitted to reduce the cost of first-line ARV regimen to about 130 American dollars per patient per year. The standardization of first-line regimens and the use of fixed drugs combinations will sound familiar to the [inaudible] have permitted to extend to many of the benefits of effective treatment.

Despite the simplification of [inaudible], a stark contrast remains between the techniques required in AIDS and

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those used in the management of other public health problems. ART scaling up may be an opportunity to strengthen medical system but the risk of interference with sector development of massive investment in developing technique with a narrow scope is important. CD4 count and viral load measurement remains key to monitoring immune depression and virologic outcome of treatment. The tests that require high-tech equipment and today access to the benefits related to these equipment's is less constrained by the cost of the technology itself than by aspects more in relation with their environment. These include the availability and the quality of electrical power. The organization and availability of maintenance and of consumable logistics or the [inaudible] of quality assurance systems, and are we going to see CD4 come to know the fate of out of order [inaudible] and computers that today [inaudible] the health care facilities of many countries. Developing equitable access to HIV care requires the technologies become more appropriate to the needs of areas with lower prevalence. For instance, so to make [inaudible] may not be adequate for health facilities, that in fact only a couple of patients per month which is the case in for instance west African, northwest African countries. CD4 counts using magnetic beads, for instance, may provide a solution for such environments, providing that these technologies develop with that concerning mind and not as a

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competitor to automate. It may be implemented without major problem in most districts' laboratories or even in TB laboratories. This would require that the technical passages be simplified, that [inaudible] free agents be packaged appropriately for that level of implementation.

These are specific health system development constraints, especially from the logistics part of it. As current viral load measurement cannot be decentralized, options may be either to develop [inaudible] simple tests or to improve transport media to send samples to central points where a phase can be performed. Commercial issues are equally important as the number of HIV sufferers in high prevalence countries and the increasing availability of funds constitute a substantial marketable opportunity for the medical technology and pharmaceutical industries. After the spectacular results obtained on drug prices, new challenges for activist networks may [inaudible] to make available more appropriate and cheaper laboratory technologies but also to help countries to be less vulnerable to commercial pressures. Measuring the outcome of ART as the previous speaker already mentioned poses the problem of compiling huge amounts of survival data for several years. If information on ART coverage is available, few countries today have reported outcomes of their ART programs. [Inaudible] of cohort developed on the same principle as for TB or leprosy have

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demonstrated their usefulness, but the volume of information is such that only few indicators can be monitored. Computerized systems face the same technological constraints as medical diagnosis and their value at [inaudible] scale may be developable. As one of the few indicators are used to evaluate programs, efforts are still required to simplify information systems where keeping them robust enough for field conditions. Speaking of organization now, health services, the development of primary care services in many low income countries which was the cornerstone of many health policies has seldom been accompanied with [inaudible] development of secondary and tertiary care. Referral services at district level remains limited to basic clinical or surgical procedures and the availability of medical or laboratory diagnosis, critical care, or paramedical services, child psychological support, remains low. Inadequate resources and support, research and competition between levels of care for delivering primary care to patients, health systems in low-income countries have not been designed to deliver chronic care and the debate on the [inaudible] of programs such as TB or leprosy or now even ART often reflects the lack of space even to chronic disease in the development of health systems. A specificity of [inaudible] ART programs is the accumulated caseload. Early programs were concentrated in specialized facilities, buffering the public

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and sometimes non-government sectors. More recently in Malawi [inaudible] good results can be achieved at large scale without verticalization of ART services. The centralization to these [inaudible] hospitals has been an important progress that for poor people in some countries, in direct cost of collecting treatment from a district hospital may still generate similar of access and availability programs as for TB treatment.

