# Pill dumping in adolescents receiving a boosted protease inhibitor regimen as part of second-line antiretroviral therapy: Experiences from an urban HIV clinic

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### Recap!

- >95% adherence to achieve viral suppression
- · Self Report
- · Pill Count
- Medication Event Monitoring System (MEMS cap)



## Terribly exciting

Mon	Tue	Wed	Thr	Fri	Sat	Su
				16	17 0	18
19 0	20 0	21 0	22 0	23 0	24	25 0
26 <b>0</b>	27	28	29 0	30 2		

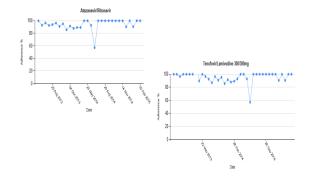


## Leading Case - Brian

- 23 year old male
- TDF/3TC + LPV/rtv since 29 Mar 2010
- ATV/rtv since 1 Mar 2013
- · Happy lad!



# Adherence assessed by pill count



# Pill Count Data (ATV/rtv)

Date	Dispensed	Expected	Actual	Adherence %
02 Feb 2015	10.00	0.00	0.00	100%
23 Jan 2015	20.00	6.00	3.00	100%
09 Jan 2015	24.00	3.00	5.00	90%
19 Dec 2014	21.00	7.00	3.00	100%



#### Lab Data

Date	Viral Load Count	CD4 count
22 Aug 2013		88
26 Aug 2013	12,830	
31 Jan 2014	76,600	146
18 Jul 2014		203
05 Dec 2014	75,731	93

### Comparison of MEMS vs pill count



## Main objectives of the study

- To ascertain the overall adherence of HIV infected adolescents and young adults to ART
- To compare self-report / pill counting adherence measurement techniques against the medicine event monitoring system cap device technique

#### Materials and methods

- Prospective cohort study in adolescents and young adults (aged 12 to 23)
- Blinded to the effect of the cap
- Boosted atazanavir (ATV/rtv) or lopinavir (LPV/rtv)
- Conducted at Newlands Clinic in Harare, Zimbabwe
- Ongoing evaluation

# Demographics (N=52)

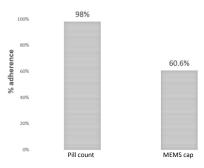
VARIABLE	FREQUENCY
AGE ; MEAN (SE)	17.4 (0.36)
GENDER	(,
MALE	46.2%
FEMALE	53.8%
CARER STATUS	
MATERNAL ORPHAN	13.5%
PATERNAL ORPHAN	26.9%
TOTAL ORPHAN	38.5%
PARENTS ALIVE	21.1%
CD4 COUNT AT BASELINE	
≤500	63.5%
>500	36.5%
VIRAL LOAD AT BASELINE	
≤50	55.8%
	44.2%
>50	

### MEMS study (N = 52)

MEMS data		Pill count data	ı
Adherence level	# of participants	Adherence level	# of participants,
0 - 50	18 (1 with 0%)		n(%)
51 - 60	3	0 - 50	0
61 - 70	6	51 - 90	2
71 - 80	7	91 - 94	5
81 - 90	11	95 - 100	45 (40 with 100%)
90 - 94	3		
95 - 100	4 (2 with 100%)		

median age of 18 (range 12 – 23)

### Median adherence recorded



## Statistical analysis

	Viral load			
Variable	(≤50) (n=29)	(>50) (n=23)	p-value	
Pill count (%; SE)	96.9 (1.50)	99.3 (0.38)	0.167	
MEMS (%; SE)	69.9 (4.59)	49.0 (6.92)	0.012*	
Age (mean; SE)	16.7 (0.50)	18.3 (0.44)	0.017*	
CD4				
≤500	36.4%	63.6%	<0.001***	
>500	89.5%	10.5%		

## Pill Dumping Phenomenon

- Do our patients want to take medicine?
- Newer techniques to ascertain adherence!



#### Costs Add Up

# of pill dumpers	Monthly cost of TDF/3TC + ATV/rtv (USD)	Annual Cost	5 Year Cost!!	150 OI/ART sites nationally
10	15 + 30 = \$45 x 10 patients	\$450 x 12 months = \$5,400	\$27,000	\$4,050,000
20	15 + 30 = \$45 x 20 patients	\$900 x 12 months = \$10,800	\$54,000	\$8,100,000
30	15 + 30 = \$45 x 30 patients	\$1,350 x 12 months = \$16,200	\$81,000	\$12,150,000

### Conclusion

- Pill counts overestimated adherence in adolescent patients on PIs as part of an antiretroviral regimen
- Median adherence was determined to be 60.6%



# Acknowledgements

- Newlands Clinic Team
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- Australasian Society for HIV Medicine







