OCCUPATIONAL HEALTH

HAART for hospital health care workers — an innovative programme

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South Africa is currently in the midst of the world's worst HIV/AIDS epidemic, carrying 10% of the burden of the disease while having only 1% of the world's population. KwaZulu-Natal, the most populous province, is currently the worst affected region, with the largest number of infected people in South Africa.[1] The burden of HIV/AIDS has placed a severe strain on the health services, with estimates of 50% of hospital beds being occupied by AIDS patients.[2] A seroprevalence of 16%[3] among health care workers, coupled with a severe shortage of nurses in South Africa (31 000 nursing posts vacant, 6 098 in KwaZulu-Natal) (Report by Minister of Health, Parliamentary Question Time, August 2003), suggests a potentially disastrous impact on provision of health care in the foreseeable future.

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McCord Hospital is a 180-bed, community-orientated hospital with a staff of 500. It offers a comprehensive package of prevention, treatment and care for patients with HIV/AIDS. However, for many staff, providing nursing care to dying young adults while knowing themselves to be at risk of HIV or HIV-positive has been a tremendous emotional burden. Despite the availability of counselling and support services offered to patients and the known benefits of antiretroviral (ARV) therapy,[4,5] few staff had been willing to be tested or to come forward for treatment even when sick. Denial, fear and hopelessness were common and the lack of easy access to ARVs for their patients and themselves compounded these feelings.[6]

From June to September 2001, 4 female staff members died of AIDS in the hospital. All these women were afraid of being tested or identified as being HIV-positive. One knew of her

positive HIV status but did not inform any of the hospital doctors looking after her. The other 3 were aware that they were ill but were not willing to be tested for HIV until very late in their illness. Their deaths in the hospital wards, being nursed by their colleagues, with much speculation about the cause of their illnesses, had a tremendously negative impact on the morale of the staff. The provision of HAART to HIV-infected health care workers in South Africa may be critical to addressing these problems and to maintaining a healthy and committed workforce able to provide hope and care to HIV-infected patients.

Setting up the programme

In response to this need, an ARV discussion group was set up in September 2001 to explore the possibility of accessing ARV drugs for staff members. An estimate was made of the sick leave and medical costs of looking after the 4 staff members who had died during 2001 (Table I).

Table I. Costs of inpatient care and sick leave for 4 staff members who died of AIDS in 2001

	Costs (R)
Employee 1: meningitis	13 000
Employee 2: HIV renal failure	26 800
Employee 3: Kaposi's sarcoma	42 000
Employee 4: HIV polyneuropathy	24 150
Total costs	105 950
Mean cost per patient	26 500

Given the McCord staff complement of 500 and an assumed prevalence of 20% it was likely that 100 staff were living with HIV disease. We estimated that 20% or 25 of these staff members may need ARV treatment based on the Southern African HIV Clinicians Society Guidelines.[7] At a cost of approximately R12 000 a year in 2001, the maximum annual cost was estimated at R300 000. This cost was weighed against the anticipated increasing health and psychological costs of HIV disease among hospital staff.

A comprehensive staff HIV management programme covering testing, prophylaxis, monitoring and triple therapy with ARVs was developed by the staff doctor (KU) in consultation with an invited expert in HIV treatment in the developed world (GF). The programme was then discussed with various staff and management groups for their input and was enthusiastically accepted by all, although several concerns were raised.

Potential problems identified

Three main potential problems were identified during the process of informing the staff. These were: (*i*) confidentiality for the staff; (*ii*) criteria for staff eligibility and access to therapy; and (*iii*) support for adherence to therapy.

Confidentiality

One of the factors contributing to the reluctance of staff to be tested and treated was the location of HIV services in the HIV clinic. It was therefore decided to locate the staff HIV services at the staff clinic. The staff clinic functions as a family practice for the staff with free consultation, treatment and admission. This service has been widely used by the staff for some years, as they do not have medical aid. Staff with tuberculosis (TB) were already being treated through the staff clinic. The staff clinic was therefore chosen as the best place to provide a confidential and comprehensive service.

Confidentiality of blood testing was thought to be critical to take-up of the service. The staff doctor would do counselling and blood taking, all HIV bloods from staff would be coded, and results and consents would be kept in a separate confidential file. Medical notes on ARV therapy would be kept discreetly in a separate compartment in the staff member's medical file.

