The relationship between adherence to clinic appointments and year-one mortality for HIV infected patients at a Referral Hospital in Western Kenya

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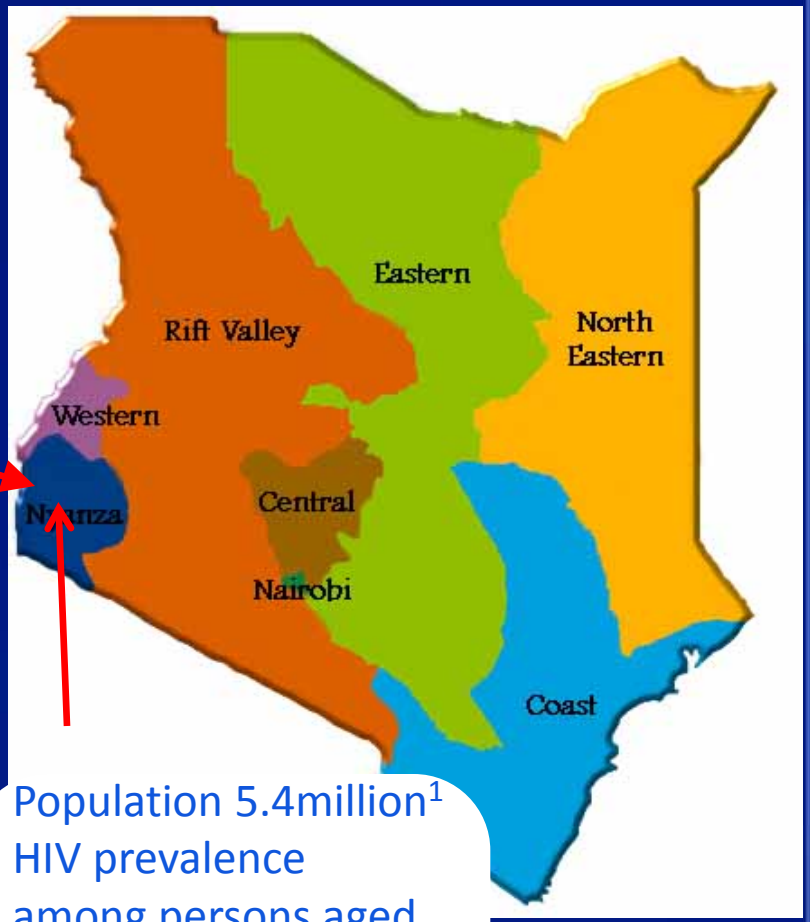
HIV Epidemiology



Kenya

- Population 38.6 million[1]
- HIV Prevalence among persons aged 15-49 years 5.1%[2]
- 51% know their HIV status[2]
- 46% in HIV care[2]
- 43% retained in care after 1 year[2]

Population 5.4million[1]
HIV prevalence among persons aged 15-49 years 15.2%[2]

[1]Kenya National Bureau of Statistics K. Population and Housing Census. 2011 [cited 2013 April 1st]; Available from: http://www.knbs.or.ke/population.php

[2] National AIDS and STI Control Program N. Kenya AIDS Indicator Survey 2012: Preliminary Report. Nairobi, Kenya: Ministry of Health, Kenya; 2013 September

Effect of non-adherence to clinic appointment on treatment outcomes of HIV infected patients

- Previous studies have shown that appointment adherence is necessary for
  - monitoring of disease progression [3,4]
  - appropriate timing of ART initiation[5]
  - adherence to Anti-Retroviral Therapy (ART)[6]
  - recognition of failure[5]
  - prevention of drug resistance[5]

- Adherence to clinic appointments can therefore be used as an objective proxy for self-reported adherence to treatment[7]

[3]Fong R, et al Factors associated with virological failure in a cohort of combination antiretroviral therapy-treated patients managed at a tertiary referral centre. Sex Health. 2013 Nov; 10(5):442-7.

[4]Peterson K, et al. Use of Self-Reported Adherence and Keeping Clinic Appointments as Predictors of Viremia in Routine HIV Care in the Gambia. J Int Assoc Provid AIDS Care 2013 Aug 30

[5]National AIDS and STI Control Program N. Guidelines for Antiretroviral therapy in Kenya 4th Edition. Nairobi, National AIDS and STI Control Program; 2011.

[6]Israelski D, et al Sociodemographic characteristics associated with medical appointment adherence among HIV-seropositive patients seeking treatment in a county outpatient facility. Prev Med. 2001 Nov; 33(5):470-5.

[7]World Health Organization WHO. RETENTION IN HIV PROGRAMMES Defining the challenges and identifying solutions. Geneva; 2011 13th-15th September.