The centralizing ART beyond district hospitals will require involving paramedical staff and some countries already explore the feasibility of involving the network of TB clinics. Interest of mobilizing communities and community based ART programs are for involving community health workers should also be assessed as it has demonstrated its usefulness of their chronic care. Besides clinical services, two countries have actually developed strong logistic support services as part of the general health systems AIDS related supplies have a relatively short shelf life in comparison with those used in TB. Effective logistic system is, therefore, key and critical not only to an interrupted supply but also to controlling the costs by limiting batch expiry. In the context of programs, standardized [inaudible] may contribute to limit the number of items to procure and deliver and improve the effectiveness of logistics. In this respect, the experience of tuberculosis may also be useful.

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When technologies are implemented, particular attention should be paid to consumer [inaudible] logistic, maintenance and quality assurance. The experience of Malawi also suggests that government health services are capable of delivering similar level of quality ART as NGO's and that the strong national ART program can be established on the backbone of the national health system.

One may also wonder if there is room for the private sector in delivery and support to ART programs and if governments are prepared to let private actors play a role. The experience of [inaudible] in this figure would be extremely informative as networks and private practitioners have developed their own ART program.

I will try not to [inaudible] human resources as the essential has already been said, but the conference of course on the health work force are the single greatest challenge to implement service delivery in many low income countries today. The size of the work force is related to training enrollment and the rate of attrition which is itself affected by migration and AIDS. The weak link also between health system needs and the training of human resources is often responsible for an imbalance between medical and paramedical professions and confusion about their role. It is also responsible for an imbalance between care and support profession of deployment of staff between urban and rural

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areas in this equitable access to health programs, low salary and poor environments result in low and inadequate performance of health staff and in many places providing only meaningful wages to staff may be enough to obtain good and sometimes outstanding performance. Skill development of the different staff categories is often fragmented between different programs also without clear comprehensive vision. Extension of ARTs directly affected by these constraints and will benefit from some human resources policy but among countries with a generalized [inaudible], the needs may vary dramatically while the [inaudible] burden center would for instance start ART in 50 new patients per month in Malawi, the high burden center would start ART in less than 20 new patients per month in [Inaudible].

An analysis of the performance of low-income countries in developing access, review of their medical density, shows on this graph that despite low number of doctors per capita, some countries have been able to achieve substantial coverage. Among the better performers are also countries with high level of HIV epidemic. Such a finding is disturbing considering the human resource crisis and one may wonder what happened. Of course, two workers already provided some information, some responses to those questions, but are those responses the same across countries? What happened? Who is doing the job and what is the quality of

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that job in those countries [inaudible] substantial coverage with low then medical density per population? There is no really answer to those questions and if then difficult to sketch out a way for a world from such that without no information on the experience.

The costs associated with ART package delivery should be analyzed from the point of view of the [inaudible] and the time necessary for adequate performance at the different levels of decentralization and patient load. Like Zambia, some health systems have already developed [inaudible] in managing chronic [inaudible], stigmatized diseases and useful lessons may be drawn from other programs. Extending ART, maybe an opportunity to strengthen health systems by further developing skills for chronic care and linking it with prevention in [inaudible] primary health care. The critical role of logistics, maintenance, management professions in this access of ART programs, those will challenge health system developers on how to make available and further develop the necessary skills.

In many low-income countries, costs are health financing risks to a large extent on user payments in hopes that cost sharing would permit to increase health financing and narrow financing gaps have not materialized. So far, community insurance initiatives have not demonstrated their capacity to take over a substantial share of health financing

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and certainly not the cost of ART. Financing via essential components of free programs such as vaccination or TB reached adequate levels in the past few years only because of information and support. In many countries, the volume of AIDS largely exceeds national public investment. Recent advocacy for generalizing the gratuity of care would no doubt improve access for the poor but may further increase tension by increasing countries' dependence on international resources. Empirical evidence confirms that ART should be provided free to the patients, countries like Senegal have demonstrated that the costs of recovering patients' contributions to their treatment are higher than what patients can themselves contribute. Substantial financing is now available from the Global Fund, the World Bank, and a couple of bilateral donors in debt relief programs but this title [inaudible]. Streamlining of donor resources at national level remains a great challenge.

