

# Offering integrated care for HIV/AIDS, diabetes and hypertension within chronic disease clinics in Cambodia

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**Problem** In Cambodia, care for people with HIV/AIDS (prevalence 1.9%) is expanding, but care for people with type II diabetes (prevalence 5–10%), arterial hypertension and other treatable chronic diseases remains very limited.

**Approach** We describe the experience and outcomes of offering integrated care for HIV/AIDS, diabetes and hypertension within the setting of chronic disease clinics.

**Local setting** Chronic disease clinics were set up in the provincial referral hospitals of Siem Reap and Takeo, 2 provincial capitals in Cambodia.

**Relevant changes** At 24 months of care, 87.7% of all HIV/AIDS patients were alive and in active follow-up. For diabetes patients, this proportion was 71%. Of the HIV/AIDS patients, 9.3% had died and 3% were lost to follow-up, while for diabetes this included 3 (0.1%) deaths and 28.9% lost to follow-up. Of all diabetes patients who stayed more than 3 months in the cohort, 90% were still in follow-up at 24 months.

**Lessons learned** Over the first three years, the chronic disease clinics have demonstrated the feasibility of integrating care for HIV/AIDS with non-communicable chronic diseases in Cambodia. Adherence support strategies proved to be complementary, resulting in good outcomes. Services were well accepted by patients, and this has had a positive effect on HIV/AIDS-related stigma. This experience shows how care for HIV/AIDS patients can act as an impetus to tackle other common chronic diseases.

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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

At the end of 2004, there were an estimated 100 000 people living with HIV/AIDS in Cambodia, of whom approximately 25 000 were estimated to urgently require care and treatment with highly active antiretroviral therapy (HAART).<sup>1,2</sup>

Cambodia is struggling with a growing burden of chronic diseases. A survey done in 2005 estimated that between 5% and 11% of all adults had type II diabetes and the prevalence of impaired glucose intolerance was between 10% and 15%. The same survey showed that between 12% and 25% of the population screened could be classified as being hypertensive.<sup>3</sup> These results are consistent with growing evidence that diabetes and other non-communicable diseases represent a significant and growing part of the disease burden in low-income countries.<sup>4,5</sup>

In 2002, Médecins Sans Frontières (MSF) and the Cambodian Ministry of Health established chronic disease clinics to integrate HIV/AIDS care with the management of diabetes and hypertension in two provincial capitals, Takeo and Siem Reap. This paper describes the approach and outcomes of this strategy.

## Context

Siem Reap and Takeo are both predominantly rural provinces, although the urban population of Siem Reap town is increasing rapidly due to growing tourism around the Angkor Wat temple complex. Both locations were selected for this pilot programme because they are large provincial centres with referral hospital capacity to expand activities. Furthermore, adequate care for the target diseases at these sites was lacking.

HAART began to be provided in Cambodia in 2001. By the end of 2005, 12 355 people were on treatment through programmes run jointly by the Ministry of Health and nongovernmental organizations (NGOs).

Chronic diseases are largely neglected in developing countries.<sup>6</sup> In Cambodia, medical care for diseases such as diabetes, arterial hypertension and epilepsy was not generally included in the reconstruction of the health care system over the past 15 years. Most diabetics receive only limited medication at referral hospital outpatient departments or when they arrive with severe hyperglycaemia at emergency wards; they are rarely referred to long-term care once they are discharged. Some drugs to treat arterial hypertension are available at hospitals and health centres, but these are usually provided for only two weeks.

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## Rationale for the chronic disease clinics

The rationale to combine care of HIV/AIDS, diabetes and hypertension was based on three assumptions.

First, the availability of antiretroviral treatment in developing countries is transforming HIV/AIDS into a chronic disease, as has been the experience elsewhere.<sup>7</sup> It was anticipated that in this resource-poor context, efficiency gains could be attained through the establishment of a multidisciplinary chronic disease care team that would use a common approach to respond to the needs of chronic disease patients, especially in providing continuity of care, long-term adherence support and social support.

Second, in Cambodian society as elsewhere, the stigma attached to HIV/AIDS presents a barrier to care. By providing care for seropositive clients and patients with other chronic diseases within the same facility, it was hoped that facility-related stigma could be reduced.

