

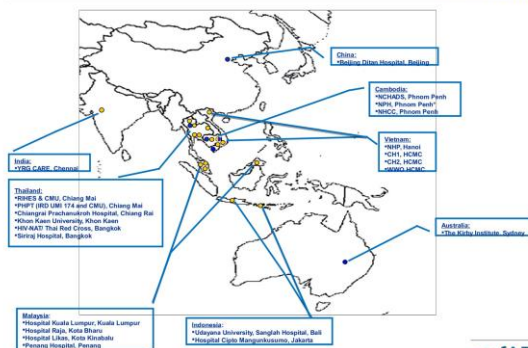
### Trends in CD4 cell count and HIV viral load suppression in Asian adolescents

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### Aim of study

to describe the trajectory patterns of CD4 cell count and viral suppression during pre-adolescence and adolescence period after initiating cART ( $\geq 3$  antiretrovirals)



### Background

- More perinatally HIV-infected children are reaching adolescence
- Adolescents have been reported to have a lower rate of virologic suppression and immunologic recovery than adults and higher loss to follow-up rates
- Adherence rates decline with age: 76% among 15–18 year olds compared with 83–89% for younger children (PACTG 219 study, US)

### Inclusion criteria

- acquired infection either perinatally or during early childhood
- aged <15 years at the start of cART
- started cART after January 2003 and were continuously on treatment for  $\geq 1$  year
- had  $\geq 3$  CD4 and viral load assessments during follow-up
- Data from TREAT-Asia Pediatric HIV Observation Database (TApHOD) up to March 2014; 18 clinics, 6 countries

### Endpoints

- trajectories of CD4 cell count and viral suppression (i.e., <400 copies/ml) at different ages during preadolescence (5-9 years) and adolescence (10-19)
- The follow-up/analysis from age 5 after being on cART for >1 year (**baseline**), and continued up to age 19.
- Statistical analysis**
- Repeated measure mixed models



Results

- 2930 children were included in the CD4 analysis

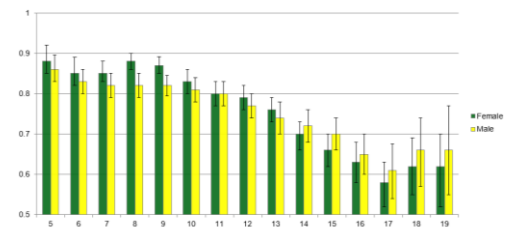
	Age categories at start of follow-up			
	5-9 (n=2207)	10-14 (n=688)	15-19 (n=35)	All (n=2930)
Male	(51.7)	(45.8)	(48.6)	(50.3)
Country				
Thailand	769 (34.8)	513 (74.6)	31 (88.6)	1313 (44.8)
Vietnam	726 (32.9)	69 (10.0)	-	795 (27.1)
Cambodia	388 (17.6)	42 (6.1)	1 (2.9)	431 (14.7)
Malaysia, Indonesia, India	324 (14.7)	64 (9.3)	3 (8.6)	391 (13.3)

Results

At start of cART	Age categories at start of follow-up			
	5-9 (n=2207)	10-14 (n=688)	15-19 (n=35)	All (n=2930)
Age	5.0 (3.2-6.9)	10.8 (9.9-12.1)	14.5 (14.2-14.7)	6.2 (3.8-9.0)
WHO stage III/IV	1051 (47.6)	323 (47.0)	20 (57.2)	1394 (47.6)
WAZ < -2SD	990 (44.8)	337 (49.0)	12 (34.3)	1339 (45.7)
HAZ < -2SD	977 (44.2)	303 (44.0)	10 (28.6)	1290 (44.0)
CD4 percentage	10 (4-16)	7 (2-13)	6 (3-13)	9 (3-15)
<10%	881 (39.9)	350 (50.9)	16 (45.7)	1247 (42.6)
10-24%	795 (36.0)	182 (26.4)	12 (34.2)	989 (33.8)
≥25%	122 (5.5)	25 (3.6)	1 (2.9)	148 (5.1)
Unknown	409 (18.5)	1341 (19.0)	6 (17.1)	546 (18.6)

