HIV care in non-industrialised countries

Charles F Gilks
Division of Tropical Medicine, Liverpool School of Tropical Medicine, Liverpool, UK

The HIV/AIDS epidemic is now most rapidly expanding in the non-industrialised world. As more and more poor people fall sick and die prematurely, the issue of care for the HIV-infected person living in a resource-poor country is of paramount importance. Rational and comprehensive care packages need to be based on proper understanding of the natural history of infection and accurate measurement of the HIV/AIDS disease burden. In the early stages of infection, disease progression is the same in non-industrialised nations as it is in industrialised countries. Once virulent diseases start, survival is short largely because of limited access to inadequate health care. Therefore, early HIV-related disease, as well as AIDS, are targets for care. Needs are diverse but can be considered as more of the same (e.g. to cope with additional cases of TB generated by HIV) and those new services such as voluntary counselling and testing and palliative care. Budgets are limited everywhere, but prioritisation can be promoted through drawing up a hierarchy of care needs. Specific HIV/AIDS services and the provision of anti-retroviral therapy come after basic services are implemented. Affordable ways to use disease-modifying drugs need to be pursued that are relevant to non-industrialised countries and which do not promote AIDS exceptionalism.

Human immunodeficiency virus (HIV) infection has now been recorded in every region of the world. With high-quality disease surveillance, the end-stage clinical manifestations of infection characteristic of acquired immunodeficiency syndrome (AIDS) were first noticed in a rich industrialised country. However, two decades after it was first described, it is abundantly clear that the main brunt of the epidemic is falling on resource-poor countries particularly in sub-Saharan Africa.

This has been a mixed blessing for non-industrialised nations. Undoubtedly, far more resources have been devoted to studying the virus and the spectrum of infectious and other diseases associated with a waning immune system than would have been the case if HIV had been an exclusively tropical problem. When an effective preventive vaccine is eventually manufactured, all will benefit. However, much of the new knowledge and many of the new products generated are geared to resource-rich nations and, therefore, usually have little relevance to resource-poor regions. This is particularly so with recent developments in...
the care of the HIV-infected person – dependent on high-technology approaches to diagnosing and managing clinical disease, and ready access to highly active anti-retroviral therapy that is almost universally accessible in the West.

With all that has been published and written about HIV/AIDS care, it may seem strange to say that in non-industrialised countries the first problem is a relative dearth of knowledge about the spectrum of HIV-related disease, how to diagnose and treat in a resource-poor setting. It is also an undoubted problem that very little has been done to describe rational and appropriate approaches to care in communities where at best most sick people only have access to the bare minimum of clinical services. And whilst there is now clear awareness of the global inequity in the differential access to anti-retroviral therapy (ART) according to the financial status of the patient's homeland, and much has been written and said about drugs, HIV care in the non-industrialised world is not just about lack of drug.

Natural history of HIV/AIDS relevant to care

High background morbidity, not rapid early disease progression

One feature distinguishes the natural history of HIV in non-industrialised countries from that described in rich industrialised societies – dealing with the consequences of progressive ill-health and immunosuppression on a background of poverty and lack of resources. The environment for most poor people is unhygienic and unhealthy, characterised by high exposure to ordinary, as well as opportunistic, pathogens. With such exposure, it is well recognised that infants in the tropics suffer far higher rates of acute respiratory infections, tuberculosis and diarrhoeal disease than in the West.

Adults are also similarly exposed. Knowing that HIV infection predisposes to specific bacterial and mycobacterial infections in the West, it will come as no surprise that, in the slums and shanties of the non-industrialised world, tuberculosis, pneumococcal disease and non-typhoid salmonellosis are all leading clinical problems. As these pathogens are all virulent and quite capable of causing disease in the immunocompetent adult as well as child, it again will come as no surprise that such HIV-related problems cause significant morbidity in the early stages of disease progression. Survival following these early events may also be relatively good. Thus one carefully conducted cohort study in Uganda noted a median survival in excess of 4.1 years following pulmonary tuberculosis and 3.36 years following acute bacterial infection.
Another consequence of high exposure to virulent pathogens is that early manifestations of HIV may develop quite soon after seroconversion. These features are incorporated in the WHO staging system and if time to the different stages is considered (e.g. from seroconversion to stage 2 median 29 months; and to stage 3, 46 months) transition time can be interpreted as rapid disease progression. This particularly happens in cohorts where individuals are known to be HIV-positive, and where staging data may be backed up by limited clinical investigation of morbid events – because clinical manifestations are often over-fitted into AIDS diagnoses. Furthermore, several stage 2 (weight loss, minor mucocutaneous manifestations) and stage 3 events (marked weight loss, unexplained prolonged fever) are common in HIV-uninfected community controls when included, and these events occur at relatively high frequencies irrespective of HIV status. When staging is carefully conducted and matched with CD4 counts, it is clear that survival times for patients in the early stages of HIV do not indicate rapid progression.

