



Monitoring of antiretroviral therapy rationing procedures at a single site in Phnom Penh, Cambodia

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Background

In resource limited settings rationing of antiretroviral therapy (ART) is necessary whilst demand exceeds supply. Equity and efficiency of access to treatment are determined by formal and informal referral and selection procedures. Transparent monitoring systems are required to determine whether equity and efficiency of ART initiation are being maximized.

Cambodia is a low income country with an estimated HIV prevalence of 123,100 (1.9%) in adults aged 15 – 49. As a result of rapidly increasing access to antiretroviral therapy (ART), the number of adults receiving ART at end September 2005 was nearly 50% of those estimated to be in need. The Cambodian National Guidelines for the Selection of People Living with HIV/AIDS for Antiretroviral Therapy includes compulsory and optional selection procedures (Table 1). The majority of ART sites (16/20; 80% in mid 2005) use a selection committee to select PLHA for ART using clinical, immunological and 'social' criteria. The time from first visit to start of ART is usually more than 3 months.

Compulsory selection procedures:

- Clinical and immunological criteria: CD4 < 200 cells /µl or WHO stage 4
- Understanding of HIV and ARV adherence, commitment to long term treatment
- Treatment of family groups

Optional selection criteria: For further prioritisation of patients if required:

- Opening/closing clinic access over time
- Duration of clinic attendance
- Random selection
- Geographic location, distance of patients to the clinic
- Prioritization of people with advanced immunodeficiency
- Use of a selection committee

Procedures that are not recommended:

- Denial of access to PLHA who have previously used ARV therapy
- Denial of access to PLHA who appear to be in a terminal stage

Table 1: Cambodian National Guidelines for the selection of PLHA for ART

The Social Health Clinic (SHC) is an out patient HIV clinic in Phnom Penh established by the National Centre for HIV/AIDS, Dermatology and STD (NCHADS) in 2004. All patients are referred to the SHC from a single free public Voluntary Confidential Counseling Testing service (VCCT) nearby. SHC management is able to open and close access to clinic services based on the length of the waiting list of people referred from the VCCT. After enrollment at SHC all patients found to be eligible on clinical (WHO Stage IV) or immunological (CD4<200 cells /µl) criteria commence ART after attending at least three adherence counseling sessions, subject to agreement between the counselor, treating doctor and senior clinician. Counseling sessions include assessment of understanding of HIV and ARV (Table 2). SHC peer support workers also hold informal information sessions in the waiting room throughout the day. All care and treatment is provided to patients free of charge.

