An Adaptive Intervention Trial to Support Viral Suppression among Female Sex Workers

1040

Sheree Schwartz[1], Carly Comins[1], Mfezi Mcingana[2], Siyanda Makama[3], Lillian Shipp[1], Ntambue Mulumba[3], Rene Petlhu[4], Vijay Guddera[3], Katherine Young[2], Pravi Moodley[5,6], Kerusha Govender[5,6], **Harry Hausler**[2,7], Stefan Baral[1]
[1]Department of Epidemiology, Johns Hopkins Bloomberg School of Public Health, Baltimore, Maryland, USA, [2]TB HIV Care, Cape Town, South Africa, [3]TB HIV Care, eThekwini, South Africa, [4]University of Western Cape, Cape Town, South Africa, [5]University of Kwazulu Natal, eThekwini, South Africa, [6]National Health Laboratory Service, eThekwini, South Africa, [7]University of Pretoria, Pretoria, South Africa

BACKGROUND

- Globally, HIV is not evenly distributed within populations; within South Africa, an estimated 60% of female sex workers (FSW) are living with HIV
- The Siyaphambili trial tested two adaptive interventions to identify efficient pathways to viral suppression, including a nurse-led decentralized treatment program (DTP) using a mobile van vs. FSW-peer led individualized case management (ICM) consisting of motivational interviewing, face-to-face visits and telephone calls
- The results of the trial are reported here

METHODS

- TB HIV Care, a South African non-profit organization, is the largest PEPFAR-funded prevention and treatment provider for FSW in South Africa
- Non-pregnant, adult (18 years+), cisgender FSW living with HIV were recruited into the Siyaphambili sequential multiple assignment randomized trial (SMART) study by TB HIV care staff at its drop-in center and FSW work venues in eThekwini
- Women with HIV viral loads ≥50 copies/ml were randomized 1:1 to either the DTP vs. ICM arms; those who were virally suppressed at baseline were not eligible for randomization in the trial and instead remained in the programmatic standard of care (SOC)
- Based on intervention responsiveness at 6-months, defined as viral load <50 copies/ml (responsive) vs. viral load ≥50 copies/ml (non-responsive), participants were re-randomized as follows: (1) those responsive were re-randomized to continue on their initially assigned intervention (DTP or ICM) vs. return to SOC, with the idea that after stabilization perhaps further intensification may not be necessary; (2) those non-responsive were re-randomized to continue on their initially assigned intervention (DTP or ICM) vs. receive both interventions in combination; the re-randomized intervention was continued until 18-months post enrollment
- The primary endpoint of the trial was an intention-to-treat 18-month combined retention and viral suppression (<50 copies/ml); secondarily we considered outcomes after re-randomization

RESULTS

- From June 2018 to March 2020, 1,654 FSW were screened for eligibility, of which 1,391 FSW were eligible and enrolled into Siyaphambili, with a median age of 31 years [IQR:27-37]
- Overall, 519/1,391 (38%) were virally suppressed at enrollment; those who were non-virally suppressed differed in significant ways from those who were virally suppressed – primarily being more marginalized and vulnerable (Table 1)

At 18-months, 117/777 (15.1%) of FSW were retained and virally suppressed overall. Participants who responded early were the most likely to benefit, independent of stepping down to SOC.

Table 1: Characteristics of study participants overall and by viral suppression status

Characteristics	Total (n=1,371)	Non-virally Suppressed (n=852)	Virally Suppressed (n=519)	p-value
Median Age (IQR)*	31 (27-37)	29 (26-34)	34 (29-40)	0.389
18-24	195 (14.2%)	146 (17.1%)	49 (9.4%)	<0.001
25-29	373 (27.2%)	283 (33.2%)	90 (17.4%)	
30-35	400 (29.2%)	249 (29.2%)	151 (29.1%)	
>35	399 (29.1%)	171 (20.1%)	228 (43.9%)	
Education**				
Never attended	25 (1.8%)	11 (1.3%)	14 (2.7%)	0.001
Complete/incomplete primary education	136 (9.9%)	63 (7.4%)	73 (14.1%)	
Secondary school incomplete	947 (69.1%)	615 (72.2%)	332 (63.9%)	
Secondary school complete	218 (15.9%)	134 (15.7%)	84 (16.2%)	
Any post-secondary education or technical training	44 (3.2%)	28 (3.3%)	16 (3.1%)	
Relationship Status**				
Steady partner, living together	208 (15.2%)	134 (15.7%)	74 (14.3%)	0.284
Steady partner, not living together	467 (34.0%)	275 (32.3%)	192 (37.0%)	
Single	695 (50.7%)	442 (51.9%)	253 (48.7%)	
ART experience				
ART naïve	185 (13.5%)	158 (18.5%)	27 (5.2%)	<0.001
Previously on ART	292 (21.3%)	245 (28.8%)	47 (9.1%)	
Currently on ART	888 (64.8%)	444 (52.1%)	444 (85.6%)	
Ever experienced physical abuse	738 (53.8%)	490 (57.5%)	248 (47.8%)	0.002
Ever experienced sexual abuse	514 (37.5%)	359 (42.1%)	155 (29.9%)	<0.001
Median self-reported health state Scale 1-100 (IQR)	52 (50-70)	51 (46-70)	56 (50-76)	<0.001
Ever injected drugs	55 (4.0%)	46 (5.4%)	9 (1.7%)	0.009
Baseline viral load				
< 50 copies/mL (VS)	519 (37.9%)	-	519 (100.0%)	
50 – 1000 copies/mL (NVS)	209 (15.2%)	209 (24.5%)	-	
> 1000 copies/mL (NVS)	643 (46.9%)	643 (75.5%)	-	

