Factors Related to CD4 Change among HIV-Infected Individuals on ART in Tak Hospital, Thailand

Kanoksak Wongpeng[1],
Sukhum Jiamton[2], Sukhontha Kongsin[1], Sukhontha Siri[1]

[1]Faculty of Public Health, Mahidol University, Thailand
[2]Faculty of Medicine Siriraj Hospital, Mahidol University, Thailand.

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Introduction:

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- HIV/AIDS is one of the major health problems in Thailand
  - **~350,000** accumulative reported AIDS cases *(Thai MOPH, 2008)*
  - **~95,000** died *(Thai MOPH, 2008)*
- Under universal coverage scheme (UC), **>92,000** currently on antiretroviral therapy (ART) *(NHSO, 2007,2008,2009)*
- CD4 change depends on factors, e.g. demographics, drug adherence, ARV efficacy *(Le Moing V,2007), (Srasuebkul P,2007)*
- Guideline of ART provision system in Thailand by the National Health Security Office (NHSO):
  - Under UC, CD4 test should have to be performed for free of charge at healthcare facilities in every 6 months to monitor the efficacy *(NHSO, 2007-9)*

Objective:

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- To identify factors associated with increasing CD4 among HIV-infected individuals receiving ART during follow-up period in Tak Hospital, Thailand

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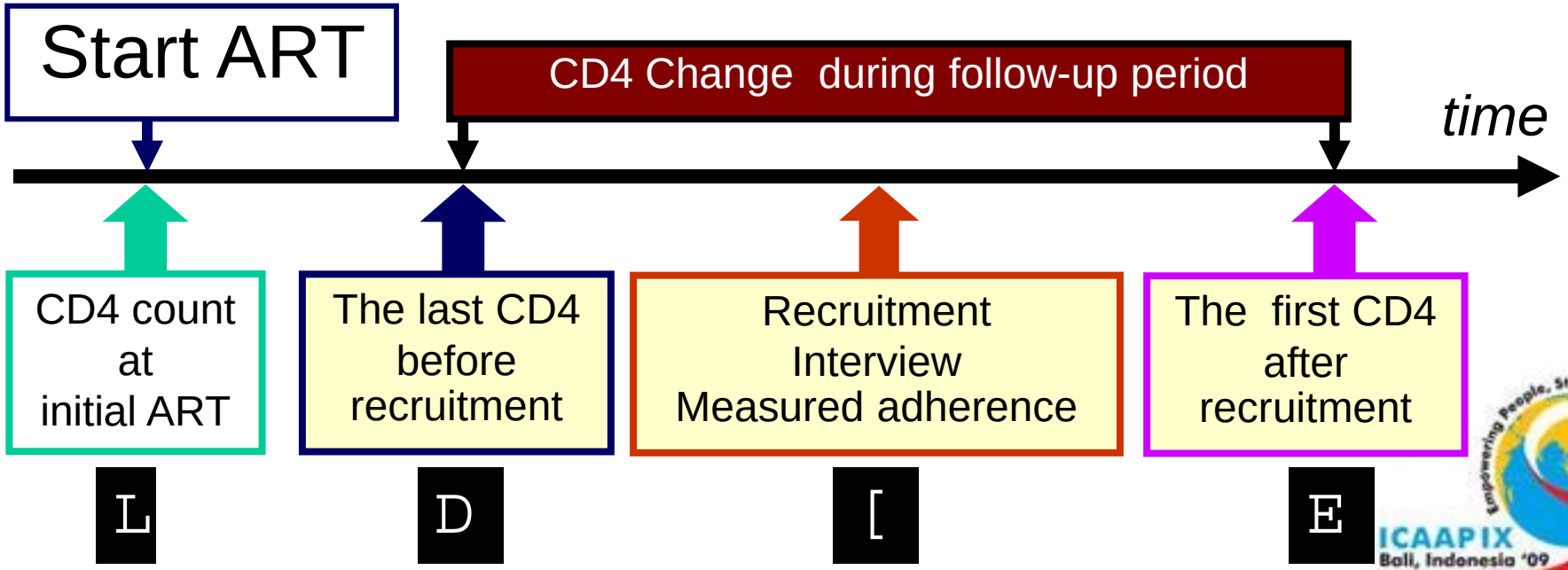
Materials and Methods

- **A retrospective cohort study**
  - Approved by the Ethical Review Committee, Faculty of Public Health Mahidol University (June 2008) and
  - Approved by the Director of Tak Hospital (May 2008)
  - Conducted in Tak Hospital, Thailand from March 2008 to January 2009