Despite a request that ARVs be dispensed by the staff doctor it was decided that they be dispensed by senior pharmacists. The hospital staff and counsellors accepted this partly because the senior dispensary staff were seen as less likely to be on the gossip network than the dispensary assistants, who were more likely to be from the same community as the staff requiring ARV therapy.

Access to therapy

During feedback from the staff there was concern about who would be eligible for treatment. The decision was made to offer free treatment to all permanent staff and to all pupil nurses employed by McCord Hospital. There was also discussion on continuing treatment for staff who left the hospital. This was particularly important in the case of pupil nurses who only trained at the hospital for 2 years. Staff who left the hospital would be charged normal outpatient rates but could continue to be seen by the staff doctor if they wished. The only exceptions were staff who retired or who were boarded after more than 10 years of service; they would be given free ARV therapy if necessary.

For staff members leaving the hospital, but not able to take over paying for ARVs themselves, all three drugs would be stopped at one time. Even if they only had a short period of ARV therapy they would benefit from the immune reconstitution, be unlikely to develop resistance and could recommence the same drugs at any time in the future.

Treatment adherence

Recognising the importance of excellent adherence,[8-10] various options to encourage adherence with ARV therapy were explored. One possibility was supervised treatment akin to the TB DOTS (directly observed short-course therapy) system.[11] We discussed designating treatment supporters from among the staff HIV counsellors, but there was concern that many staff would not be comfortable with being allocated one of their colleagues as an HIV treatment supporter. Two strategies were chosen to try and support adherence with ARV therapy.

The first was thorough information and counselling on ARV therapy by the staff doctor over two or three visits, discussing treatment, side-effects, the critical importance of adherence and the risk of resistance.[12] Secondly, staff commencing ARV therapy would be supplied with seven plastic screw-cap bottles labelled Monday to Sunday in which they would pack all their medication for a week including ARV therapy, TB treatment and prophylactic treatment.

Components of the McCord Hospital HIV management programme

The HIV management programme includes confidential counselling and testing by the staff doctor; annual disease stage assessment and screening including CD4 counts, chest X-rays and Pap smears; and prophylaxis against TB, pneumocystic pneumonia and cryptococcal infection. In line with current World Health Organisation (WHO) recommendations[5] and considering that the hospital could only afford drugs from a restricted list, therapy is offered to patients with CD4 counts less than 200 or a CD4 count less than 350 plus significant symptoms, e.g. atypical TB or prolonged diarrhoea. Monitoring of therapy is done according to standard recommendations from the Southern African HIV Clinicians Society Guidelines.[7]

Drug regimens and costs

The 'first-step' ARV therapy was chosen as stavudine (d4T) and didanosine (ddI) together with either efavirenz or nevirapine because this was the most cost-effective regimen available to the hospital at the time (November 2001). 'Alternative first step', where ddI would be replaced by lamivudine (3TC), would be used if there was a strong history of alcohol abuse or pancreatitis or raised amylase. In the case of pregnancy, treatment failure or known resistance to the 'first-step' drugs, the 'second step' would be zidovudine (AZT), 3TC and either efavirenz, nevirapine or indinavir. The hospital would pay for the whole cost of baseline and monitoring tests and drugs from the 'first step' and 'alternative first step'. The hospital would subsidise 50% of the cost of drugs from the 'second step' (Table II). The cost of other ARVs precluded their being included in the initial programme.

Table II. Costs of different drug regimens (2001)

Regimen	Cost per month (R)
First-step drugs (ddI, d4T, efavirenz or nevirapine)	700
Alternative first-step drugs (replace ddI with 3TC)	900
Second-step drugs (AZT, 3TC, efavirenz or nevirapine or indinavir)	1 400

Results of implementing the staff HIV programme

The programme has been in place since November 2001. Since then there has been a large amount of interest in the programme from hospital staff as gauged by the number being tested for HIV, having CD4 counts, going onto TB prophylaxis and being placed on ARV therapy. For the 3-year period before that, viz. January 1999 - December 2001, few staff members were counselled and tested for HIV in the staff clinic (7 in 1999, 6 in 2000 and 11 in 2001). In late 2001, 2 had CD4 counts done and were started on ARV therapy. One staff member paid for her own treatment before the programme started, but died 2 months later of pulmonary Kaposi's sarcoma. The other was the first member to go onto the programme and responded well to the treatment.