*Missing for n=4; **missing for n=1; ***missing for n=6

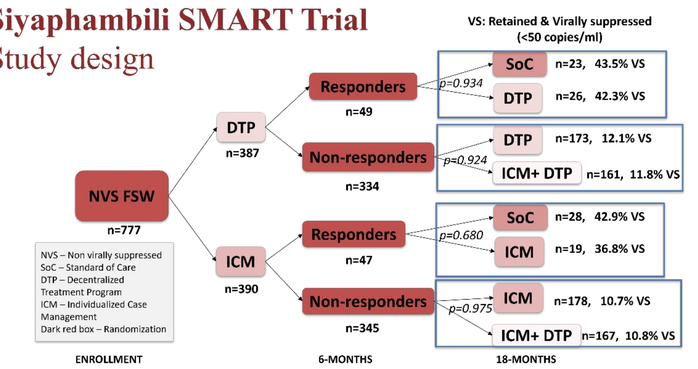
Table 2: Characteristics by arm of randomized participants

Characteristics	ICM (n=388)	DTP (n=385)	p-value
Median Age (IQR)*	30 (26-34)	30 (26-34)	0.374
18-24	59 (15.2%)	63 (16.3%)	0.919
25-29	133 (34.3%)	123 (34.0%)	
30-35	113 (29.1%)	117 (30.4%)	
>35	82 (21.1%)	80 (20.8%)	
Relationship Status*			
Steady partner, living together	59 (15.2%)	63 (16.4%)	0.277
Steady partner, not living together	116 (29.9%)	134 (34.8%)	
Single	212 (54.6%)	188 (48.8%)	
Median age of first exchange of sex acts for goods (IQR)	24 (20-33)	24 (20-37)	0.522
Median age of first exchange of sex acts for money (IQR)	22 (20-27)	23 (20-26)	0.646
Hormonal contraception use (DMPA, Nuristerate, COCs, implant or IUD)	130 (33.5%)	119 (30.9%)	0.443
ART experience***			
ART naïve	71 (18.3%)	75 (19.5%)	0.198
Previously on ART	119 (30.7%)	109 (28.3%)	
Currently on ART	194 (50.0%)	201 (52.2%)	
Ever experienced physical abuse	231 (59.4%)	214 (55.6%)	0.313
Ever experienced sexual abuse	159 (41.0%)	165 (42.9%)	0.516
Median self-reported health state Scale 1-100 (IQR)	51 (43-66)	51 (47-70)	0.677
Ever injected drugs	23 (5.9%)	21 (5.5%)	0.781
Baseline viral load			
< 50 copies/mL (VS)	-	-	0.481
50 – 1000 copies/mL (NVS)	95 (24.5%)	86 (22.3%)	
> 1000 copies/mL (NVS)	293 (75.5%)	299 (77.7%)	

*Missing for n=3; **missing for n=1; missing for n=4

- Of the 872 FSW who were non-virally suppressed, 777 women returned for follow-up and were randomized into the DTP vs. ICM arms; overall, FSW were well balanced across the DTP and ICM arms (Table 2)
- Among the 679 women who were not in care or virally suppressed at 6-months, 351 were re-randomized to continue on their assigned interventions (DTP=173 and ICM=178) and 328 were re-randomized to receive both DTP and ICM
- At 18-months, no difference was observed across arms (ITT analysis), 16.0% DTP vs. 14.1% ICM (p=0.455) and no difference was observed in those stepping up or stepping down interventions either (Figure 1)

RESULTS



- Among FSW with sustained viremia at 6- and 12-months who returned for further bloodwork, 74/80 (92.5%) were resistant to first line ART
- In a non-randomized TB HIV Care program comparator arm of non-virally suppressed FSW engaged in HIV care during the enrollment period, 4/86 (5%) were retained and virally suppressed at 18-months

CONCLUSIONS

- While outcomes appear modestly improved over SOC, they are extremely sub-optimal and high rates of drug resistance were observed
- Further investigation into implementation outcomes is warranted based on the need to achieve greater impact, including as assessment of delivery fidelity and how participant engagement in interventions impacted outcomes
- These results reinforce the urgent need to improve treatment outcomes among FSW in South Africa to end new HIV infections by 2030

ACKNOWLEDGMENTS

We are grateful to the support received from the National Department of Health, KZN Provincial Department of Health, and the National Health Laboratory Service (NHLS). This study was funded by NINR: R01-5R01NR016650; investigators also received support from the Johns Hopkins Center for AIDS Research (P30AI094189). We are grateful to the community advisory board, study participants and program teams working alongside the research team.