Expansion of antiretroviral treatment to rural health centre level by a mobile service in Mumbwa district, Zambia

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Problem Despite the Government's effort to expand services to district level, it is still hard for people living with HIV to access antiretroviral treatment (ART) in rural Zambia. Strong demands for expanding ART services at the rural health centre level face challenges of resource shortages.

Approach The Mumbwa district health management team introduced mobile ART services using human resources and technical support from district hospitals, and community involvement at four rural health centres in the first quarter of 2007. This paper discusses the uptake of the mobile ART services in rural Mumbwa.

Local setting Mumbwa is a rural district with an area of 23 000 km^2 and a population of 167 000. Before the introduction of mobile services, ART services were provided only at Mumbwa District Hospital.

Relevant changes The mobile services improved accessibility to ART, especially for clients in better functional status, i.e. still able to work. In addition, these mobile services may reduce the number of cases "lost to follow-up". This might be due to the closer involvement of the community and the better support offered by these services to rural clients.

Lessons learnt These mobile ART services helped expand services to rural health facilities where resources are limited, bringing them as close as possible to where clients live.

Une traduction en français de ce résumé figure à la fin de l'article. *Al final del artículo se facilita una traducción al español.* الترجمة العربية لهذه الخلاصة في نهاية النص الكامل لهذه المقالة.

Introduction

Zambia is one of the sub-Saharan African countries worst affected by the HIV pandemic. In 2007, the prevalence rate among adults was approximately 14.3% and there were an estimated 1.5 million HIV-infected people.[1,2] In 2004, the government of Zambia declared HIV/AIDS a national crisis and launched a policy of free antiretroviral treatment (ART), that made free ART available in 322 sites.[2,3]

However, more than half of the population lives in rural areas where there is poor access to ART services.[1] Several studies reported that long travel distances are a potential barrier to accessing services and, after starting ART, they are a barrier to optimal adherence.[4–6] To improve accessibility, ART services need to be located as close to the community as possible. Thus, Mumbwa district health management team introduced a mobile ART service at rural health centres as a pilot programme of the Ministry of Health. This paper discusses the uptake of these mobile services in rural Mumbwa.

Local setting

Mumbwa District is one of 72 districts in Zambia, with an area of 23 000 km^2 and a population of 167 000. There are 28 public health facilities including a district hospital, as well as a mission hospital and private facilities. Health-care providers in the whole district consist of five medical doctors, 24 clinical officers, 44 nurses and 33 midwives. The district hospital plays a role as a referral hospital for care, support and treatment of HIV. It is equipped with an X-ray machine, a blood cell counter, a biochemistry analyzer, a CD4+ lymphocyte (CD4) counter, a microscopic examination and urinalysis. Rural health centres are usually staffed by only two to four medical professionals such as clinical officers, nurses and/or an environmental health technician. They offer simple examinations such as rapid tests while X-ray examination and most laboratory services including haemoglobin are only available in hospitals.

In 2006, ART services were provided only at Mumbwa District Hospital. The number of clients receiving ART was less than 450 in April 2006, although the number of clients in need of ART was estimated approximately 5000 to 7500.

Approach

Mobile ART services commenced at four rural health centres in the first quarter of 2007. Before the implementation of the services, staff members at the four sites attended a 10-day training course in management of ART and optimistic infection conducted by the experienced staff of the district health management team and Mumbwa District Hospital. Lay counsellors and support group members, of whom most are HIV-positive and on ART, were selected from the community and trained in HIV prevention, ART and counselling skills to assist staff members in the rural health centres. Almost daily, lay counsellors gave psychosocial counselling to ART patients in the community, and support group members reminded them of the arrival of the mobile service. Rural health centres were selected as mobile ART sites according to geographical location, coverage population and existing resources including medical staff, space and community

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Fig. 1. **Trends in enrolment of patients on antiretroviral treatment, Mumbwa district, Zambia, 2004–2008**