Third, it was considered important that the care delivery model should reflect epidemiological realities. Although at the clinics' inception reliable epidemiological data on diabetes and other chronic diseases was lacking, these illnesses were recognized to contribute an increasing share of the total burden of disease in Cambodia. Diabetes was given a specific priority, since it was seen by many health workers as a frequent problem. The provision of systematic and continuous care for chronic diseases was encouraged by both the Ministry of Health and local WHO representatives, who were involved in the final design of this pilot health care delivery model.

## Development of services

As in the rest of the country's public hospitals, no structured care for HIV or diabetes existed before the chronic disease programmes. These began with a strong emphasis on outpatient consultations, with services actively promoted as clinics for treatment of diabetes, hypertension and HIV/AIDS. Regarding other chronic diseases, mental health patients were not included, as mental health clinics existed in both provinces, while some other patients, such as epileptics and those with thyroid disorders, were accepted but were few in number.

All consultations were carried out by doctors who received training on the

principles of chronic disease management and a patient-centred approach. Counsellors were also recruited, although when the clinics started counsellors were not yet a recognized part of the Cambodian health system and trained psychologists were and still are rare. Counsellors were either nurses or staff members recruited after an evaluation of appropriate personal skills. A continuous training programme was organized by MSF for all staff to deal with newly appearing needs and problems, and to introduce new tools and guidelines. Most of the training was organized as on-the-job training, with theoretical training sessions organized around specific topics every three months.

The complex needs of chronic patients relied on a functional collaboration with several other hospital departments, particularly for severely ill AIDS patients. A separate infectious diseases inpatient ward with appropriate staff resources and equipment was set up in each hospital. Efforts were made to integrate services for tuberculosis and HIV for efficient care of co-infected patients.

Staffing in both clinics was gradually increased to meet the increasing patient load, from 8 staff members in 2003 to a total of 20 full-time staff members (8 medical doctors, 8 counsellors and 4 nurses) in 2005. Of this total, 10 were engaged from other hospital departments, and the rest were engaged with MSF funds. MSF also provided financial support for the new clinic functions, mainly the purchase of medicines that were not routinely available from the Ministry of Health (initially including antiretrovirals and all medicines for opportunistic infections) and incentives for staff members who had to cope with ever-increasing workloads. Investments were also made to improve the structures and medical equipment of the clinics, hospitals and laboratories. All operating costs – medicines and staff salaries – were gradually taken over by the Ministry of Health.

## Description of services

Every new patient was given a unique identification code and an individual medical file. All HIV services were provided free of charge according to national policy. Diabetes patients pay a fixed fee per consultation of approximately US\$ 0.50, which also covers the costs of drugs and diagnostics. For

diabetics and other patients, a routine questionnaire is used to assess income and eligibility for exemption from these user fees.

All new HIV/AIDS patients were staged at their first visits by WHO clinical staging and a CD4 count. Treatment for opportunistic infections, mainly tuberculosis and cryptococcus meningitis, was provided where needed and prophylaxis for PCP (cotrimoxazole) and cryptococcal meningitis (fluconazole) was started according to national guidelines. For all patients requiring antiretroviral treatment (CD4 count <200 cells/mm<sup>3</sup> or WHO stage IV), a standardized medical and psychosocial treatment preparedness plan was followed. Almost all patients were started on a standard first-line regimen of stavudine, lamivudine and nevirapine; zidovudine and efavirenz were used as alternatives in case of intolerance to the first-line regimen. Most regimens were given as generic fixed-dose combinations. Once on HAART, patients were followed up on a monthly basis and a routine laboratory protocol of alanine aminotransferase, and haemoglobin at months 1, 2, 3, 6 and 12 was used to monitor for drug side-effects. Treatment success was monitored by CD4 lymphocyte count every 6 months.

Diabetes patients were all type 2 and treatment was based on two oral hypoglycaemic drugs: metformin and glibenclamide. For a limited number of patients insulin therapy was commenced using slow-release insulin (Insulatard, Novo Nordisk, Denmark) at two doses every 24 hours. Priority was given to the stabilization of blood glucose levels, control of blood pressure and diagnosis and care of foot sores. Prior to 2006, routine monitoring of glycosolated haemoglobin (HbA1c) was not possible due to high cost, but this has since become a routine monitoring test.