Several groups propose that the higher background rates of endemic disease (in particular helminth infections, tuberculosis, sexually transmitted infections and, in many areas, malaria) generate ‘immune activation’ which drives rapid progression. Whilst this may be demonstrated in vitro in both HIV-infected and uninfected Africans (in and out of Africa), it is difficult to reconcile this with lack of evidence of this occurring in the early stages of HIV. Whilst viral loads may go up with acute malaria, this may only be transient and associated with acute febrile episodes; the outcome this may have on progression is likely to be limited. The most likely candidate disease significantly to disturb the immune system is tuberculosis. Even here whilst individual studies may show worse survival with TB, the control groups may not be strictly comparable; a comprehensive recent review found little evidence epidemiologically of a significant interaction. In African patients in the UK, there is no difference in survival with tuberculosis — indeed survival is better if TB is the first AIDS-indicator disease.

Poor survival with clinical AIDS

Poverty also influences disease presentation and quality of care. With few resources at hand, health seeking behaviour may be significantly compromised with delay resulting in late clinical presentation, and this is likely to increase mortality even in readily treatable conditions. It is extremely hard to quantify this in any fashion. Household studies would need to be very large, and identifying morbidity in any ethical study requires that the event is properly managed and treated. An indirect
measure of this is the much higher rates of mortality for community-acquired pneumonia in predominantly young adults in Kenya of 10%\textsuperscript{16}; in the UK comparable age-adjusted rates would be only 1–2%.

Whatever impact late presentation may have, it is compounded by inadequate healthcare services in which the facilities may be very basic and the quality of care provided highly compromised. The supply of essential drugs cannot always be maintained and simple diagnostic tests and radiology may not be available because of lack of supplies or machine faults. Trained staff may not be on hand to deliver even a limited basic package of care, either because they are not paid a living wage and need second jobs, or because HIV/AIDS is itself taking a toll on clinical staff. There are sadly no data to suggest in the non-industrialised world that healthcare staff are using superior knowledge about HIV to reduce their own risks of infection. There is little primary medical care and continuity of care in the community on discharge can rarely be organised.

These issues are likely to be critical with more severe ill-health and immunosuppression. There are far more data from Africa on mortality with an AIDS-defining illness, or when a patient develops stage 4 illness. All studies suggest that survival is far shorter than in the West\textsuperscript{17}. In a rural Ugandan cohort, median survival with stage 4 clinical AIDS was 9 months\textsuperscript{18}. In an urban Ugandan cohort, median survival with a CD4 count less than 200 was 9 months, whereas survival in an urban US cohort before the introduction of highly active anti-retroviral therapy median survival was 19–20 months\textsuperscript{10}. Whether this is all just inadequate health care, or whether inadequately treated virulent infections significantly up-regulate viral replication, drop CD4 counts and hasten death is not clear.

Clearly some patients do present with profound immunosuppression\textsuperscript{19}, but it is unclear how long they have been in this state, whether it is recent and a consequence of viral activation, or long-standing. In some patients with virulent infections, low CD4 counts rise on therapy\textsuperscript{a}. It must also be remembered that these data do not indicate rapid progression to the point of development of AIDS, only impaired survival with AIDS. Unfortunately, many authors look just at time-to-death and conclude that rapid disease progression throughout the course of HIV infection must be taking place\textsuperscript{20}, assuming that all death occurs at a similar point in the disease process\textsuperscript{21}.

**Rarity of the classical Western opportunistic infections**

With high early morbidity and mortality in non-industrialised countries, it is to be expected that fewer people will survive long enough to develop
profound immunosuppression or will survive long in such a state. Thus even with the ubiquitous exposure to opportunistic infections (OIs) in the environment, the rate of developing such conditions will be far lower in resource-poor countries for people who are poor and use government facilities. It is important to point out that the more affluent users of private hospitals are likely to experience a more typical western pattern of OIs, but these groups are in all non-industrialised countries just a small minority.

