



Imperial College Healthcare **NHS**
NHS Trust



Age related viral suppression in adolescents living with perinatally acquired HIV-1 infection

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BHIVA Spring Conference Liverpool : Abstract O29

Background

- With suppressive ART most children living with perinatal HIV (PaHIV) in resourced settings survive into adulthood.
- Suboptimal adherence remains the major cause of treatment failure: triple class resistance 12-41% at transfer to adult care¹
- Adherence poorer in adolescents compared to younger children or older adults

¹Collins CID 2017



Methods

- PaHIV aged 12-21 yrs on ART
- Grouped by viral suppression over last 12 months:
 - **SS** sustained suppression: VL <50 c/ml, single blip <400c/ml allowed
 - **IS** intermittent suppression: VL 50-400 c/ml on 2 occasions or >400 on 1 occasion
 - **US** unsuppressed: VL >400c/ml on more than one occasion
- Demographic and Social Factors compared between groups and subsequently compared in 3 age bands (12-15, 16-18, 19-21 years).



Results: Demographics

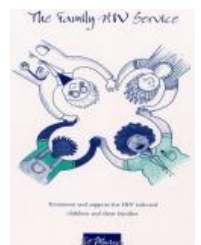
- 123 PaHIV; 57% female, 82% black African, 53% UK born
- Age: median 17 (IQR 15-19) years
- ART: 39%PI, 38%NNRTI, 15%integrase, 7%complex.
- 95% once daily dosing, 27% STR and 35% on first line ART.
- 59 in 900 clinic (Young Adults) and 64 in Family Clinic (Paediatrics)

Viral suppression grouping:

- **SS** n=86 (70%), **IS** n=21 (17%), **US** n=15 (13%)



	Cohort n=123	SS n=86	IS/US n=37	SS V IS/US
Age in years mean (SD)	16.9 (2.4)	16.7 (2.5)	17.6(2.1)	Difference 0.9 years, p<0.03
Female n (%)	70 (57)	50 (58.1)	20 (54)	NS
Black African n (%)	101 (82)	71 (82.6)	30 (81.1)	NS
Non-UK born n (%)	58 (47.2)	41 (47.7)	19 (51.4)	NS
Age at ART start Years mean (SD)	5.7 (4.8)	5.6 (4.7)	5.7 (4.9)	NS
Years on treatment mean (SD)	11.4 (5.2)	11.1 (4.9)	12.1 (5.6)	NS
Parental Bereavement N(%)	27 (21)	19 (22.1)	8 (21.6)	NS
Peer Support N(%)	54 (43.9)	38 (44.2)	16 (43.2)	NS
CDC C diagnosis ever n (%)	26 (21.1)	17 (19.8)	9 (24.3)	NS
Registered disabled n (%)	15 (12.2)	9 (10.5)	6 (16.3)	NS



	Cohort n=123	SS n=87	II/US n=37	SS vs IS/US
PI n (%)	48 (39)	26 (30.2)	22 (59.46)	OR 4.5 (2.05-9.96) p 0.0002
NNRTI n (%)	47 (38.2)	44 (51.2)	3 (8.1)	NA
II n (%)	19 (15.5)	12 (14)	7 (18.9)	NS
1ST Line ART n (%)	43 (35)	35 (40.7)	8 (21.6)	OR 0.4 (0.16-0.98) P <0.05
2nd line n (%)	57 (46.3)	37 (43)	20 (54.1)	OR 1.56 (0.72-3.38)
3rd line + n (%)	23 (18.7)	13 (15.1)	10 (27)	OR 2.08 (0.82-5.3)
1 pill once a day n (%)	33 (26.8)	26 (30.2)	9 (24.3)	NS
>1 pill once a day n (%)	83 (67.5)	58 (66.3)	25 (67.6)	NS
CD4 > 500 n (%)	100 (81.3)	77 (89.5)	23 (62.2)	OR 0.19 (0.07-0.5) p 0.0007