Objective

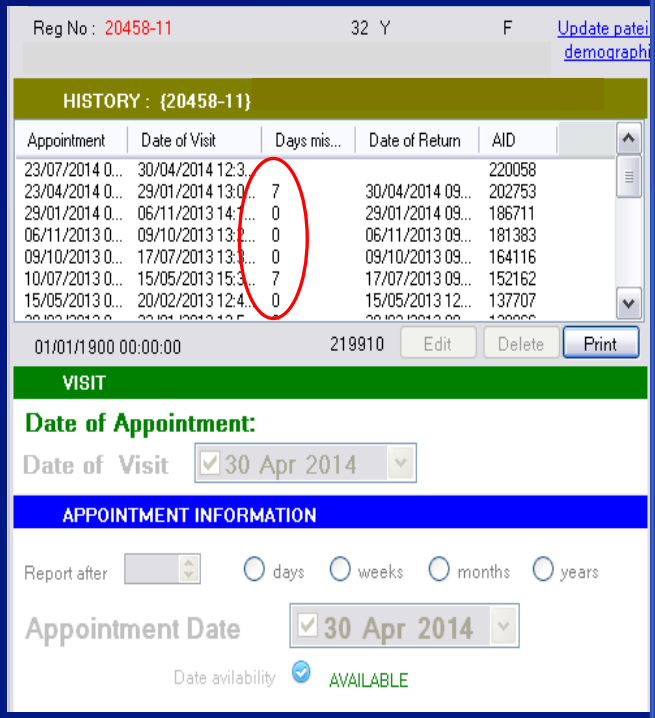
- To examine the relationship between adherence to out-patient HIV clinic appointments and year-one mortality rates for newly enrolled HIV-infected patients at the JOOTRH HIV clinic

- Hospital is largest public health facility in Nyanza

- Referral in western Kenya

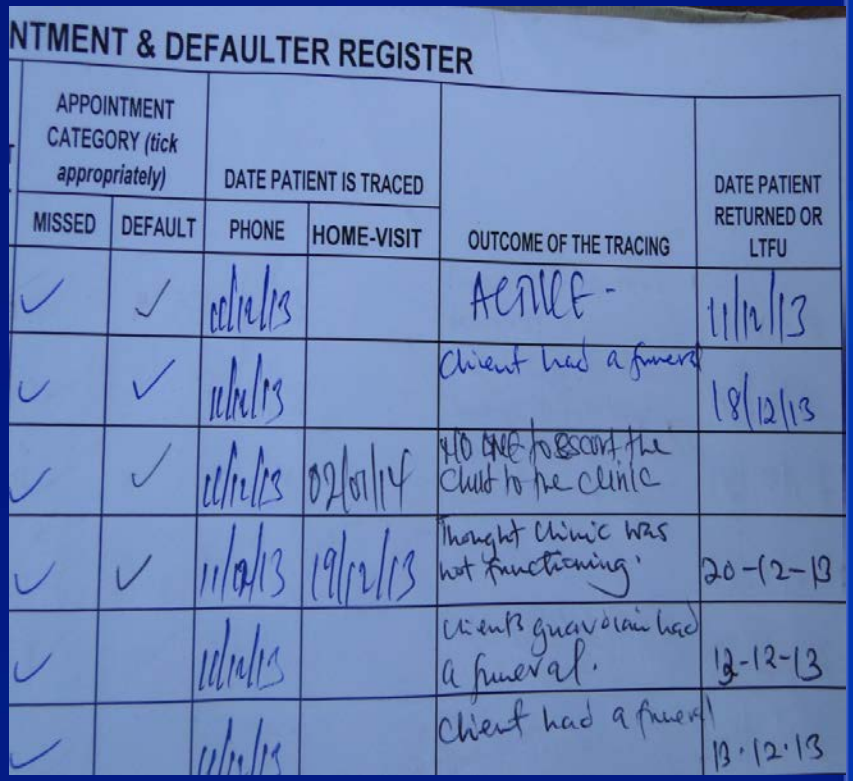
Methods

- Retrospective review of the electronic medical records for newly enrolled patients at the JOOTRH HIV clinic between Jan 2011 and Dec 2012
- Patients aged ≥ 15 years
- Risk factors include:
  - Demographic: *Age, gender, education,…*
  - Clinical: *CD4, WHO stage, ART eligibility*
  - Psycho-social: *Support group, disclosure*
- Analytic methods
  - Alternating Logistic Regression
  - Cox proportional hazards



Outcomes

- Adherence to medical appointments
  - Adherent patients (Non-defaulters); attended all clinic appointments as scheduled or within 3 days of the scheduled date
  - Non-adherent patients (Defaulters); did not attend clinic appointments as scheduled
  - Measured at each scheduled appointment
- Patient outcomes at end
  - 'alive', 'transferred', 'dead' or 'lost to follow-up'