Pneumocystis pneumonia occurs but is consistently identified only in small numbers of patients who are from highly selected populations and bronchoscopyed\textsuperscript{22}, or at autopsy\textsuperscript{23}. Whilst \textit{Mycobacterium avium} infection does occur in Kenya, it is estimated to occur in only about 1\% of HIV/AIDS patients admitted to hospital\textsuperscript{24}. Autopsy data suggest, in some areas at least, that toxoplasma lesions may be common\textsuperscript{23}, but clinical studies suggest far fewer patients actually present with encephalitis; it seems that many of these lesions may be clinically silent, contributing little to clinical outcome. Geography may play some role here with potentially different rates of toxoplasma exposure, although in Kenya where rates of clinical disease are very low, the majority of adults have toxoplasma antibodies\textsuperscript{25}. The most important true opportunists seem to be fungal, with \textit{Cryptococcus neoformans} a problem across the tropics\textsuperscript{26} and \textit{Penicillium marneffii} restricted to South-East Asia\textsuperscript{27}.

**Epidemiology of the HIV/AIDS disease burden**

The size of the HIV/AIDS disease burden

Surveillance for HIV infection is now well established in most non-industrialised countries, with surveys of at-risk or sentinel groups regularly conducted. However, one epidemiological issue has not received appropriate attention, the burden of HIV/AIDS disease. Incredibly, in the second decade of the epidemic, no non-industrialised country has yet generated figures that document comprehensively the actual volume of HIV/AIDS disease presenting to the health services for care. Disease surveillance is at best haphazard, often relying just on the reporting of ‘clinical AIDS’ cases. This omits early HIV-related disease, as much presents without stigmata of underlying HIV infection.

Such an approach is based on western experience, where AIDS dominates clinical care but has little relevance where early non-AIDS disease is at least as important\textsuperscript{21}. Only with tuberculosis is regular serological surveillance carried out and this is still far too haphazard in most countries. Most care is delivered in health centres and community clinics, yet almost no disease surveillance has been carried out at this
level. Without knowing how much HIV/AIDS disease is presenting, where and at what stage of disease progression, it is impossible to describe adequately the care burden of any community (Fig. 1).

The HIV epidemic is dynamic and rapidly evolving across the non-industrialised world. Some countries may at last be showing stability or reductions in HIV prevalence. However, this has not yet had time to translate into stability in disease burden, where the number of people falling sick and needing significant healthcare equals the number of people dying. In all non-industrialised countries, far more people are
starting to fall sick with HIV/AIDS and steady state may be decades away. The consequences of this on the health system will be profound, but have hardly been touched upon. Clearly the demand for care will escalate for the foreseeable future; and because current disease surveillance focusing just on clinical AIDS is far too crude and inexact to generate any meaningful information or to capture changes evolving over time, active surveillance must be set up.

All HIV-related disease is ‘new’ in the sense that it would not have developed without the HIV epidemic. In high-prevalence countries this additional, new burden of disease presenting for care may be very large and growing, and may have a significant impact on healthcare services themselves. This is because the existing, pre-AIDS disease burden has not diminished in any way as the epidemic of HIV/AIDS disease has taken off. Few high-prevalence countries have been able to increase health spend in anticipation of this additional burden of disease; indeed, some health budgets have actually diminished in real terms. Another problem with inadequate disease surveillance is that it is quite unclear how such unprecedented shifts in the burden of disease have been met by health services.

The evolving and ever-growing disease burden

We have conducted two longitudinal studies in hospitals facing large HIV care burdens – one serving a rural district, Hlabisa in KwaZulu Natal, the other a government facility in an urban centre, Nairobi. The earliest evidence of the impact of HIV is the rapid and sustained rise in TB cases. In Hlabisa, the TB workload had doubled within 3 years of HIV being identified in the district in 1990; by 1997, 57% of all TB was attributable to HIV with an HIV prevalence in new patients of 67% (when a condition like HIV is common in the background population, it must be assumed that some patients with TB are coincidentally infected). In contrast, clinical AIDS cases were relatively rare in 1997 indicating the relatively long period the later stage diseases take to develop and perhaps that significant proportion of people die before developing clinical AIDS.