Table 2: Tool for providing information and assessing understanding of ART

Question	Yes	No	Don't know
1. Do you know what HIV is?			
2. Do you know what AIDS is?			
3. Do you know what ARV is?			
4. Do you know what a doctor is?			
5. Do you know what a nurse is?			
6. Do you know what a counselor is?			
7. Do you know what a peer support worker is?			
8. Do you know what a social health clinic is?			
9. Do you know what a voluntary confidential counseling testing service is?			
10. Do you know what a waiting list is?			
11. Do you know what a selection committee is?			
12. Do you know what a clinical criteria is?			
13. Do you know what an immunological criteria is?			
14. Do you know what a WHO stage is?			
15. Do you know what a CD4 count is?			
16. Do you know what a blood test is?			
17. Do you know what a urine test is?			
18. Do you know what a saliva test is?			
19. Do you know what a skin test is?			
20. Do you know what a bone marrow test is?			
21. Do you know what a lymph node biopsy is?			
22. Do you know what a chest X-ray is?			
23. Do you know what a CT scan is?			
24. Do you know what an MRI scan is?			
25. Do you know what a PET scan is?			
26. Do you know what a ultrasound is?			
27. Do you know what a biopsy is?			
28. Do you know what a skin biopsy is?			
29. Do you know what a bone marrow biopsy is?			
30. Do you know what a lymph node biopsy is?			
31. Do you know what a chest X-ray is?			
32. Do you know what a CT scan is?			
33. Do you know what an MRI scan is?			
34. Do you know what a PET scan is?			
35. Do you know what a ultrasound is?			
36. Do you know what a biopsy is?			
37. Do you know what a skin biopsy is?			
38. Do you know what a bone marrow biopsy is?			
39. Do you know what a lymph node biopsy is?			
40. Do you know what a chest X-ray is?			
41. Do you know what a CT scan is?			
42. Do you know what an MRI scan is?			
43. Do you know what a PET scan is?			
44. Do you know what a ultrasound is?			
45. Do you know what a biopsy is?			
46. Do you know what a skin biopsy is?			
47. Do you know what a bone marrow biopsy is?			
48. Do you know what a lymph node biopsy is?			
49. Do you know what a chest X-ray is?			
50. Do you know what a CT scan is?			
51. Do you know what an MRI scan is?			
52. Do you know what a PET scan is?			
53. Do you know what a ultrasound is?			
54. Do you know what a biopsy is?			
55. Do you know what a skin biopsy is?			
56. Do you know what a bone marrow biopsy is?			
57. Do you know what a lymph node biopsy is?			
58. Do you know what a chest X-ray is?			
59. Do you know what a CT scan is?			
60. Do you know what an MRI scan is?			
61. Do you know what a PET scan is?			
62. Do you know what a ultrasound is?			
63. Do you know what a biopsy is?			
64. Do you know what a skin biopsy is?			
65. Do you know what a bone marrow biopsy is?			
66. Do you know what a lymph node biopsy is?			
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68. Do you know what a CT scan is?			
69. Do you know what an MRI scan is?			
70. Do you know what a PET scan is?			
71. Do you know what a ultrasound is?			
72. Do you know what a biopsy is?			
73. Do you know what a skin biopsy is?			
74. Do you know what a bone marrow biopsy is?			
75. Do you know what a lymph node biopsy is?			
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87. Do you know what an MRI scan is?			
88. Do you know what a PET scan is?			
89. Do you know what a ultrasound is?			
90. Do you know what a biopsy is?			
91. Do you know what a skin biopsy is?			
92. Do you know what a bone marrow biopsy is?			
93. Do you know what a lymph node biopsy is?			
94. Do you know what a chest X-ray is?			
95. Do you know what a CT scan is?			
96. Do you know what an MRI scan is?			
97. Do you know what a PET scan is?			
98. Do you know what a ultrasound is?			
99. Do you know what a biopsy is?			
100. Do you know what a skin biopsy is?			

Table 2: Tool for providing information and assessing understanding of ART

Objectives

We aimed to assess the equity and efficiency of current practices for referral to and commencement of ART at the Social Health Clinic.

Methods

Observational data on all adults attending SHC are collected prospectively and entered into an electronic database. Data include demographics, attendance, clinical information and laboratory test results. For the purposes of this study adults who were on ARV at enrollment and children were excluded. We compared gender, education level and residential status of adults enrolled in the clinic with the sub-set initiating ARV. Time from first clinic visit to initiation of ARV was used as a measure of efficiency. The gender balance of rationing at the point of referral was assessed using demographic data of patients with positive HIV test results from the VCCT from January 1st to June 30th 2005 and enrollment data at the SHC for the same period. This was used to estimate the gender ratio of adults enrolled and compared to the gender ratio of adults testing positive at the VCCT.

Results

In the first nine and a half months of operation to the end of September 2005 the SHC enrolled 506 patients, including 479 adults. Of these, 309 (64.5%) were found to be eligible for ART according to clinical and immunological criteria in the Cambodian National ART Guidelines and 214 (69.2% of those eligible) started ART.

Table 3: CD4 and WHO stage of adult patients (n=479)

CD4 (cells/µl)	WHO 1	WHO 2	WHO 3	WHO 4	Total	%
CD4 > 500	10	18	20	1	49	10%
CD4 500 - 350	19	43	60	11	133	28%
CD4 350 - 200	6	26	88	17	137	27%
CD4 < 200	6	14	66	75	161	35%
CD4 Median	201	260	62	55		
CD4 IQR	45 - 478	92 - 407	25 - 230	23 - 181		
Total	34	101	288	56	479	
%	7%	21%	60%	12%	100%	

Table 3: CD4 and WHO stage of adult patients (n=479)

*Number of patients fulfilling clinical and immunological criteria for ART according to the Cambodian National Guidelines are highlighted.