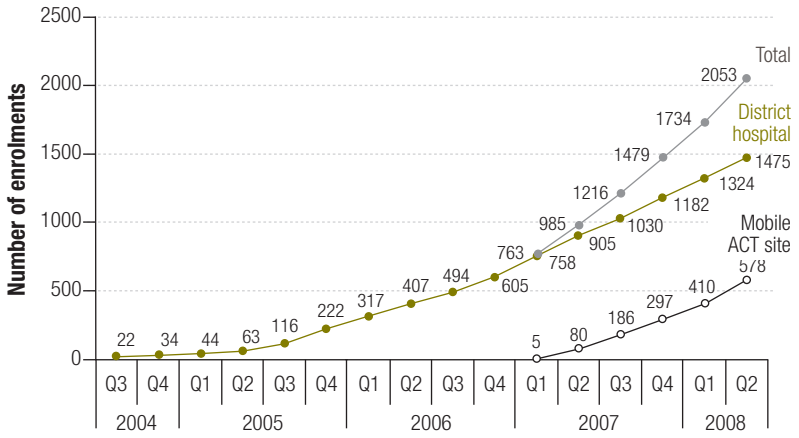

Table 1. **Characteristics of clients at commencement of antiretroviral treatment and their outcomes at the first 6 months in the Mumbwa District Hospital and rural health centres, Zambia**

Characteristic	District hospital (*n* = 458)		Rural health centres (*n* 22)	
	n	%	*n*	%
At commencement				
Age (years)				
18–38	277	60.3	129	55.6
39 or more	182	39.7	103	44.4
Gender				
Male	190	41.4	84	36.2
Female	269	58.6	148	63.8
Clinical staging				
I or II	66	14.6	42	22.7
III or IV	386	85.4	143	77.3
Functional status				
Working	183	39.9	143	62.2
Ambulant or bed-ridden	276	60.2	87	37.9
Regimen				
NEV+3TC+d4t/AZT	377	82.1	149	64.2
EFV+3TC+d4t/AZT	82	17.9	83	35.8
Other	0	0.0	0	0.0
CD4 cell count				
Counted	370	80.8	214	92.2
Not counted	88	19.2	18	7.8
At 6 months				
Retained at original site	319	69.5	176	75.9
Dead	29	6.3	32	13.8
Lost to follow-up	99	21.6	24	10.3
Transfer out	12	2.6	0	0.0
Functional Status				
Working	279	86.6	148	96.1
Ambulant or bed-ridden	43	13.4	6	3.9
CD4 cell count				
Counted	71	22.3	64	36.4
Not counted	248	77.7	112	63.6

CD4, CD4+ lymphocyte; NEV, Nevirapine; EFV, Efavirenz; 3TC, Lamivudine; d4t, Stavudine; AZT, Zidovudine

activities. A mobile ART team including a medical doctor, clinical officer, nurse, laboratory staff and pharmacist visited the ART sites every two weeks.

Eligibility for the mobile ART services was assessed by either CD4 cell count (for which blood samples were sent to the district hospital laboratory) or clinical symptoms. Eligible patients were monitored in the same manner as the hospital by trained professionals either from the mobile team or ones from the rural health centre depending on staff availability in the health centre. However, complicated cases that could not be treated by the mobile service were transferred to the hospital.

Operational cost for the four mobile ART services expended by the district health management team, which was the only source of funding, was 86 million kwacha per year (approximately 17 000 United States dollars) which included allowances for team members, fuel and motor vehicle services.

Except for those aged less than18 years, client data were collected from the ART registration books at the district hospital and the rural health centres. All clients who were newly enrolled for ART in 2007 were included in the analysis (232 cases in the mobile sites and 458 cases in the district hospital). Conditions of the clients at the 6th month after starting treatment were categorized as "retained at original site", "lost to follow-up", "dead" and "transfer out" as treatment outcomes.

Relevant changes

The accumulated number of ART clients from both mobile sites and the district hospital reached 2053 in the second quarter of 2008, accounting for 25% to 40% of the estimated clients in need of ART in the district (Fig. 1). Of those who were newly enrolled up to the second quarter of 2008, 46.6% (578/1295) initiated ART using the mobile services.

Average age of ART clients included in the analysis was 38.1 years (standard deviation 10.09) and 60.3% of them were female. There were no differences in the pattern of age and gender of patients attending the district hospital and the rural health centres. However, clients presented at the rural health centres at an earlier stage and with better functional status than those presenting at the district hospital.

Table 1 shows that the percentage of patients "lost to follow up" in the mobile ART sites was lower than at the district hospital. A greater percentage of rural health centre patients died during the study period.