In Nairobi, the trends with time are equally revealing. Over a decade (1988–1997), the number of HIV-infected patients admitted per day to one hospital increased steadily from 4.3 to 13.9. There was a consistent pattern of disease over the study period, with bacteremia and mycobacteremia predominating, and there was no evidence of the classic western opportunistic infections emerging as the AIDS epidemic has matured. HIV prevalence in patients hospitalised in Nairobi doubled from 19% in 1988/1989 to 39% in 1992. Initial trends suggested that the
sick HIV/AIDS cases were crowding out the HIV-uninfected patients and that mortality rates were rising, effects that had been widely predicted. However, in 1997, admissions increased irrespective of HIV status, so the HIV prevalence stabilised at 40% whilst hospital bed occupancy nearly doubled from 105% to 190%. Far fewer patients with clinical AIDS were admitted over the decade (39% of HIV-positive patients initially falling to 24% in 1997) probably because of changes in health-seeking behaviour. Carers seem less likely to bring in potential AIDS sufferers because of perceived stigmatisation or lack of confidence that much can be achieved. With a changing spectrum of early versus late disease/AIDS over the time period, in-patient mortality actually significantly fell – from 36% to 23% – despite the rise in bed occupancy. These counter-intuitive results may be unique to Nairobi, or a common feature in non-industrialised countries. It is very frustrating to note that there are no other comparable data bases to refer to. If these responses are common, then they have important implications for care particularly if patients with end-stage disease remain in the community.

Planning and implementing a comprehensive care policy

Comprehensive care across the continuum

HIV/AIDS is a spectral disease that progresses through several more or less distinct stages. This is important when considering what care needs to be provided, because this clearly relates to the different stages of disease (Fig. 2). This is not so obvious if there is limited perception of the importance of early disease; or if it is invisible because there is no surveillance system in place to record it. On the other hand, it is emphasised by discussing the need to provide ‘comprehensive care across the continuum’, a phrase first coined by van Praag when in the WHO.

An overt focus on clinical AIDS has tended to obscure the earlier, more treatable part of the disease process, minimised the true impact that is being felt in hospitals and perhaps health centres and constrained the development of comprehensive care policies. Care is not synonymous with home-based care and trying to deliver services just for patients with AIDS is an incomplete response. Focusing on AIDS alone, re-inforces the negative, that we have little control over this disease, and can do very little good – rather than the positive, that much early disease is successfully treated and that even with basic drugs and facilities something can always be done. It is bad for the patient and his or her carer who need to be encouraged and educated into realising that they can do something for themselves by early presentation of symptoms – especially in TB but with other acute problems too. It is also very bad...
for staff motivation and morale and although poorly documented both recruitment and staff retention are becoming major problems for health services in high-prevalence countries.

<table>
<thead>
<tr>
<th>HIV status</th>
<th>Asymptomatic</th>
<th>Early HIV disease</th>
<th>Late HIV Disease</th>
<th>AIDS</th>
<th>Terminal</th>
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<tbody>
<tr>
<td>Likelihood that symptoms are recognised as HIV related</td>
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**HIV testing and counselling**
- accessible VCT services
- ongoing psychological support

**Enhance existing services for:**
- pulmonary TB
- pneumococcal pneumonia
- bacterial skin infections
- acute diarrhoea
- acute sinusitis

**Enhance service for symptom relief:**
- shingles/post herpetic neuralgia
- HSV-related Bells palsy
- Pruritis

**Specialist services for:**
- disseminated TB
- chronic diarrhoea and wasting
- invasive Salmonella septicaemia
- fungal meningitis
- Kaposi's sarcoma
- Oral/oesophageal Candida
- disease prophylaxis
- anti-retroviral drugs

**Specialist palliative care service:**
- pain relief
- management of distressing symptoms (diarrhoea, cough)
- Spiritual/emotional support

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**Fig. 2** Evolving care needs with stage of HIV/AIDS disease.
New services to set up

Planning a response involves identifying what new services or interventions are needed that were either not widely promoted or did not exist prior to the HIV/AIDS epidemic. The most important of these are counselling services which have a pivotal role in HIV/AIDS care. Voluntary counselling and testing (VCT) is the entry point to care – without a person knowing his or her positive HIV status, it is obvious that specific care services cannot be effectively utilised. Because of the stigmatisation and discrimination around the diagnosis, it is universally accepted that there are special constraints around making a diagnosis of HIV infection that do not exist with other infectious or terminal conditions. This involves discussing the possibility of the diagnosis, then if the patient or client so wishes, informing the person of the test result. The process is voluntary and implies consent to the test procedure. This is a new concept which has come with HIV in non-industrialised as in industrialised countries. It has meant putting in place a new cadre of staff trained in counselling and implementing a new service. It is also a service which links the entry-point to care effectively with HIV prevention. One may hope that with more people knowing their HIV status that the demand for effective care services downstream may then grow, as in the West people living with HIV/AIDS have been very effective advocates for this. One important point to note in linking care with prevention is that in non-industrialised countries, the credibility of AIDS programmes will increasingly be judged by the quality of care they offer.