Median baseline CD4 counts were 110 cells /µl, 48 cells /µl and 46 cells /µl in all patients, those who started ART and those who were eligible but did not commence ART, respectively. Among eligible patients there were no difference in the proportion starting treatment according to gender or residential status, however adults who did not have any high school education were less likely to start ART than those who did not, 90/150 vs 124/159; p=0.01 (Table 4)

Table 4: Proportion of eligible patients starting ART

	Total	Start	Not start	P
Total	309	214	95	31%
Gender				
Male	192	127	65	34%
Female	117	87	30	26%
Residence				
Phnom Penh	191	129	62	32%
Province	118	85	33	28%
Education				
Primary or less	150	90	60	40%
Above primary	159	124	35	36%
				<0.01

Table 4: Proportion of eligible patients starting ART

Table 5 describes potential confounding reasons for the association between education level and initiation of ART. Within eligible patients there was a significant association between education level and CD4 with patients with lower education more likely to have a lower CD4 on presentation (P=0.02). However within eligible patients there was no significant association between CD4 count at presentation and starting ART. There was also a trend towards shorter duration of follow up for patients with lower education (P=0.22).

Table 5: Duration of follow up and CD4 on presentation by education level

Education level	Primary or less	Above primary	P		
Statistic	mean	median	mean	median	
Duration of follow up (days)	148	148	162	172	0.22
CD4 count at presentation (cells/µl)	62	43	60	47	0.02

Table 5: Duration of follow up and CD4 on presentation by education level

Among eligible patients there was no difference in time from enrollment to starting ART according to gender, residential status or education level (Table 6).

Results (continued)

Table 6: Time to start ART from enrollment (n=214)

	Median (days)	IQR (days)
Total	47	35-62
Gender		
Male	47	35-63
Female	47	35-62
Residence		
Phnom Penh	48	37-64
Province	47	35-67
Education		
Primary or less	48	35-63
Above primary	47	35-62

Table 6: Time to start ART from enrollment (n=214)

Eligible patients who had been followed for less than three months were less likely to have commenced ART (p< 0.001).

For the first six months of 2005 the number of women testing HIV positive at the VCCT was 517. During the same period 101 women presented for care at the SHC giving a ratio of number testing HIV positive : number presenting for care of 0.20 The number of men testing HIV positive during this period was 449 and 121 men presented for care at the SHC giving a significantly different ratio of 0.27 (P=0.01).

Table 7: Ratio of people testing HIV positive at VCCT to number presenting for care by gender* January 1st 2005 – June 30th 2005

	Test HIV positive	Presented for care	Did not present for care	P
Male	449	121	328	85%
Female	517	101	416	73%
Total	966	222	744	77%

*The delay between testing HIV positive at the VCCT and first visit at SHC results in these two populations being composed of different individuals.

Of the 135 patients who commenced ART during this time period with at least 3 months of follow up, 3 (0.01%) had died and 3 (0.02%) were lost to follow up.

Conclusion

This study was conducted at a clinic in which enrollment for outpatient services is able to be rationed, and ART is provided to all enrolled patients who are eligible on clinical and immunological criteria. In this setting, ART was commenced efficiently without the potential delays associated with referral of patients to a selection committee

However the results of this study indicated that patients eligible for ART with a higher education level were more likely to start ART at the SHC than eligible patients with lower education level. This may be because of different spectrum of disease, shorter duration of follow up, less symptoms due to higher use of private medicine, better ability to show understanding of HIV and treatment or perceived readiness to adhere to lifelong treatment.

In addition evaluation of referral processes suggested inequity with regard to gender in uptake of referral to the clinic from the VCCT. This may be due to gender bias in referral information given by VCCT staff or a gender difference in willingness or ability to present for care.

The structure and function of health care systems that provide HIV testing, referral to HIV care, clinical services and ART contribute to the equity and efficiency of HIV treatment. Transparent monitoring and evaluation of these systems at all levels of HIV testing and care are feasible using simple data collection methods and are necessary to ensure referral and selection procedures maximize equity, efficiency and treatment outcomes.

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