Now the issue is less to increase the volume of aid than to streamline the existing resources and increase the capacity of health systems locally to absorb financing but also to efficiently transform financing into benefits for the patient. I think advocacy has mobilized important financing on ART. It becomes necessary to look carefully at what this financing pays for. Why is the effectiveness of ART programs beginning to be documented? There is still limited

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information available on the costs of the different approaches and on the systemic impact of financing some costs of ART programs that may not be financed for other health priorities. The harmonization of AIDS not only concerns financial flows but also the [inaudible] chased with aid money as the aid from donors remain [inaudible]. [Inaudible] is an obstacle to the constitution of homogenous fleets of equipment that would facilitate consumable logistic and maintenance and [inaudible] aid used to purchase inputs should be strongly promoted among donors.

While clinicians still debate on the most appropriate of the drugs and the [inaudible] of standardizing second line treatment, the public health debate focuses on whether priority should be given to providing wide access to first line treatment while second line remain limited to few centers. As resources are not limitless, principles of equitable health gain, limitation of systemic distortion may help better set priorities. Moreover, this debate remains limited to health and AIDS circles, which may not have the adequate legitimacy for making such decisions. How can the debate better involve the beneficiaries and who should take responsibility for that? There is consensus on limited stewardship capacity of many health systems but the [inaudible] for this low capacity may vary largely between countries. [Inaudible] may include political culture or

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limited career development prospects, competition from other sectors, tension and resources, etc. We have already examined the importance of a balanced development of care and support systems. [Inaudible] capacity also hinders the ability of systems to adequately coordinate and streamline increasingly complex [inaudible]. Delegation of aid to a cascade of competing agencies may not only hinder some planning but also limit the volume available for beneficiaries and increase the personnel in charge of grant management. [Inaudible] the impact of AIDS business to [inaudible] last August may also need to be evaluated. Limited institutional capacities in health ministry may also force programs to [inaudible] of their own resources and compete for external funding.

Projects may contribute to turn programs into semi autonomous agencies, behaving more like competitors than like partners within the same organization as their institutional hierarchies kind of play their regulatory role. Accountability for public resources is obviously necessary. Rapidly developing mechanisms to account for the millions of dollars coming from sources with various accounting policies is considerable a traditional challenges for organizations or ministry with regular budgets within the thousands of dollars. The capacity of multiple and poorly coordinated mechanisms of AIDS delivery seeking quick visible results to

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further undermine already fragile health systems should not be underestimated.

In conclusion, the commitment and tenacity of dedicated networks of people estimated spectacular progress in access to ART and are loaded to become a reality and increasing number of low-income environments. It is now time to draw lessons from country experiences and underlies the cost effectiveness and systemic impact of the different approaches. This moment may be the right one before more resources are mobilized to sustain existing experiences and further develop them. Resisting the verticalization of ART programs affords an opportunity to strengthen medical and support systems which should not be missed as it may come into developed care of chronic diseases and better address this increasing health challenge, but to find possible way forward. We direly need that those four countries involved in expanding access to ART share their experience and publish their data. I would like to acknowledge my colleagues of the union, [Inaudible] who have helped me in preparing this paper. Thank you for your attention. [Applause]

FEMALE SPEAKER (RITA): Thank you very much, Francois, for your thought provoking presentation. Are there any questions from the audience? I see a hand. Would you like to come forward to the microphone? Okay, perhaps I misinterpreted the raise of the hand. Maybe then ask perhaps

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the three other speakers to join us here behind the table including you, Francois, if you so wish, for the final questions or comments from the audience. I know that Lucy was required due to the limitations of time to cut off couple of questions earlier on. I think we are now ready to take them and you are free to address any of the speakers now. Thank you. Over to you.