Patients with arterial hypertension were treated according to a protocol based on standard guidelines, using a stepwise approach with hydrochlorothiazide, atenolol and captopril as the main antihypertensive drugs. The objective was to control arterial blood pressure below 160/90 mmHg.

In both clinics, a team of counsellors provided a series of activities complementary to the medical consultations, for both HIV/AIDS and diabetes patients. The principal objective of the counselling activities was to

encourage drug adherence and lifestyle changes with information and psychosocial support, with the long-term aim of providing patients with the means (knowledge and confidence) to assume more responsibility in the management of their disease.<sup>8</sup> Peer-support groups were established for antiretroviral users and diabetics; these groups provide an essential continuation of the work of the counsellors and doctors.

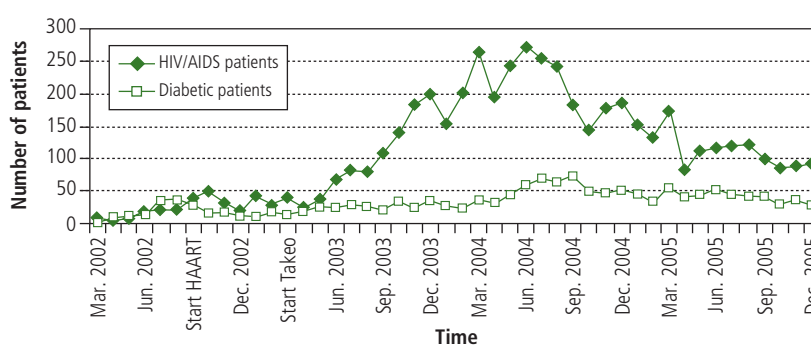
### Patients and outcomes

Data on patient history and progression on treatment were obtained at every consultation. For HIV patients, data were entered into routine monitoring software (Fuchia, Epicentre, Paris); for other chronic disease patients, a tailored database was established.

Between March 2002 and December 2005, a total of 9149 chronic disease patients attended one of the clinics at least once (5273 in Siem Reap and 3876 in Takeo); 4793 of these were HIV-positive, 2638 had diabetes, 1419 were hypertensive and 299 were diagnosed with another chronic disease.

Among HIV patients, median CD4 at baseline was 53 cells/mm<sup>3</sup>; 72% were in need of HAART at first consultation and a total of 2497 people living with HIV/AIDS started HAART. Among diabetics, doctors registered one or more complications (peripheral neuropathy, nephropathy, retinopathy or coronary heart disease) in 15.2% of these patients. In both centres, new diabetic patients outnumbered new HIV patients (Fig. 1) during the programme's early

Fig. 1. Inflow of new patients in chronic disease clinics, Cambodia



months. Towards the end of the third quarter, the number of new HIV/AIDS patients exceeded the number of new diabetes patients and continued to increase in both centres, while the number of new diabetics remained stable at an average of 52 patients per month in both clinics combined.

A cohort analysis of all patients at 24 months of treatment shows that 87.7% of HIV patients who started HAART and 71% of the diabetics were still alive and in active follow-up (Table 1). Only 3% of HIV patients on HAART were lost to follow-up; 9.3% had died, with mortality highest in the first 3 months, reflecting the fact that most patients sought care at a very late stage in their disease. In contrast, of the 29% losses in the diabetes cohort, only 3 (0.1%) patients had died, and the rest were lost to follow-up, with 64% lost to follow-up in the first three months. Of the patients who remained in care at 3 months, 90% were still in care

at 24 months or more. In the cohort of hypertension patients, 32% were lost to follow-up. Here again, most of the patients who discontinued care did so early in treatment. Of all patients who stayed longer than two months in follow-up, 81% were still in regular follow-up at 12 months.

The median CD4 count of HIV patients on HAART rose from 53 cells/mm<sup>3</sup> at baseline to 218 cells/mm<sup>3</sup> at month 12 and 316 cells/mm<sup>3</sup> at month 24 of treatment. Between June 2006 and February 2007, HbA1c results became available for 451 diabetes patients with more than 6 months of regular treatment, which is 27% of the active cohort. The median value was 8.6%; 57% of the patients had an HbA1c below or equal to 9%. Of all hypertension patients who were on regular drug therapy for more than 6 months in December 2006, 68% had reached blood pressures equal to or below the target of 160/90 mmHg.

