



TREATMENT AS PREVENTION

$$U = U$$

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Introduction

- Treatment as prevention refers to the use of antiretroviral medication to prevent HIV transmission.
- Based on the concept of Undetectable = Untransmittable
- Launched in early 2016 by a group of people living with HIV with global experts to clear up the confusion about the science of U = U.
- This movement aims to dismantle the HIV stigma, improves the lives of people living with HIV and bring us closer to ending the epidemic.


Why is this important?

- Improves the lives of people living with HIV by reducing shame and fear of transmission, opening up possibilities for conceiving children without alternative means of contraception
- Dismantles HIV stigma on community, clinical and personal level
- Encourages people living with HIV to start and stay on treatment
- Strengthens advocacy efforts for universal access to treatment, care and diagnostic to save lives and bring us closer to the end of the epidemic.

How it all started...


1998, San Francisco Cohort

Women with HIV on triple ART during pregnancy : transmission from mother to baby approaches zero¹



2000, Uganda Cohort

415 serodiscordant, heterosexual couples followed prospectively for up to 30 months: Zero transmission when viral load was less than 1500 copies/mL²



2005, Spanish Cohort

393 heterosexual, serodiscordant couple enrolled from 1991- 2003 in a prospective observational study. Zero transmission in partners with undetectable viral load³ .

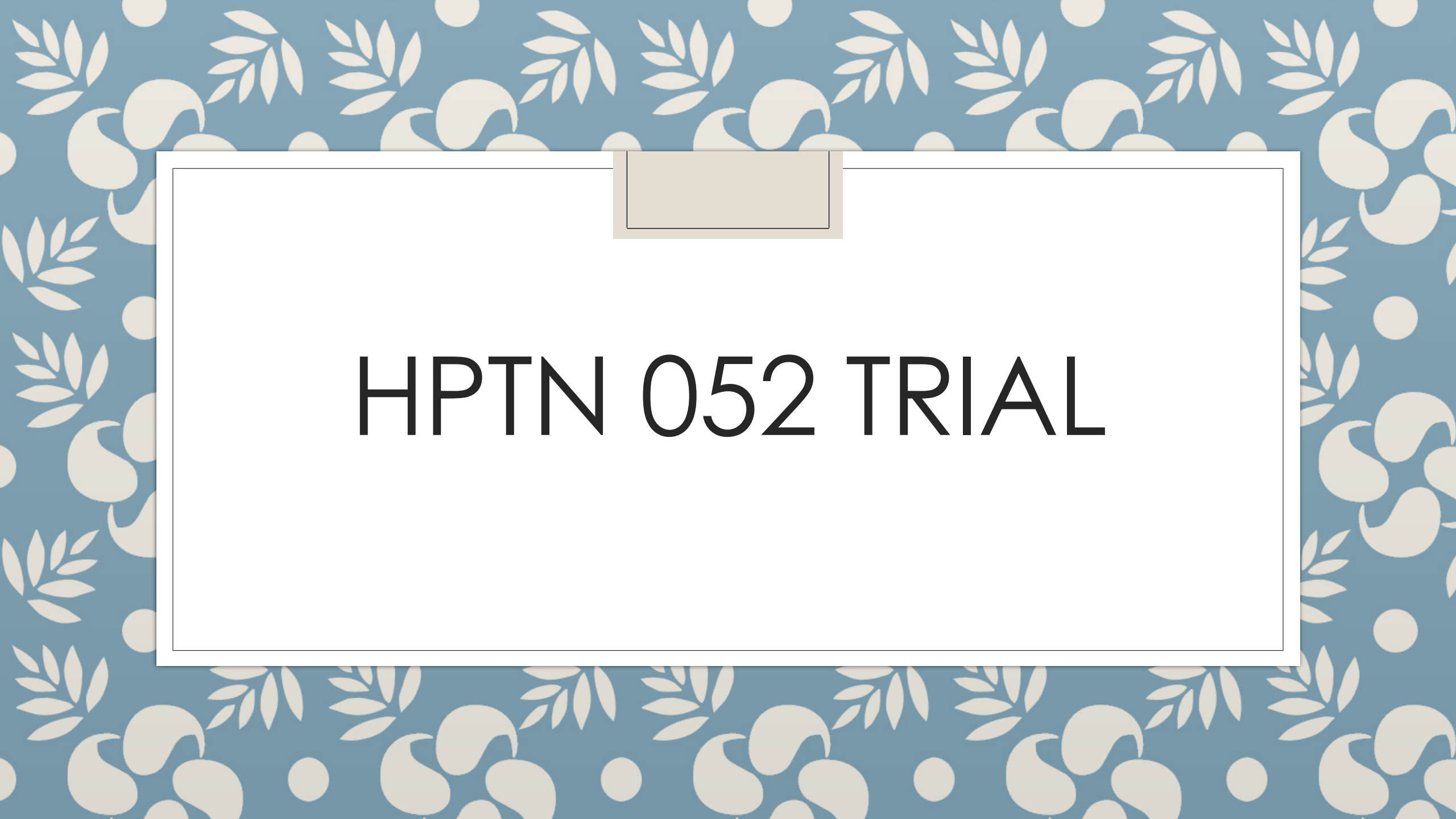
¹ Int Conf AIDS 1998 Jun 28-Jul 3; 12:41. Poster abstract 459.