At the other end of the disease process is the need for palliative care services. Whilst death is not new, the HIV/AIDS epidemic has focused attention on the needs of the dying. Prior to HIV, death usually came at the extremes of life and the economically active adults (usually the women or mother) provided the necessary care and support. There was relatively little call for specialised terminal care. Unfortunately, all this has changed with the HIV epidemic as it is precisely this group who are falling sick and dying; whilst some people die relatively quickly with overwhelming infection, many have chronic and debilitating end-stage disease. The traditional social safety net in most non-industrialised countries is the extended family. This is being overwhelmed by the death of so many breadwinners and heads of household and cannot cope.

More of the same

The early disease burden comprises virulent infections such as TB, pneumonia and Gram-negative sepsis, which may present with fairly typical clinical features but at much higher rates. Blood-stream invasion is common. These diseases usually respond well to standard therapy.
Indeed impressive improvements can be achieved in survival without high-technology inputs or non-essential drugs. With TB, the delivery of standard therapy with DOTS is a major advance. Thus the problem in managing these patients is not that the diseases are new and require new facilities and drugs, but simply that there is extra volume to treat. It must be emphasised that HIV-uninfected people get TB, pneumonia and invasive bacterial infections, albeit at lower rates than those with underlying HIV infection. It is important to concentrate on care services that will serve all – both for equity, and because those negative will increasingly be expected to care for their sick relatives in the community.

This is recognised very well for tuberculosis control, perhaps because TB is vertically organised and there is an effective global TB unit in WHO. Certainly the most important HIV-associated disease from a care perspective as well as public health perspective is TB. However, most TB control is delivered outside hospital, and delivering ‘more of the same’ needs also to take into account clinical problems that present to the general medical services. Whilst in Nairobi it is not invariably the case that these services will collapse, without somehow being strengthened and supported the staff will suffer great stress and morale and motivation will inevitably suffer.

Research relevant to non-industrialised countries

Clinical and operational research has a vital role to play in planning rational care policies for a new epidemic. Unfortunately, most research on HIV/AIDS disease is conducted in resource-rich countries and is of very little relevance to non-industrialised countries. Sufficient data exist to be clear that there is a different spectrum of disease in poor communities; that virulent bacterial and mycobacterial infections predominate, and will respond to standard treatment. One remaining issue is whether such morbidity can be prevented.

A number of studies have shown that preventive treatment (chemoprophylaxis) given for 3–12 months protects against TB in adults infected with HIV, at least in the short-to-medium term. Protection is greatest in subjects who are ppd-skin test positive. This intervention requires all patients to be carefully screened for active TB to prevent inadvertent monotherapy. Co-trimoxazole chemoprophylaxis offers protection against morbidity, and in patients with tuberculosis against mortality, in a region with low community levels of drug resistance, largely by preventing pneumonia, bacterial infections and malaria. In most non-industrialised countries co-trimoxazole resistance is widespread and it is not clear how effective chemoprophylaxis will be in such areas. The problems with any intervention which requires regular pill-taking is ensuring adequate
adherence and in a resource poor environment may limit the widespread implementation of primary prevention. Unfortunately, pneumococcal polysaccharide vaccination, a single injection deliverable without any adherence issues, has recently proved to be ineffective and may even be harmful in African adults infected with HIV. More research is required in appropriate primary disease prophylaxis.

A hierarchy of care

Prioritising care needs

Non-industrialised countries are invariably short of financial resources and cannot afford to implement all of these initiatives included in a comprehensive and rational care package. There is a clear need to prioritise the more critical from those less vital, which depends on what infrastructure already is in place. With this in mind it is possible to construct a hierarchy of care services (Table 1).

Such a practical approach may appear to be inimical, and indeed some AIDS activists dispute the validity and morality of such an approach – specialist services including ART must be made available now, as it is in the West. Others feel that this is grounded in reality and that, whilst it is important to press for more resources just for HIV/AIDS, in the real world there are competing needs in public health and disease care and priorities have to be selected. It would seem sensible only to advocate widespread specialist services when other more basic services for HIV/AIDS patients can be assured.