Table 1. Survival and cohort retention of HIV/AIDS patients who started HAART and diabetes patients who started treatment in chronic disease clinics, Takeo and Siem Reap

Months on treatment		0-3	3-6	6-12	12-18	12-24	24+
<b>HIV patients</b>							
N	2497 <sup>a</sup>	2317	1906	1288	691	300	289
Deaths (cumulative)		110	37 (147)	34 (181)	16 (197)	4 (201)	0 (201)
Lost to follow-up (cumulative)		36	19 (55)	15 (70)	7 (77)	1 (78)	2 (80)
Transfer out to other service (cumulative)		25	48 (73)	80 (153)	58 (211)	13 (224)	3 (227)
Median CD4 count (cells/mm <sup>3</sup> )	53	154	180	218	269	309	344
% remaining in care <sup>b</sup>		94.1	91.7	89.3	88	87.7	87.6
<b>Diabetes patients</b>							
N	2638 <sup>a</sup>	2484	1795	1321	801	457	25
Deaths (cumulative)		0	0	2	0	0	1 (3)
Lost to follow-up (cumulative)		487	91 (578)	116 (694)	52 (746)	15 (761)	9 (770)
Transfer out to other service (cumulative)		1	0	1	1	0	0
% remaining in care <sup>b</sup>		81.5	78.1	73.6	71.6	71	70.7

<sup>a</sup> All patients who started HAART or diabetes treatment in the chronic disease clinics of Siem Reap or Takeo.

<sup>b</sup> Kaplan-Meier survival estimate.

## Discussion

The experience of these two chronic diseases in Cambodia shows that integrating care for HIV/AIDS with care for other chronic diseases is feasible, resulting in satisfactory outcomes for patients and efficiency gains for the services.

Over three years, the two centres demonstrated that staff could effectively assume a multidisciplinary role and that skills to manage patients who need to start a lifelong treatment were relevant to and effective for both HIV/AIDS and diabetic care. Doctors adapted to the role of chronic diseases specialists and gradually adopted a patient-centred approach. Adherence support counselors, a new function in the health-care system that was created with expanding HIV/AIDS care, have been shown to be valuable in supporting adherence and lifestyle changes for diabetics.

The rapid expansion of patient inflow is a good indicator that these services were well accepted by both diabetics and HIV patients. The latter arrived in very small numbers in the first months after the clinics opened but numbers increased significantly after this initial period. We believe this is partly because they could mingle with other patients with less stigma-associated diseases. Nevertheless, the high early mortality and low median CD4 reflects the fact that large number of patients had no access to HAART earlier. The fact that the inflow of new diabetes patients never slowed, even with clinic waiting rooms often crowded with very ill HIV patients, is another indicator that the services were well accepted.

At 24 months on HAART, only 3% of HIV patients were lost to care, while this was true for almost 30% for the diabetics. A more detailed analysis of the diabetic cohort shows that most of the losses to follow-up appear in the first 3 months; after that, almost 90% of diabetics remained part of the cohort at 24 months of follow-up. Many reasons could explain the early dropouts: diabetes is not seen as life-threatening, alternative care through private providers exists and some patients might be uncomfortable sharing premises with HIV patients. This needs to be evaluated more fully.

Outcomes of patients who started HAART compare favourably or equally to other described cohorts, both in western settings and in other developing countries.<sup>9,10</sup> The results of the diabetes patients are measured by HbA1c, and at this stage the interpretation of these results is limited because no baseline values are available for the patients of the diabetic cohort; results are only available for 27% of all patients and these do not represent a randomized sample. The mean HbA1c value measured is 0.7% higher than was found in a 24-month western cohort;<sup>11</sup> no comparable data from a resource-limited context were found in the literature.

Attention to diabetes care at the Cambodian health ministry is still limited, reflecting scarce funding for non-communicable disease control. This has clearly limited the extent to which these programmes could be replicated, although gradually more stakeholders, like the ministry's newly established non-communicable diseases working

group, see the added value of this model of care.