JOHN HOSKINS: Yeah, thank you. My name is John Hoskins from [Inaudible] Tuberculosis Foundation. Very interesting presentations, all of them. It seems that most of the solutions for the overstretched health services that are dealing with HIV patients are directed at public health services and also looking at the data that were presented by Stewart I believe that about 11-percent of patients were late on their visit, I'm getting quite worried that even when numbers are increasing, their problem will get bigger. My question is have - is there any experience of involving other provided, be it other public health programs like mother/child health or private providers or informal providers in the provision of the ART? It means that [inaudible] could still be centralized for the provision of treatment delegated to other providers. Thank you.

FEMALE SPEAKER (RITA): Thank you. Would you like to address this, Stewart? And if any other speaker has thoughts in this regard, please feel free to contribute that. Thanks.

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STEWART REID: In Zambia recently, the Ministry of Health made antiretroviral drugs free to the private sector and I know that there is a lot of experience in the private sector in prescribing antiretroviral drugs. I think that this initiative by the Ministry of Health is a very positive one, because I think that the patients who go to the private sector may have less than perfect adherence because of problems and pain and so I think that this will help to improve adherence. I also think we all have concerns about adherence to care as you mentioned and we are all learning. As we build experience, I think we are learning better ways to get patients to adhere to care. Of course we are also concerned about the issue of treatment fatigue. We are still in the early phase of the ART scale-up in Africa and the issue of treatment fatigue is also a concern but I think the private sector has got a large role to play and governments should probably support them.

FEMALE SPEAKER (RITA): Ian would like to add his reviews in this regard.

IAN SANNE: Sir, in our program, in the [inaudible] program funded by PEPFAR, we, in fact, have engaged the private sector to general practitioners in providing treatment on a capitation fee model basis, in other words we pay for everything for the patient including consultation fees to the general practitioner and have successfully

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recruited 53 doctors and I think over approximately 1,200 patients now onto the program. It has been successful. We have just done an economic evaluation of the program and in fact it costs about double what the cost is of our [inaudible] site so for every successfully treated patient, successful to find as viral load undetectable alive, immune reconstitution at one year, the cost of [inaudible] is about \$1100 U.S. dollars per [inaudible]. All costs included opportunistic infections, everything, where as the cost in the private sector is about \$2,000 U.S. dollars. Costs driven mainly by the types of patients they are putting on and the ability to actually maintain follow-up.

The other issue with the [inaudible] study in South Africa [inaudible] the household is [inaudible] looking at nurse practitioners providing treatment [inaudible] on ongoing monitoring. That study will become, the results will become available early next year. It is nurses randomized versus doctors and the last point I wanted to make, sorry, I'm having a richer moment, sorry.

FEMALE SPEAKER: Thank you. [Inaudible] a thought to the speakers, what is the role of the community, members of community or perhaps a set of treatment supporters in this regard.

FEMALE SPEAKER (RITA): I hear [inaudible] from the last speaker about, I think I must first hear from the left

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hand side and then possibly from you. Any comments? Any experiences, thoughts? Grace, you look like you wish to say something. Grab the microphone nearest to you, please.

FEMALE SPEAKER: My question is, is it on the role of the community or the role of the present providers?

FEMALE SPEAKER: I was trying to push us to think in terms of community members or family members, leaders or friends, treatment buddies because I think in a number of our settings in sub-Saharan African countries, we do have presence of private sector in bigger urban centers but it is not necessarily so in rural areas where 70-percent of the population may lead.

GRACE BONGOLOLO: I will explain from experience that is from Malawi, in Malawi just maybe in the African setting we know that social support, the issue of extended families is like sort of tied, though with influence of HIV/AIDS sort of like loosening up. However, it is important also to include or recognize the importance of community members for example, they can help in adherence issues for example, like reminding the patient of their treatment or even escorting the patient to get treatment so we cannot remove or completely ignore the role of the community members or relatives in the provision of antiretroviral therapy, it is more special in the least developed countries.

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FEMALE SPEAKER (RITA): Thank you. Any other contributions on the communities' role?