Access to anti-retroviral therapy

To many activists in the West, the main issue about HIV/AIDS care is even more focused on the huge inequity in access to ART in the non-industrialised world, now bearing the main brunt of the HIV epidemic. Somehow mechanisms must be found to provide drugs so that the single global standard of care for HIV/AIDS, that practised in the West, can be adopted. This ignores the huge investment necessary in the capacity to use such drugs properly (training, laboratory monitoring, drug distribution); and runs the risk of being inequitable itself, as so many resources are devoted to HIV/AIDS. What about malaria, tuberculosis and the other diseases of poverty the majority HIV-uninfected also suffer from. AIDS exceptionalism of this magnitude runs the very real risk of generating a major backlash and cannot be sustainable.
Table 1  A hierarchy of different care levels for resource-poor countries

<table>
<thead>
<tr>
<th>Care level</th>
<th>Services</th>
<th>Comments</th>
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<tbody>
<tr>
<td>The essential minimum</td>
<td>• Universally accessible HIV testing.</td>
<td>• Most countries in Africa have started implementing these basic minimum essential services.</td>
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<tr>
<td></td>
<td>• Support and counselling for the person with HIV/AIDS.</td>
<td>• Once implemented, providing basic HIV/AIDS education and information, and training staff in counselling and support skills, is relatively cheap and sustainable.</td>
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<tr>
<td></td>
<td>• Information and education which includes clear prognosis and advice on care and support issues.</td>
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<td></td>
<td>• Access to PW/HIV/AIDS groups.</td>
<td></td>
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<tr>
<td>Basic care delivery within the existing</td>
<td>• Restructured tuberculosis control services with the capacity to cope with rising demand.</td>
<td>DOTS is being introduced and will improve the capacity for TB control to be delivered.</td>
</tr>
<tr>
<td>healthcare services</td>
<td>• Restructured hospital services with the capacity to cope with rising and changing case-load in equitable fashion (HIV/AIDS and non-HIV equally considered).</td>
<td>Where confidence exists in hospital care, crowding out of patients and reduced quality of services are becoming evident. No solutions are yet identified.</td>
</tr>
<tr>
<td></td>
<td>• Improved primary healthcare services (health centres, clinics and dispensaries) to include specific HIV/AIDS care packages.</td>
<td>Often spare capacity in clinics and health centres; little yet done to develop existing potential or improve referral patterns.</td>
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<tr>
<td></td>
<td>• More resources for terminal care.</td>
<td></td>
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<tr>
<td>Introducing specific HIV/AIDS clinical services</td>
<td>• The purchase and provision of drugs for opportunistic infections that are not on essential drugs list.</td>
<td>To pay for such services, more money has to be voted to the health sector or redistributed within existing health budget.</td>
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<tr>
<td></td>
<td>• Establishment of technology to diagnose and manage common opportunistic infections.</td>
<td>For many African countries, the initial stumbling block has been the treatment of fungal infection</td>
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<tr>
<td></td>
<td>• Provision of clinics and centres from where primary/secondary prophylaxis can be delivered.</td>
<td>Equity and access issues complex and largely unresolved.</td>
</tr>
<tr>
<td>Providing disease-modifying anti-retroviral</td>
<td>• The purchase and provision of anti-retroviral drugs in keeping with current consensus guidelines.</td>
<td>Massive investment necessary to finance such a new initiative, and sustain it once implemented.</td>
</tr>
<tr>
<td>therapy</td>
<td>• Establishment of technology to manage HIV/AIDS patients on anti-retroviral therapy.</td>
<td>If poorly implemented, threat of drug-resistance is major concern.</td>
</tr>
<tr>
<td></td>
<td>• Expansion of existing HIV/AIDS treatment clinics to accommodate anti-retroviral therapy.</td>
<td>Equity and access issues complex and largely unexplored.</td>
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What is needed is to integrate AIDS care into mainstream care and to improve globally access to care. Resources for healthcare need to be increased in an equitable fashion. Within such a system, the issue with ART is how these can be incorporated in a way that is sustainable and affordable. The research question is how best to use powerful, but expensive, ART in ways appropriate to a resource-poor environment. Recognising that these drugs can be used in a variety of ways in addition to the 'standard of care' in the West is vital. If that is accepted, then it is possible to seek ways that ART can be used for short-term benefit which either governments can subsidise, or individuals can choose to buy. Erecting one standard of care, life-long triple therapy, means that such approaches are by definition sub-standard. But it then erects impossible barriers for governments to fund, or individuals to purchase. Pragmatism suggests that we need to explore ways to use ART for short-term benefit to increase access. Then at least some of the therapeutic advances made over the last decade would impact on non-industrialised countries.

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