At most visit	Age categories at start of follow-up			
	5-9 (n=2207)	10-14 (n=688)	15-19 (n=35)	All (n=2930)
Parental status				
Single orphan	670 (30.4)	209 (30.4)	12 (34.3)	891 (30.4)
Double orphan	416 (18.9)	266 (38.7)	7 (20.0)	689 (23.5)
Died	32 (1.4)	15 (3.6)	-	57 (1.9)
Transferred	159 (7.2)	179 (26.0)	11 (31.4)	349 (11.9)
Lost	32 (1.5)	23 (3.3)	3 (8.6)	58 (2.0)
Follow-up time, PY	11,424	3458	104	14,986
Median years	5.1 (3.2-6.9)	5.4 (3.2-6.9)	3.3 (2.0-4.6)	5.1 (3.2-6.9)

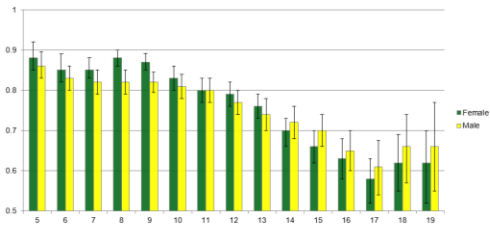
Proportion with CD4 count >500 cells/mm3



Median CD4

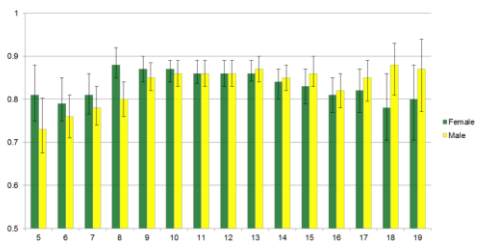
- Females 5-9 yrs: 909, 10-14 yrs: 744, 15-19 yrs: 592
- Males 867 to 722 to 611

Proportion with CD4 count >500 cells/mm3



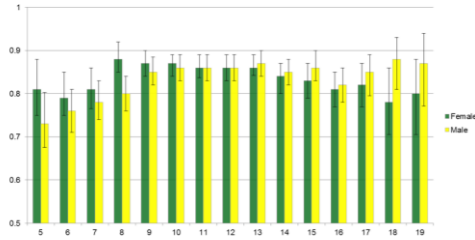
The declining trend in CD4 was significant during late adolescence (15-19 years) in both males (p=0.02) and females (p < 0.001) after adjusting for age, CD4, HIV RNA, and treatment interruptions

Proportion with HIV-RNA <400 copies/ml



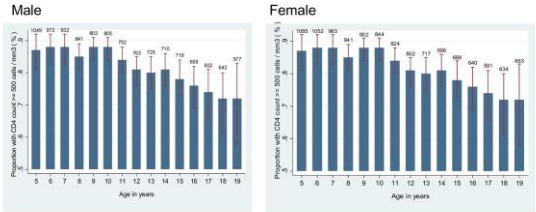
Among the 1928 adolescents in the HIV RNA analysis, 73-88% had results <400 copies/mL during preadolescence and adolescence

Proportion with HIV-RNA <400 copies/ml



Female 15-19 years had lower rates of viral suppression (OR 0.78, 95% CI 0.61-0.99, p=0.04) than females 10-14 years; no differences were seen in males

Sensitivity analysis: Proportion with CD4 count >500 cells/mm<sup>3</sup> among virologically suppressed



Mortality

- 57 (1.9%) died → mortality rate of 0.38 (0.29- 0.49)
- 19 (47%) deaths were due to acute infectious

Age at follow-up start, yrs	Age at death, yrs			Total
	5-9 (2207)	10-14 (2159)	15-19 (980)	
5-9	15	14	3	32
10-14	0	6	19	25
<b>Total</b>	<b>15</b>	<b>20</b>	<b>22</b>	<b>57</b>

Conclusion

- Children in our cohort had consistent virological suppression and age-appropriate CD4 changes regardless of sex
- Despite the overall treatment success, mortality was highest during ages 15-19 years

Acknowledgements

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