The burden of chronic diseases in developing countries has received increasing attention recently. WHO has called for innovative action in this regard,<sup>12</sup> and it has been argued that NGOs should address these huge unmet needs<sup>13</sup> and that chronic diseases should figure more prominently on the international development agenda.<sup>14</sup>

The justifiable increase in attention to HIV/AIDS in recent years has highlighted the fact that other chronic diseases remain neglected. The chronic disease clinics approach has demonstrated an ability to respond to these epidemiological realities, and provides an example of how the considerable attention to and funding of HIV/AIDS care can offer an opportunity to improve care for non-communicable diseases like diabetes and hypertension, which are increasingly seen as high-priority public health challenges for the developing world.<sup>15</sup>

Now that HAART is becoming progressively more available in the developing world, HIV care is a matter of chronic disease management. There is an important opportunity for HIV programmes to both learn from and reinforce other chronic disease programmes. In Cambodia, the experience of the chronic disease clinics has shown that care can be integrated. Because staff and services are complementary, patient outcomes are good and there are indications that the integration has reduced HIV-related stigma. ■

**Competing interests:** None declared.

## Résumé

### Offre de soins intégrée à l'intention des personnes vivant avec le VIH/sida, un diabète ou de l'hypertension par les dispensaires cambodgiens spécialisés dans les maladies chroniques

**Problématique** Au Cambodge, l'offre de soins à l'intention des personnes vivant avec le VIH/sida (prévalence : 1,9 %) est en développement, mais pour les personnes atteintes de diabètes de type II (prévalence 5 à 10 %), d'une hypertension artérielle ou d'une autre maladie chronique pouvant être traitée, elle reste très limitée.

**Démarche** Nous décrivons l'expérience et les résultats obtenus avec une offre de soins intégrée à l'intention des personnes vivant avec le VIH/sida, un diabète ou une hypertension, dans le cadre de dispensaires spécialisés dans les maladies chroniques.

**Contexte local** Des dispensaires spécialisés dans les maladies chroniques ont été mis en place dans les hôpitaux spécialisés de Siem Reap et Takeo, deux capitales provinciales du Cambodge.

**Modifications pertinentes** Au bout de 24 mois de soins, sur l'ensemble des patients vivant avec le VIH/sida, 87,7 % étaient encore vivants et faisaient l'objet d'un suivi actif. S'agissant des patients diabétiques, cette proportion était de 71 %. Parmi les patients contaminés par le VIH, 9,3 % étaient morts et 3 % étaient perdus de vue, tandis que parmi les diabétiques, on enregistrait 3 décès (0,1 %) et une proportion de 28,9 % de perdus de vue. Parmi l'ensemble des patients diabétiques restés plus de 3 mois dans la cohorte, 90 % étaient encore suivis au bout de 24 mois.

**Enseignements tirés** Sur les trois premières années, les dispensaires spécialisés dans les maladies chroniques ont prouvé la faisabilité d'une offre de soins intégrée pour les personnes

vivant avec le VIH/sida et atteintes d'une maladie chronique non transmissible au Cambodge. La complémentarité des stratégies d'aide à l'observance a également été démontrée, d'où l'obtention de bons résultats. Ces services sont bien acceptés par ces patients,

ce qui a un effet positif sur la stigmatisation dont ils souffrent. Cette expérience montre à quel point la prise en charge des personnes vivant avec le VIH/sida peuvent donner une impulsion à celle d'autres maladies chroniques courantes.

## Resumen

### Atención integrada contra el VIH/SIDA, la diabetes y la hipertensión en dispensarios de enfermedades crónicas de Camboya

**Problema** En Camboya se está extendiendo masivamente la atención a las personas con infección por VIH/SIDA (prevalencia del 1,9%), pero la atención a las personas con diabetes de tipo 2 (prevalencia: 5%–10%), hipertensión arterial y otras enfermedades crónicas tratables sigue siendo muy limitada.

**Enfoque** Describimos la experiencia y los resultados de la oferta de atención integrada para la infección por VIH/SIDA, la diabetes y la hipertensión en el entorno de los dispensarios de enfermedades crónicas.