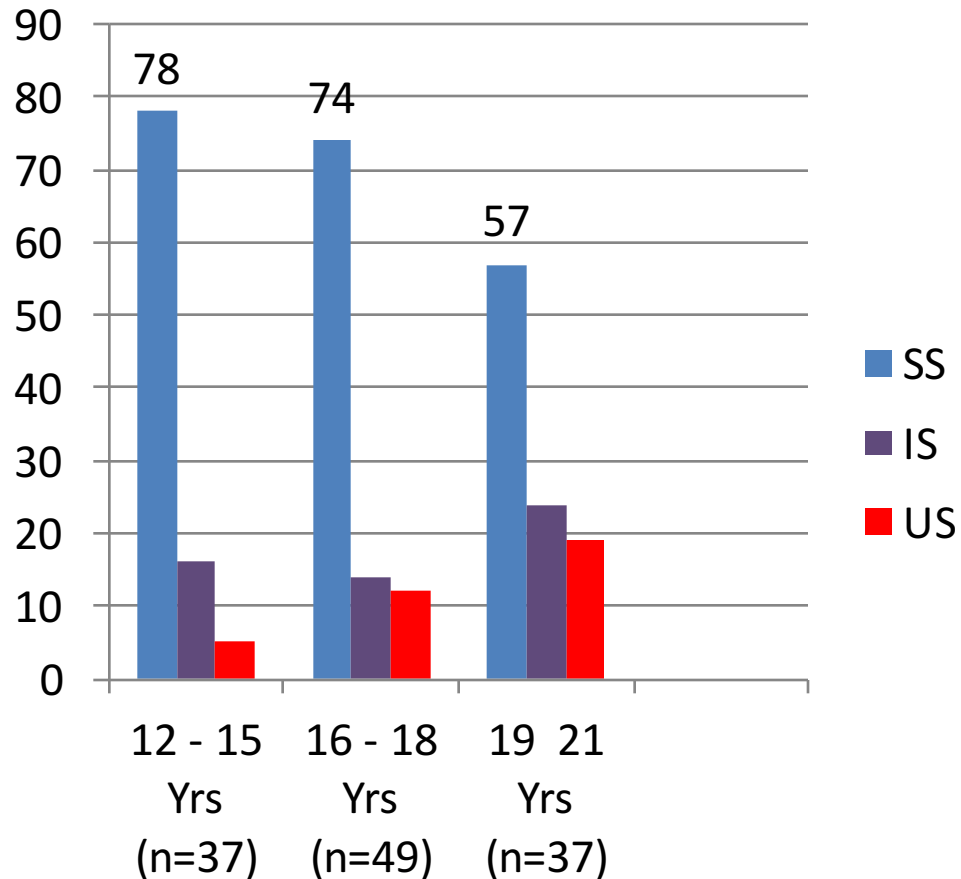


Results: Viral suppression and Age

Mean age of the **SS** group was 0.92 years younger than the **IS and US groups together** ($p < 0.03$), and 1.71 years younger than the **US** group ($p < 0.004$).

There was no significant difference in viral suppression rates between 12-15 and 16-18 year olds, but a significant decline in suppression rates was observed in the 19-21 age group .

Between the ages of 12-15 and 19-21, RR of viral suppression was 0.72 [95% CI 0.52-1]



Results: Viral Suppression and CD4

- 81% of the cohort had CD4 count >500cells/ul and only 6 had counts <200 cells/ul
- **89.5% of SS** group vs **62.2% of IS/US** group had CD 4 count > 500 cells/ul (OR 0.19, $p<0.0007$)
- CD4 count <200 cells/ul found predominantly in 19-21 age group – however, numbers too small for statistical comparison.



Results: Viral Suppression and ART

- PI v all other ART regimens were associated with non-suppression (**IS/US** v **SS**: OR 4.5, 95% CI 2.05-9.96).
- No significant difference in PI use by age-group
- 44/47 young people on NNRTI based regimen were in **SS** group
- 1st Line Therapy associated with **SS** vs **IS/US** group (OR 0.14, 95% CI 0.16-0.98)

