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Mortality among HIV Patients on Antiretroviral Treatment (ART) in Bali, Indonesia 2006-2014

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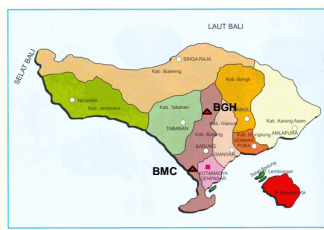
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Background – HIV in Indonesia

- **Indonesia** → Significant increase in new HIV infections & AIDS-related deaths between 2005 to 2013 (UNAIDS, 2012; 2014)
- **Bali** → the third highest HIV/AIDS case rate of all provinces in Indonesia
- **Badung General Hospital (BGH)** → third highest number of HIV cases in Bali in June 2014 (Indonesia's Ministry of health, 2014)

Map of Bali



- BGH → main district hospital of Badung district-providing treatment to general population
- BMC → satellite clinic of BGH-provides targeted HIV care and referrals to BGH for MSM

Background

HIV/AIDS mortality has decreased →
remains a global health problem



- HIV/AIDS remains a leading **global cause of mortality** (Ortblad et al., 2013)
- 2008-2030 projections indicate AIDS deaths will be higher than deaths by any other diseases (Bongaarts et al., 2009)
- Scale-up of ART has resulted in reduced AIDS-related deaths though some countries with **low ART access** → **increased** in AIDS-related deaths (UNAIDS, 2014)

Background - Predictors of Mortality

- A variety of socio-demographic and clinical characteristics have been reported to be associated with mortality among HIV patients taking ARVs in a number of different settings
- Data relevant to the Indonesian setting is very limited



We explored incidence and predictors of mortality among HIV patients on ART attending a large district hospital in Bali

Methods

- **Study Design** → A retrospective cohort study
 - Baseline: the data of first ART visit
 - Censor: loss to follow up (LTFU) and transfer out to other ART clinics
 - Unknown mortality status → classified as LTFU

Methods

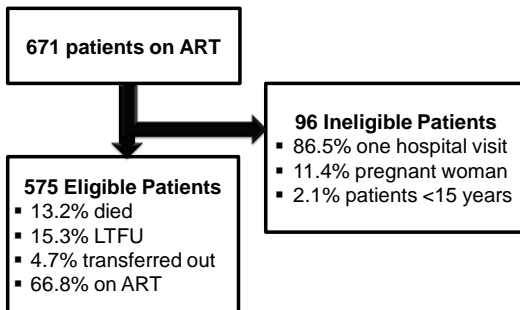
Study Population

- All adult patients (671 patients) included in the study → 96 data ineligible → 575 data follow up

Data Collection Technique

- Collected from ART registers, ART national form, and medical records → using standardized data collection form

Research Subject



Methods

Data Analysis

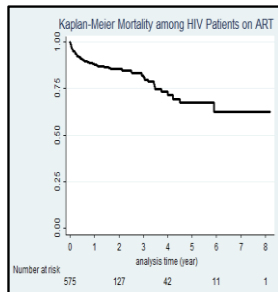
- Kaplan-Meier analysis → the mortality rate
- Cox proportional hazards model → identify predictors (socio-demographic factors, clinical parameters, type of ARV service, and ART policy)

Results – Baseline Characteristics

Characteristics	n% (n= 575)	Characteristics	n% (n= 575)
Age (Median; IQR)	31; (26-38)	Weight (Median; IQR)	55; (47-61)
Sex		CD4 count (Median; IQR)	128; (26-296)
Woman	110 (19.1)	Clinical Stage	
Transmission Risk		Stage I & II	307 (53.4)
Homosexual	232 (40.8)	Stage III & IV	268 (46.6)
Heterosexual	322 (56.6)	Treatment Supervisor	
IDU	15 (2.6)	Yes	241 (41.9)
Education		Type of ARV services	
Higher Education	490 (85.2)	Satellite (BMC)	234 (40.7)
Marital Status		Prime site (BGH)	341 (59.3)
Married	165 (32.5)	ART policy	
		Policy after 2012	413 (71.8)

Results – Kaplan Meier Analysis

- 76 patients died in eight years follow-up
- The mortality rate: 10.1/100 person-years (95%CI:8.0-12.6)
- Mortality rate was high in period after initiation of ART with 35 (46%) dying in initial 3 months



Results – Independent Predictors of Mortality

Characteristics	Unadjusted HR	p-value	Adjusted HR	p-value
Age	1.04	0.001		
Sex		0.124		0.001
Woman	1.00		1.00	
Man	1.69		3.77	
Transmission Risk		<0.001		
Homosexual	1.00		1.00	
Heterosexual	6.51		6.51	
IDU	7.15		7.15	
Education		<0.001		0.008
Higher Education	1.00		1.00	
Lower Education	3.36		1.98	
Marital Status		0.783		
Married	1.00		1.00	
Single/Divorced	0.89		0.89	
Weight	0.94	<0.001	0.96	0.003
CD4 count	0.99	<0.001		
Clinical Stage		<0.001		0.002
Stage I & II	1.00		1.00	
Stage III & IV	9.10		4.61	
Treatment Supervisor		0.001		<0.001
Yes	1.00		1.00	
No	2.24		4.41	
Type of ARV services		<0.001		0.033
Satellite (BMC)	1.00		1.00	
Prime site (BGH)	6.61		3.49	
ART policy		<0.001		
Policy after 2012	1.00		1.00	
Policy before 2012	3.10		3.10	

Conclusions and Implications

- The mortality rate among HIV patients on ART in Bali was high particularly in ART first period
- Our findings suggest:
 - Improvement of ART services to encourage early HIV diagnosis and prompt treatment → aspects of BMCs targeted ART services model might be considered for use at BGH
 - Adherence support is a very important part of ART services → providing treatment supervision, support group, and reminder tools is key to promoting adherence to ART

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THANK YOU