Site: Tak hospital, Thailand

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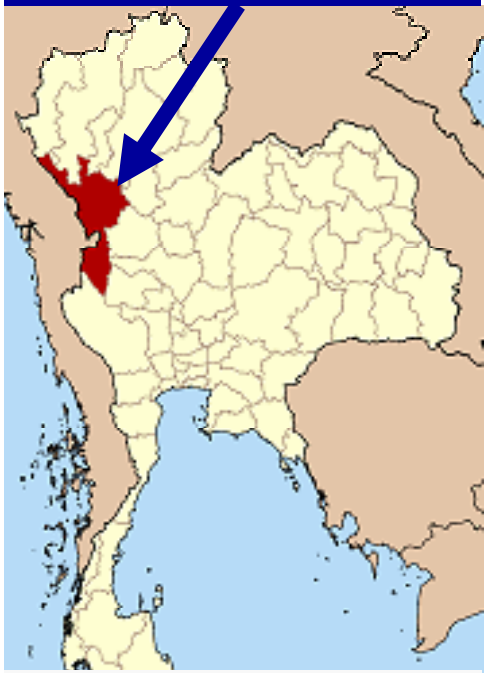
Tak Province



Tak Province
Area: 16,407 km.^{3}
From Bkk 426 km.
9 Districts
Population: 524,468
(MOPH, 2007)

Tak Hospital, Tak Province

- 305 Beds with 687 HIV/AIDS cases
- 403 registered for receiving ARVs

(NHSO, 2009)

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Data analysis

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- Descriptive analysis for demographic & clinical data
- Paired T-test for testing the difference of the last CD4 before recruitment (A) & the first CD4 after recruitment (B)
- Logistic Regression performed for the association between CD4 change & independent factors
  - Demographic factors
  - Clinical data
  - ARTs (regimen, duration of Rx, adherence)

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Results

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Characteristics of 124 patients

- mean follow-up time 6.6 months (sd 1.4)
- female 51%
- mean age 37.5 years (sd 7.6)
- 53% had education higher than primary school
- half were employees
- 81% were under the Universal Coverage Scheme
- Mean (sd) last CD4 before recruitment 350(231.0) [A]

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Results

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CD4 changes during the follow up period, n=124

59% of cases CD4 increase during follow-up period

CD4 (Cells/microlitre)	The last CD4 before recruitment [A]	The first CD4 after recruitment [B]	P-value	CD4 change during follow-up period [B]-[A]
Mean (SD)	350(231.0)	336(198.7)	<0.001*	-14(150.3)
Min, Max	3,1182	5,1099		-711,496
Median	308	296		9

*Paired t-test

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Results

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Adjusted associations between factors and CD4 change* (from multivariate analysis)

Variables	Crude (n=124)		Adjusted (n=119)		
	OR	95% CI	OR_{adj}	95% CI	*p*-value*
Sex of patients					
Male	1		1		
Female	1.94	0.94-4.00	**2.69**	1.04-6.94	0.041
Age group of patients					
<50 years old	1		1		
≥50 years old	1.18	0.27-5.16	0.53	0.92-2.97	0.316
Duration of receiving antiretroviral therapy					
<12 months	1		1		
≥ 12 months	.20	0.08-0.66	**0.19**	0.06-0.70	0.012

***Adjusted by sex, age group, duration of receiving ART, marital status, OI history, BMI and Adherence to ART**

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Results

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Adjusted associations between factors and CD4 change* (from multivariate analysis), Con't

Variables	Crude (n=124)		Adjusted (n=119)		
	OR	95% CI	OR_{adj}	95% CI	*p*-value*
Marital status					
Single	1		1		
Married	2.80	1.06-7.38	**3.23**	1.04-9.98	0.042
Widowed/divorced/separated	1.36	0.54-3.47	1.25	0.39-4.00	0.703
History of opportunistic infection					
Not occurred	1		1		
Occurred	1.14	0.52-2.52	1.50	0.56-4.02	0.411
BMI (per 1 value increased)	0.90	0.78-1.05	**0.82**	0.68-0.99	0.044
Self report adherence					
< 95%	1		1		
≥ 95%	1.67	0.78-3.59	1.69	0.69-4.18	0.248
History of change ARVs					
No	1		1		
Yes	1.63	0.61-4.33	2.55	0.11-9.11	0.149

***Adjusted by sex, age group, duration of receiving ART, marital status, OI history, BMI and Adherence to ART**

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Discussion

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From multivariate

Marital status

- "Married status" had 2.78 times of chance for CD4 increase compared with single status
  - Supported from their spouses
  - Remind on ART taking on time by their spouses

BMI

- "Body Mass Index (BMI)" had significant association with CD4 increased during follow-up period
  - dosage of ART among higher BMI was proportionally lower than lower BMI (diluting effect?)

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CONCLUSION & RECOMMENDATION

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- The results of our study highlight a positive association between “married status”, “duration of taking ART for less than one year” and the increased CD4 count
- BMI should be considered when giving ART

- Further studies in different facilities should be considered.

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Thank you for your attention

Acknowledgement

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- "NEW LIFE" HIV club
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- Department of Epidemiology, Faculty of Public Health Mahidol University Thailand