² N Engl J Med 2000; 342: 921-929.

³ J Acquir Immune Defic Syndr. 2005;40:96-101.

Important Trials

- HPTN 052 Trial
- PARTNER 2 Study
- Opposites Attract Study



HPTN 052 TRIAL

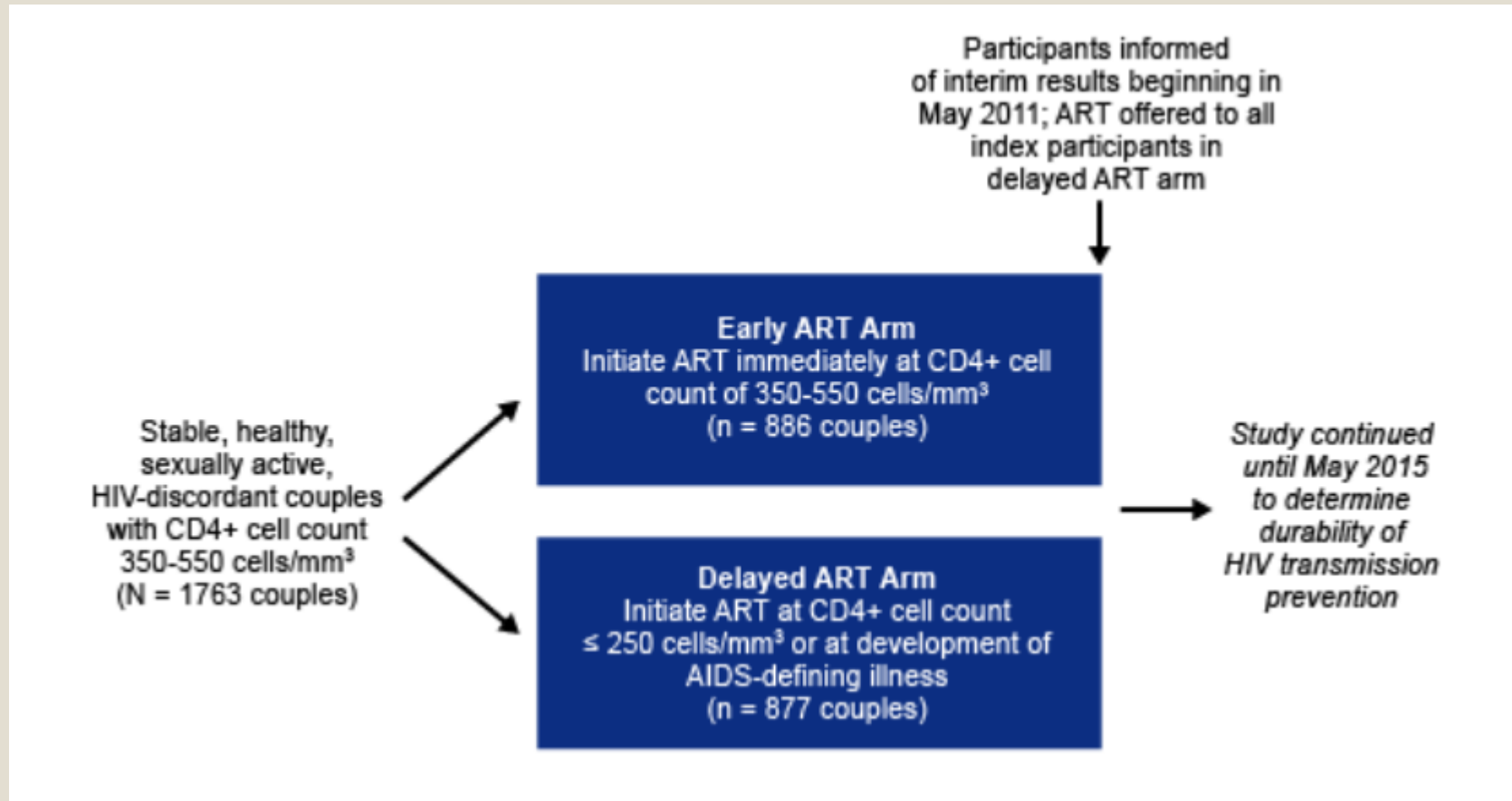
INTRODUCTION

- Multinational, randomized, unblinded, controlled trial
- Trial designed to evaluate effects of ART on prevention of HIV transmission to HIV-negative individuals in serodiscordant couples and on clinical events in infected individuals
- 1763 serodiscordant couples enrolled from 9 countries were randomised to early or delayed ART.
- Primary end point: virologically linked partner infections

INCLUSION CRITERIA

- Serodiscordant couple (one infected with HIV-1, one is not)
- Stable relationship for at least 3 months
- Reports 3 or more episodes of vaginal or anal intercourse during the past 3 months
- Willing to disclose HIV-1 status to their partner

TRIAL DESIGN



BASELINE CHARACTERISTICS

Characteristic ^[2]	HIV-Infected Participants		HIV-Uninfected Participants	
	Early ART (n = 886)	Delayed ART (n = 877)	Early ART (n = 893)	Delayed ART (n = 882)
Type of serodiscordancy, n (%)				
• HIV-positive man, HIV-negative woman	436 (49)	417 (48)	NA	NA
• HIV-positive woman, HIV-negative man	431 (49)	441 (50)	NA	NA
• HIV-positive man, HIV-negative man	18 (2)	19 (2)	NA	NA
• HIV-positive woman, HIV-negative woman	1 (< 1)	0	NA	NA

RESULTS

- April 2005 to May 2011, early ART was associated with 93% risk reduction in linked partner infections

<i>Parameter</i>	<i>Early ART (4314 PY Follow-up)</i>	<i>Delayed ART (4180 PY Follow-up)</i>
All partner infections, n (rate/100 PY)	19 (0.44)	59 (1.41)
Linked partner infections, n (rate/100 PY)	3 (0.07)	43 (1.03)
Risk reduction with early ART, %		
• All partner infections	69	--
• Linked partner infections	93	--

RESULTS

- 8 linked HIV infections were diagnosed after seropositive patient started ART