For the period January - December 2002, the first full calendar year of the programme, 38 staff were counselled and tested, a more than three-fold increase on the pattern of the previous 3 years. As a result of this testing and others coming forward, 21 HIV-positive staff had CD4 counts done. Eight of these were given TB prophylaxis. By the end of 2002, 4 staff members were on ARVs (3 of whom were also on TB treatment) and all were doing well. In total 22 staff members were on the programme (Fig. 1).

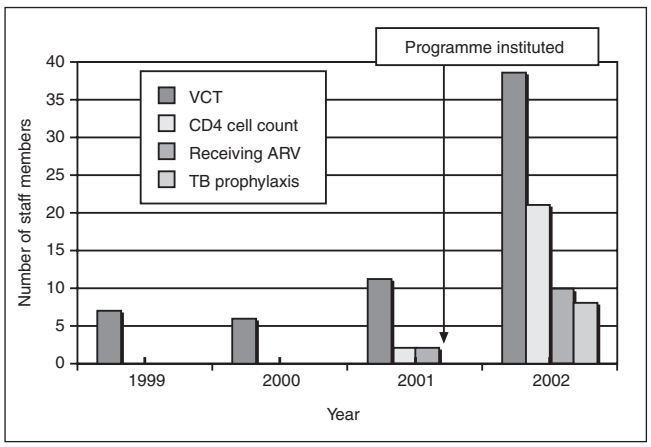

Fig. 1. Results of the McCord Hospital HIV staff programme.

By August 2003, 27 staff members were on the programme, and another 8 who had been on the programme had left the hospital. Ten staff members were on ARV therapy, 4 of whom were also on TB therapy. One pupil nurse who was on ARVs had stopped treatment as she had finished her training and had not yet found work. Another pupil nurse who was on ARVs and TB treatment for 12 months stopped treatment after developing treatment failure. She could not afford 'second-step' drugs.

There have been many positive reactions to the programme. Many of the staff HIV counsellors provide ongoing support to their HIV-positive colleagues. An HIV-positive pupil nurse has spoken about her status with many of her colleagues and has encouraged them to go for testing. A professional nurse, who was nursed by her colleagues when very ill, was initially very frightened of being identified as HIV-positive. She has not told many of her colleagues her status, but she does tell them she went to the staff clinic to 'find out what was wrong' and got 'the right treatment'. However there are still staff members in fear and denial. During the year 2002, 2 staff members known to the staff doctor died of suspected AIDS. Both had refused HIV testing.

Costs for the 12-month period January 2002 - December 2002

The cost to McCord for the first calendar year of providing ARVs and monitoring bloods (i.e. CD4 and viral loads) was approximately R40 210 (Table III). Only 1 staff member was on treatment for the whole year. The other 3 started at various times through the year. Three were on 'first-step' drugs and 1 was on 'alternative first-step' drugs. In the first year no staff members were on 'second-step' drugs and therefore all the costs were borne by the hospital. These figures are for ARVs and HIV bloods only. Should their prices decrease, substantial savings would result.

Table III. Costs of antiretrovirals and HIV bloods for first 12 months of the programme

	Cost (R)
Antiretrovirals for 4 staff members who started treatment at various times through the year	28 800
CD4 and viral loads for 4 staff members on antiretrovirals	8 800
CD4 count only on annual check-ups on 18 staff	2 610
Total	40 210

Conclusions

We believe that this programme represents the first formal attempt by a South African hospital to offer HIV treatment and care to its staff. The development of the programme was motivated by the increasing number of staff members who were sick and dying of AIDS. We believe that such a programme can serve as a model for other institutions that may wish to embark on HIV testing and treatment for their staff.[13]

The programme was developed with the following essential elements. Firstly, the programme was discussed with all groups within the hospital including management, unions, the staff HIV counsellors, and in small groups, the staff themselves.

Secondly, the service was located within the staff clinic, a family practice within the hospital. The service is therefore comprehensive, managing minor ailments, chronic illnesses, TB and HIV. It is also confidential in that the staff do not have to fear they will be seen going to an HIV clinic and in that all the counselling, testing, prescribing and follow-up is done by the one staff doctor. Thirdly, the staff doctor (KU) has had access to expert advice and support from the TB services at Durban Chest Clinic and from an experienced HIV physician (GF). The major clinical challenges have been from the rapid and complicated presentations of TB in many of these severely immunocompromised patients.