**Contexto local** Se establecieron dispensarios de enfermedades crónicas en los hospitales de referencia provinciales de Siem Reap y Takeo, dos capitales de provincia de Camboya.

**Cambios destacables** Tras 24 meses de aplicación de ese régimen de atención, el 87,7% de todos los pacientes con VIH/SIDA permanecían con vida y sometidos a seguimiento activo. Entre los pacientes con diabetes esa proporción era del 71%. De los pacientes con VIH/SIDA, el 9,3% habían muerto y un 3%

se habían perdido en el seguimiento, mientras que las cifras para la diabetes fueron de 3 (0,1%) defunciones y un 28,9% perdidos en el seguimiento. De todos los pacientes con diabetes que permanecieron más de 3 meses en la cohorte, el 90% se encontraban aún sometidos a seguimiento a los 24 meses.

**Enseñanzas extraídas** Durante los tres primeros años, los dispensarios de enfermedades crónicas han demostrado la viabilidad de la integración de la atención contra el VIH/SIDA y la proporcionada contra las enfermedades crónicas no transmisibles en Camboya. Las estrategias de apoyo a la observancia tuvieron un efecto complementario, lo que se tradujo en buenos resultados. Los servicios fueron bien aceptados por los pacientes, y eso tuvo un efecto positivo en la estigmatización relacionada con el VIH/SIDA. Esta experiencia demuestra que la atención a los pacientes con VIH/SIDA puede ser un estímulo para hacer frente a otras enfermedades crónicas comunes.

## ملخص

### إيتاء الرعاية المتكاملة للإيدز والعدوى بفيروسه والسكري وارتفاع ضغط الدم

#### ضمن عيادات الأمراض المزمنة في كمبوديا

المصابين بالإيدز والعدوى بفيروسه مات 9.3% منهم فيما فقدت متابعة 3%، ومن السكريين مات 3 (1%) وفقدت متابعة 28.9% منهم. ومن بين جميع السكريين الذين بقوا لمدة تزيد على 3 شهور ضمن الأتراب، ظل 90% يتلقون المتابعة حتى 24 شهراً.

**الدروس المستفادة:** خلال السنوات الثلاثة الأولى، أثبتت عيادة الأمراض المزمنة إمكانية إدماج رعاية مرض الإيدز والعدوى بفيروسه ضمن الأمراض المزمنة غير السارية في كمبوديا. وقد أثبتت استراتيجية دعم الامتثال أنها مكتملة، وذات حصائل جيدة. وقد كانت الخدمات مقبولة جداً لدى المرضى، مما أعطى تأثيرات إيجابية في ما يتعلق بالصحة الناجمة عن الإصابة بمرض الإيدز والعدوى بفيروسه. وتظهر هذه التجربة كيف يمكن للرعاية المقدمة لمرضى الإيدز والعدوى بفيروسه أن تكون دافعا لمعالجة أمراض مزمنة أخرى شائعة.

**المشكلة:** يتسع نطاق الرعاية التي تقدم في كمبوديا للمصابين بالإيدز أو بالعدوى بفيروسه (ومعدل انتشاره 1.9%)، إلا أن الرعاية لاتزال محدودة جداً لمرضى النمط الثاني من السكري (ومعدل انتشاره 5-10%)، وارتفاع ضغط الدم وغير ذلك من الأمراض المزمنة التي تبرا بالمعالجة. **الأسلوب:** قدم الباحثون وصفاً للخبرات والحصائل التي تنتج عن إيتاء الرعاية المتكاملة للإيدز والعدوى بفيروسه والسكري وارتفاع ضغط الدم ضمن مرافق عيادات الأمراض المزمنة.

**المرفق المحلي:** لقد أسست عيادات الأمراض المزمنة في مستشفيات الإحالة في ولايتي سيم ريب وتاكيو، وهما عاصمتان لولايتي كمبوديتي. **التغيرات ذات الصلة:** بعد 24 شهراً من تلقي الرعاية كان 87.7% من مجمل مرضى الإيدز والعدوى بفيروسه على قيد الحياة ويخضعون لمتابعة فعالة. أما بالنسبة للسكريين فقد كان من بقي منهم على قيد الحياة 71%، ومن بين

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