Discussion

The mobile service increased the number of ART clients in the district probably because it reduced the long distances required to travel to health services in rural areas. This allowed clients to start ART at an earlier stage. Mobile ART services might have encouraged people to seek voluntary counselling and testing before showing symptoms (Box 1).

There were less transfers and "lost to follow up" patients at the mobile sites during the first six months of treatment. Effective community involvement in rural health centres may have made it easier to educate clients and to prevent loss to follow up. In addition, lay counsellors and community support groups contributed to relieving the shortage of human resources. Retention rates at the first six months of treatment in other studies in African countries vary from 39.2% to 86.7%.[7] These compare well with the 69.5–75.9% retention rates we observed in this study.

In contrast, the mortality of patients at mobile sites at the first six months was higher than during the same period at the district hospital. This may be due to misclassification of deaths recorded as "lost to follow-up" at the district hospital.

Other studies have estimated that about 75% of the deaths that occur in the first three months of treatment are due to immune reconstitution inflammatory syndrome.[8] However, clients using mobile ART sites at an earlier stage of their disease do not incur the same risk of immune reconstitution inflammatory syndrome.

This study has some limitations. First, the comparison between mobile ART sites and the district hospital was made in the same period. Clients in the hospital enrolled since the introduction of mobile ART to the rural health centres might have different social demographic characters from the ones enrolled before mobile services were made available. This analysis is, however, important because the resources such as infrastructure, equipment and human resources in the hospital are very different from the rural health centres. Second, details of the treatment outcomes, case management and co-morbidities were not provided. Since the study was done in non-research settings, comparisons such as using CD4 cell counts could not be done.

Box 1. **Summary of main lessons learnt**

- Mobile ART services in resource-limited settings can increase the number of ART patients by reducing the need to travel long distances to reach health facilities.
- Mobile services enable patients to start ART at an earlier stage in their disease when voluntary counselling and testing is located at the same site.
- Involvement of the community such as lay counsellors and support groups increase the number of patients retained at the original site compared to hospitals, which normally have many referred cases.

Conclusion

Mobile ART services involving lay counsellors and support groups seemed to be a beneficial and effective strategy to improve accessibility at health facilities without standardized equipment and human resources. More importantly, other barriers such as stigma and discrimination must be cleared. To our knowledge, this is the first comparison of mobile ART services involving community resources in rural areas with hospital-based services. Further investigation is required to evaluate long-term outcomes including clinical status, adherence and quality of life. ■

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ملخص

التوسع في المعالجة بمضادات الفيروسات القهقرية على مستوى مركز الصحة الريفية من قبل الخدمات المتنقلة في منطقة مومبوا في زامبيا

المشكلة على الرغم من الجهود التي تبذلها الحكومة للتوسع في تقديم الخدمات على مستوى المنطقة، تظل هناك صعوبة تواجه المتعايشين مع فيروس الأيدز في الحصول على المعالجة بمضادات الفيروسات القهقرية في المناطق الريفية من زامبيا. وهناك تحديات تواجه الطلبات الملحة الخاصة بالتوسع في خدمات المعالجة بمضادات الفيروسات القهقرية على مستوى مركز الصحة الريفية تتمثل في قصور الموارد.

الأسلوب قام فريق التدبير العلاجي الصحي لمنطقة مومبوا بإدخال الخدمات المتنقلة للمعالجة بمضادات الفيروسات القهقرية باستخدام الموارد البشرية، والدعم التقني من مستشفيات المنطقة، والمشاركة المجتمعية في أربعة مراكز صحية ريفية في الربع الأول من عام 2007. وتناقش هذه الورقة البحثية بداية إدراج الخدمات المتنقلة للمعالجة بمضادات الفيروسات القهقرية في أرياف مومبوا.

الموقع المحلي مومبوا هي منطقة ريفية تقع على مساحة تبلغ 23000 كيلو متر مربع، ويبلغ عدد سكانها 167000. وقبل إدخال الخدمات المتنقلة كانت خدمات المعالجة بمضادات الفيروسات القهقرية لا تتوافر سوى في مستشفى المنطقة في مومبوا.

