Healthcare utilization by a cohort of late-stage HIV-positive patients commencing antiretroviral medication in South Africa

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Introduction:

The roll-out of antiretroviral therapy (ART) in Africa will have significant resource implications, not only from the cost of antiretrovirals, but also its impact on demand for healthcare services.

Existing cohort studies of healthcare utilization on ART have been conducted in the developed world, where HIV illness is far less advanced at ART commencement than in Africa.

There has to date been no research on the short-term resource impact of scaling-up ART provision.

Objectives:

- To measure the level of healthcare utilization by severely immune-suppressed patients beginning ART.
- To assess patterns of healthcare utilization in this cohort over time and by site of care.

Methods:

The Site

The Hannan Crusaid Treatment Centre (HCTC) is a dedicated ART clinic located in a peri-urban settlement near Cape Town. The site was the first public-sector ART clinic in the Western Cape province when it was begun in September 2002. The clinic acts as the primary healthcare site for all enrolled patients, referring them to higher levels of care as appropriate.

Patients in the cohort were usually referred to the nearest secondary and tertiary hospitals, but also attended other secondary facilities as well as a dedicated tuberculosis hospital and a hospice.

The Analysis

The first 212 eligible patients (criteria included a CD4 count <200/µl or a history of an AIDS-defining illness, status disclosure and attendance of treatment readiness sessions) screened at the HCTC were retrospectively tracked from enrollment until between 12 and 28 months on ART.

Data on visits made to the HCTC, local hospital clinics and inpatient wards were collected from paper and computerized records. The number of outpatient visits (OPV) and inpatient days (IPD) was calculated for each patient.

Visits were categorized by type of institution accessed, whether the visit was outpatient or inpatient, by the primary reason for seeking care and by the timing of the visit relative to the commencement of ART.

Trends in visit rates were evaluated using the Cochrane-Armitage χ^2 test.

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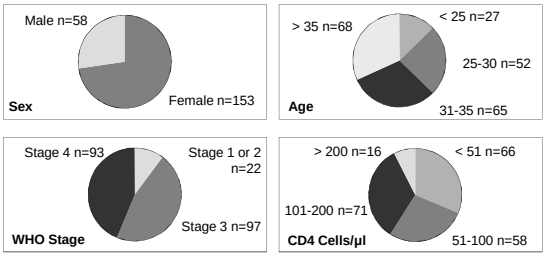
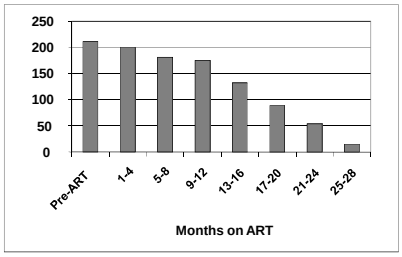
Background Characteristics:

The Cohort at Baseline



Number of Patients under Observation



Results:

Outpatient Visits

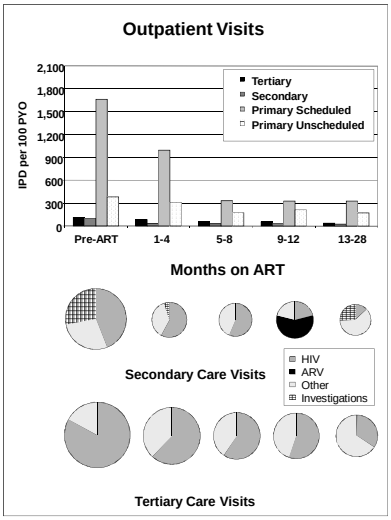
The majority (64.2%) of all outpatient visits were scheduled visits to the primary care clinic while another quarter (24.8%) were unscheduled visits to the same site. More tertiary clinic than secondary clinic and emergency care visits were made.

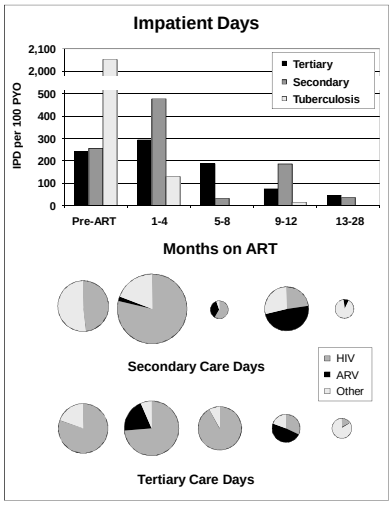
Overall outpatient visits per 100 patient years of observation (PYO), excluding scheduled primary care follow-up, fell from 596 immediately prior to ART to 334 in the first year on therapy and 245 thereafter.

Both secondary (χ^2=10.0, p<0.002) and tertiary (χ^2=15.6, p<0.001) outpatient visit rates were highest prior to ART, falling over time on treatment. The proportion of all visits made for HIV-related reasons fell consistently at both levels of care.

Between nine and 12 months on treatment over half of all secondary care visits were for illnesses related to Stavudine. After 12 months on treatment the majority of visits at both levels of care were for non-HIV-related illness.

The most frequent HIV-related causes of hospital visits were Kaposi's sarcoma, CMV retinitis and cryptococcal meningitis. Chief causes of non-HIV-related demand were ophthalmic, hepatic and antenatal care.





Inpatient Stays

Total inpatient days fell from 2,560 days per 100 PYO prior to treatment to 476 days in the first year on therapy and 73 days thereafter. The overall trend was highly significant (χ^2=239, p<0.001).

The great majority of inpatient time prior to treatment (81%) was for five patients admitted to a dedicated tuberculosis hospital. At the tertiary level of care the rate of inpatient days rose as treatment began before declining after four months on treatment.

A similar pattern was seen at the secondary level, with the exception of the nine to 12 month period, when stays for illness related to Stavudine, primarily lactic acidosis, raised the number of days. After 12 months on treatment almost all inpatient demand was due to non-HIV-related illness.

The most frequent HIV-related causes of inpatient days were tuberculosis, neoplasms other than Kaposi's sarcoma and cryptococcal meningitis. Chief causes of non-HIV-related demand were cardiovascular illness and antenatal care.

Discussion & Conclusions:

1. The fall in inpatient care seen in the developed world at the commencement of Highly Active ART was replicated in this cohort, with a brief delay. The rise in outpatient care seen in the same setting was not repeated here however. These patterns are likely to have been linked to the highly immune-compromised nature of these patients at baseline, which emphasises the resource cost of delaying ART provision.
2. Demand for HIV-related care fell even more rapidly than overall demand. After 12 months on treatment the great majority of hospital care demand was for non-HIV-related illness.
3. A few patients were responsible for a very large proportion of overall demand. These people were not, however, predictable by baseline WHO Stage, CD4 count or Viral Load. A larger study might provide sufficient statistical power to discern some such pattern.
4. Stavudine has a noticeable impact on service use with 3% of all patients who commenced ART having to be hospitalized for lactic acidosis or peripheral neuropathy. The trade-off between the low cost of Stavudine and the cost of treating related illness should be carefully considered.