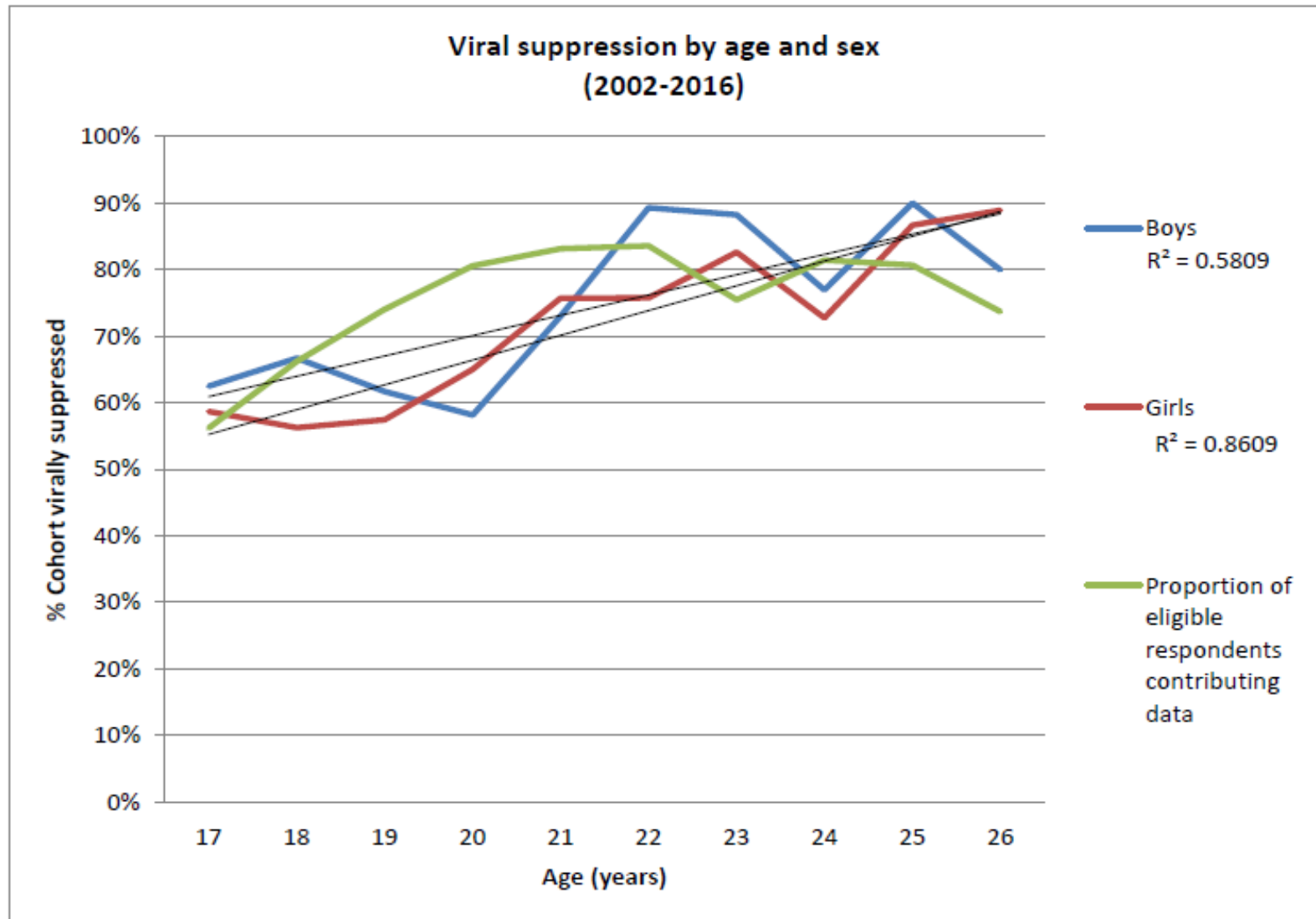


Results: Other Risk Factors

- > 50% of young people aged 12-18 engaged in some sort of peer support. However, no relationship with viral suppression was demonstrated
- There was no effect on viral suppression of gender, length of time or age at starting ART, comorbidity, CDC status, pill burden, disability or parental loss.
- In the 16-18 age group, no difference in viral suppression was observed before or after transition



Results



Conclusion

- Adolescence and early adulthood are major risk factors for loss of viral suppression in this cohort of young people living with PaHIV
- Rates of viral suppression were stable through early and middle adolescence and decreased in late adolescence, associated with second line, PI based ART and poorer immune function.
- With a median age of transition to UK adult services of 17.5 years, enhanced adherence support in late childhood and through early/mid adolescence is critical.
- Sustained support is needed through late adolescence and into early adulthood as young people reach maturity



Acknowledgements

- Adolescents attending the Family and 900 Clinics
- Family Clinic: Paula Seery, Anita Freeman, Hermione Lyall, Gareth Tudor-Williams, Toyin Popoola
- 900 Clinic: Sarah Fidler, Sara Ayers, Susan McDonald, Graham Frize
- Rebecca French, London School of Hygiene and Tropical Medicine



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Results: Age Related suppression

Age related suppression

SS; 12-15yrs:78.4%

16-18yrs:73.5%

19-21yrs:56.8%

comparing age groups (12-15 v 19-21yrs) RR of VS was 0.72 [95% CI 0.52-1].