التغييرات ذات العلاقة حسنت الخدمات المتنقلة من الوصول إلى المعالجة بمضادات الفيروسات القهقرية، ولاسيما بين من يتمتعون بحالة وظيفية أفضل، كالذين لا تزال لديهم المقدرة على العمل. وعلاوة على ذلك، يمكن للخدمات المتنقلة أن تخفض عدد الحالات المفقودة التي يتعذر متابعتها. وقد يرجع هذا إلى المشاركة الوثيقة للمجتمع والدعم الأفضل الذي تقدمه هذه الخدمات للمراجعين من سكان الريف.

الدروس المستفادة ساعدت الخدمات المتنقلة للمعالجة بمضادات الفيروسات القهقرية على التوسع في توفير الخدمات في المرافق الصحية الريفية ذات الموارد المحدودة، وجعلتها أقرب ما يمكن للمناطق التي يعيش فيها ملتمسي هذه المعالجة.

Résumé

Élargissement de l'accès au traitement antirétroviral au niveau des centres de santé ruraux grâce à un service mobile dans le district de Mumbwa, Zambie

Problème Malgré les efforts du gouvernement en matière de développement de l'accès aux services au niveau du district, il s'avère encore très difficile pour les personnes atteintes du VIH de bénéficier du traitement antirétroviral (TAR) en Zambie rurale. Les appels soutenus pour le développement de services d'accès au TAR au niveau des centres de santé ruraux doivent faire face à une pénurie de ressources.

Approche L'équipe de direction médicale du district de Mumbwa a mis en place les services mobiles de TAR, en utilisant les ressources humaines et le soutien technique des hôpitaux du district, ainsi qu'un engagement communautaire dans quatre centres de santé ruraux au cours du premier trimestre de l'année 2007. Cet article va traiter du succès des services mobiles de TAR dans le district rural de Mumbwa.

Environnement local Mumbwa est un district rural d'une superficie de 23 000 km^2 et de 167 000 habitants. Avant l'introduction des services mobiles, les services de TAR étaient uniquement accessibles à l'hôpital du district de Mumbwa (Mumbwa District Hospital).

Changement significatifs Les services mobiles ont amélioré l'accessibilité au TAR, notamment pour les patients dans un meilleur état de santé, c'est-à-dire ceux qui peuvent encore travailler. De plus, ces services mobiles pourraient réduire le nombre de cas «perdus au suivi». Cela pourrait être la conséquence d'une participation plus importante de la communauté et d'un soutien amélioré de ces services aux patients ruraux.

Leçons tirées Ces services mobiles de TAR ont aidé à développer les services aux centres de santé ruraux où les ressources sont limitées, les rapprochant le plus possible de leurs patients.

Resumen

Expansión del tratamiento antirretroviral a nivel de los centros de salud rurales mediante un servicio móvil en el distrito de Mumbwa, Zambia

Situación A pesar de los esfuerzos del Gobierno por extender los servicios hasta el nivel de distrito, sigue resultando difícil que las personas con VIH accedan al tratamiento antirretroviral (TAR) en la Zambia rural. Las enérgicas súplicas para ampliar los servicios relacionados con el TAR a los centros de salud rurales se enfrentan a las dificultades derivadas de la escasez de recursos.

Enfoque El equipo de gestión sanitaria en el distrito de Mumbwa introdujo servicios móviles de TAR que hacían uso de recursos humanos y asesoramiento técnico de hospitales de distrito, así como la participación de la comunidad en cuatro centros de salud rurales en el primer trimestre de 2007. Este trabajo aborda el uso de los servicios móviles de TAR en el distrito rural de Mumbwa.

Marco regional Mumbwa es un distrito rural con un área de 23 000 km2 y una población de 167 000 habitantes. Antes de la introducción de los servicios móviles, los servicios de TAR se proporcionaban sólo en el Hospital de Distrito de Mumbwa.

Cambios importantes Los servicios móviles mejoraron la accesibilidad al TAR, especialmente para usuarios con un mejor estado funcional, es decir, aún capaces de trabajar. Además, estos servicios móviles pueden reducir el número de casos de «pérdidas durante el seguimiento». Esto podría deberse a la mayor implicación de la comunidad y al mejor apoyo ofrecido por estos servicios a los usuarios en las áreas rurales.

Lecciones aprendidas Estos servicios móviles para el TAR ayudaron a extender los servicios a los centros de salud rurales cuando los recursos fueron limitados, acercándolos lo máximo posible a los lugares donde viven los usuarios.

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