NTMENT & DEFAULTER REGISTER

APPOINTMENT CATEGORY (tick appropriately)		DATE PATIENT IS TRACED		OUTCOME OF THE TRACING	DATE PATIENT RETURNED OR LTFU
MISSED	DEFAULT	PHONE	HOME-VISIT		
✓	✓	11/12/13		Alive	11/12/13
✓	✓	11/12/13		Client had a funeral	18/12/13
✓	✓	11/12/13	02/01/14	No one to escort the client to the clinic	
✓	✓	11/12/13	19/12/13	Thought clinic was not functioning	20-12-13
✓		11/12/13		Client's grandmother had a funeral.	12-12-13
✓		11/12/13		Client had a funeral	13.12.13

Selected characteristics of newly infected HIV patients at JOOTRH, 2011-2012

- 582 new HIV patients enrolled
  - 89% (n=516) aged ≥24 years
  - 60% (n=347) female
  - 92% (n=538) had primary or lower education
  - 88% (n=510) had disclosed their HIV status
  - 82% (n=477) ART-eligible at enrolment by clinical & immunological staging. ALL initiated on ART
  - 44% (n=258) were defaulters
  - 3%(n=19) died

Comparisons of selected patient characteristics between defaulter and non-defaulters

Characteristic		Defaulters 258 (44%)	Non-defaulters 324 (56%)	P-value
Age group	15-24 years	32(12)	34(10)	0.47
	≥ 24 years	226(88)	290(90)	
Gender	Male	107(41)	128(40)	0.63
	Female	151(59)	196(60)	
Education level	Above primary	**28(11)**	**16(5)**	**0.01**
	Primary or less	230(89)	308(95)	
Smoking	Yes	**16(6)**	**8(2)**	**0.02**
	No	242(94)	316(98)	
Disclosed to who	Both family & non-family	**120 (53)**	**168 (60)**	**0.03**
	Family	37 (16)	57 (20)	
	Non-family	11 (5)	15 (5)	
	Not specified	59 (26)	43 (15)	

Odds ratios for selected risk factors associated with rate of defaulting clinic appointments over

Characteristic		Unadjusted OR (95% CI)	p-value	Adjusted OR (95% CI)	p-value
Age group	15-24 years	1.3 (0.9-2.0)	0.13	-	-
	>= 24 years	ref		ref	
Gender	Female	1.0 (0.8-1.3)	0.98	-	-
	Male	ref		ref	
Employed	No	1.3 (1.0-1.7)	0.03	1.4 (1.1-1.9)	**0.014**
	Yes	ref		ref	
Smokers	Yes	1.9 (1.1-3.4)	0.02	2.2 (1.3-3.8)	**0.003**
	No	ref		ref	
Disclosed to who	Both family and non-family	ref		ref	
	Family	1.4 (0.9-2.0)	0.08	1.4 (0.9-2.1)	0.072
	Non family	1.5 (0.8-3.0)	0.24	1.5 (0.7-3.1)	0.335
	Not specified	1.9 (1.4-2.6)	<.0001	2.2 (1.4-3.3)	**0.0003**

Impact of adherence to clinic appointments on year-one mortality rates among HIV patients enrolled at JOOTHR

Adherence to clinic visits for 1 year	Patients (N=582)	Deaths n=19 (%)	Total follow up time (person years)	Death rate per 100 person years	Hazard ratio (95% CI)
Adherence status					
Defaulters	258	12(63)	99.3	4.0	3.2 (1.2-8.0)
Non-defaulters	324	7(37)	222.5	3.1	ref
Cumulative elapsed time from appointment to actual visit (days)					
None	324	7 (37)	222.5	3.2	ref
4-60 days	187	7 (37)	69.9	10.0	4.1 (1.4-11.8)
60+ days	71	5 (26)	29.3	17.1	5.0 (1.5-17.0)

Limitations

- Inability to determine “true” outcomes of lost to follow-up patients
- Inability to control for other factors associated with mortality
  - TB co-infection
  - Recurrent illnesses during the follow-up period
- A short follow up period of one year

Conclusion

- High rate of non adherence to clinic appointments associated with risk of death
  - Patients likely to default had not disclosed their HIV status, were unemployment or smokers.
- Non-adherence to clinic appointments is linked to poor patient outcomes
  - Risk of death increases with increase in cumulative days elapsed between scheduled appointment and actual visit

Recommendations

- Institute interventions to improve adherence targeting e.g.,
  - Patient not yet disclosed their HIV status, unemployed and smokers
  - Patient involvement in scheduling & rescheduling of appointments in the event of unexpected circumstances
- Further analysis to address other causes of mortality
- Assess treatment adherence using other means

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