MALE SPEAKER: I think I said something of the patient in [inaudible] Zambia. It was from a district in the [inaudible] province, [inaudible] district in the [inaudible] province. I'm a patient, go by myself, and I am a TB treatment support. What program in our rural sector, we do need to help the health providers by TB access [inaudible] one to do the dose to the patient. We are finding difficulty [inaudible] some other procedures which are required for poor people to organize themselves to [inaudible] to open an account for them to be funded so that they can do [inaudible] profiling, especially when [inaudible] a volunteer work is not paid anything but to assess that patient, maybe that patient cannot take blood on an empty stomach, which is very difficult. So those are the problems which we are facing in the community, especially in the rural sector in Zambia.

FEMALE SPEAKER (RITA): Thank you very much for your contribution and I think that you echo some of the sentiments that also Grace very eloquently touched on regarding the indirect costs, even in situations where for example TB treatment and now antiretroviral treatment ease or would be free of charge. Thank you. I believe that my co-chair Lucy has a question. I think we have to hear what she has in her mind.

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LUCY CHESIRE: Thank you, Rita. The first question is basically to Ian, and now that he has mentioned that he is working in a PEPFAR funded project, what are you doing considering that when you look at the African scenario, there are many countries that are actually faced with the challenge of food and security, how are you marching in the issue of ART in the low income areas? We have been trying to come up with strategies that would be able to address the issue of food and security and the other question is to Stewart, I am rather concerned as a nutritionist who is practicing in an HIV program, why is it - I don't know whether this was an oversight - that you don't have nutritionists in Zambia?

STEWART REID: I'll let Ian go first. [Laughter]

IAN SANNE: [Inaudible] question, so on the PEPFAR program, percent has not found any food security, however the national program in South Africa does require for each of the treatment sites to the CCNT sits to in fact integrate nutrition education as part of the site plans for roll out of ARVs. There are a number of NGOs that support the ARV treatment sites in particular in our setting [inaudible] who provides particular nutrition support to the extremely malnourished patients identified within the clinic. As part of the services of the clinic, South Africa has a very good social network and disability grants can be applied for periods of time if our patients are extremely ill and child

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[inaudible] grants and one of our strategies for food security is to apply for such grants.

STEWART REID: I think Lucy quickly picked out one of the weaknesses of our system is that we do not have nutritionists in Zambia. We are working with the world food program to provide nutritional supplementation to patients. We have also noticed that patients who present with a low BMI, less than 16, is a strong predictor for mortality as there is no question that nutritional supplementation is something that we need to work more on. And we are looking at the issue of refeeding syndrome to see whether part of the early mortality that we may be seeing may be related to some electrolyte abnormalities including specifically phosphorous abnormalities that may develop in the early stages of immune reconstitution syndrome but yes, nutritionists are - we have a shortage in Zambia.

FEMALE SPEAKER (RITA): Thank you very much for these responses and questions. I wonder if there are any other burning issues from the audience? I know that we have practically come to the end of our time but considering that we had a late start due to the very popular and somewhat longer than [inaudible] preceding session, Lucy and I thought of allowing a few more minutes for this session. I think we have exhausted our thoughts on this very controversial and difficult issue, something that will require our thinking

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caps, our intelligence also in the future. Lucy, I call upon you to give some closing remarks. Thank you.

LUCY CHESIRE: Thanks, Rita, for that. I just want to sum up by saying that we actually need to address the issue of human resource shortages, more so in an era whereby we are seeing that in the majority of the ART sites, the staff are actually experiencing lots of burnouts and this in the long run is going to lead to uncompromised care. So this is an issue that as professionals we should actually take up and back up our support so that much more resource is actually coming up for health systems, [inaudible] and also the human resource supports and on that note, I am going to wish you all a lovely evening. If you haven't been to the Eiffel Tower, make sure you go up there, because it is really fun. [Applause]

[END RECORDING]