Some difficulties were encountered with the programme. Firstly, there were side-effects with 'first-step' drugs. Peripheral neuropathy has been the major problem and was experienced by all 3 staff members on ddI and d4T regimens in the first year. This was especially so for the 2 who were also on isoniazid-containing TB regimens. All 3 managed to cope with the side-effects with pyridoxine supplementation and the symptoms remitted spontaneously or on completion of TB treatment. The decreasing costs of ARV drugs will make it possible to offer regimens of comparable efficacy and reduced side-effects and toxicity.

Secondly, because of confidentiality concerns, all of the adherence counselling was done by the staff doctor. However, 2 of the staff were poorly adherent, not fully understanding the importance of or being able to maintain 100% adherence. This was compounded in these 2 staff members by the high pill burden. They were both on TB treatment and 1 was also taking fluconazole for secondary prophylaxis of cryptococcal meningitis. Poor adherence probably contributed to treatment failure in 1 of them.[8] We are now using two extra strategies to support adherence — treatment diaries and identifying treatment supporters from among family or friends.

Thirdly, the fact that the counselling, testing, prescribing and follow-up is done by the one staff doctor has been both a bonus and a problem. It has helped protect confidentiality but has been labour-intensive for the doctor running a busy staff clinic. The addition to the programme of a senior counsellor acceptable to all staff would make a difference. However, this person would have to have other responsibilities apart from HIV counselling so that staff do not fear being identified as being HIV-positive by going to this counsellor. Even so, staff may still not be willing to discuss their HIV with a designated staff HIV counsellor.

Despite these difficulties, our experience indicates that offering HIV care and treatment to health care workers is humane, feasible and cost-effective and represents an important entry point for the use of ARV therapy in South Africa.

1. Whiteside A, Sunter C. *AIDS The Challenge for South Africa*. Cape Town: Human and Rousseau, 2000.
2. Colvin M, Dawood S, Kleinschmidt I, Mullick S, Lalloo U. Prevalence of HIV and HIV-related disease on the adult medical wards of a tertiary hospital in Durban, South Africa. *Int J STD AIDS* 2001; **12:** 386-389.
3. Shisana O. Impact of HIV/AIDS on the health sector: Implications for the health care worker. Symposia session. Proceedings of the South African AIDS Conference, 3 - 6 August 2003.
4. Patella F J jun., Delaney KM, Moorman AC, *et al*. Declining morbidity and mortality among patients with advanced human immunodeficiency virus infection. HIV Outpatient Study Investigators. *N Engl J Med* 1998; **338:** 853-886.
5. World Health Organisation. Scaling up Antiretroviral Therapy in Resource-limited Settings: Guidelines for a Public Health Approach. Geneva: WHO, 2002. http://www.who.int/hiv/pub/prev care/pub18/en/
6. Hosseinipour M, Kazembe N, Sanne I, van der Horst C. Challenges in delivering antiretroviral treatment in resource poor countries. *AIDS* 2002; 16: suppl 4, S177-S187.
7. Southern African HIV Clinicians' Society Clinical Guidelines. Antiretroviral therapy in adults. June 2002 version. *Southern African Journal of HIV Medicine* 2002; March (issue 7): 35-42.
8. Mannheimer S, Friedland GH, Matts, Child C, Chesney M. The consistency of adherence to antiretroviral therapy predicts biologic outcomes for HIV infected persons in clinical trials. *Clin Infect Dis* 2002; **34:** 1115-1121.
9. Chesney MA, Ickovics J, Hecht FM, Sikipa G, Rabkin J. Adherence: a necessity for successful HIV combination therapy. *AIDS*. 1999; **13**: suppl A, S271-278.
10. Friedland GH. Adherence to antiretroviral therapy. *Journal of the HIV Clinicians' Society of South Africa*, 2002: 25-32.
11. Volmink J, Matchaba P, Garner P. Directly observed therapy and treatment adherence. *Lancet* 2000; **355:** 1345-1350.
12. Friedland GH, Williams AW. Attaining higher goals in HIV treatment: The central importance of adherence. *AIDS* 1999; 13: suppl S61-S72.
13. Plumley B, Mistry N. Employees HIV/AIDS: action for business leaders. Proceedings of the XIV International AIDS Conference, Barcelona, 7-12 July 2002 (abstract MoPpF2035).