- 4 infections likely occurred before, or soon after, ART initiation
- 4 infections occurred after ART failure in seropositive patient

No transmission occurred between a partner with suppressed HIV viral load and a HIV negative partner



PARTNER 2 STUDY

INTRODUCTION

- This was a continuation of the PARTNER1 study, which studied rate of HIV transmission within serodiscordant heterosexual and MSM couples during periods of condomless sex from 2010- 2014.
- In PARTNER1 study, **no linked within couple transmission was identified**
- PARTNER2 followed MSM from 2014 to 2018
- Primary aim was to improve the accuracy of estimated within couple HIV transmission risk in MSM during periods of CL sex while HIV- positive partner had HIV-RNA < 200 copies/mL.

INCLUSION CRITERIA

- Couple reported within-couple condomless sex
- No PEP or PrEP use by HIV-negative partner
- HIV-1 RNA < 200 copies/mL in HIV-positive partner at all assessments within prior 12 months
- Follow-up completed before censoring in April 2018

BASELINE CHARACTERISTICS

- 783 serodiscordant men who have sex with men (MSM) couples were recruited
- 23% of HIV-negative men and 27% of HIV-positive men diagnosed with STI during follow-up
- 37% of HIV-negative men reported CL sex with other partners

BASELINE CHARACTERISTICS

<i>Baseline Characteristics Among HIV-Negative Partners</i>	<i>Participants (n = 783)</i>
At entry	
• Median age, yrs (IQR) (n = 759)	38 (31-45)
• White, n/N (%)	687/768 (89)
• Median yrs of CL sex (IQR)	1.0 (0.4-2.9)
During follow-up	
• Median yrs in the study (IQR)	1.6 (0.9-2.9)
• Diagnosed with STI, %	23
• CL sex with other partners, %	37
• Median no. of CL sex acts per year (IQR)	43 (19-74)
• Estimated total number CL sex acts	76,991

BASELINE CHARACTERISTICS

<i>Baseline Characteristics Among HIV-Positive Partners</i>	<i>Participants (n = 783)</i>
At entry	
• Median age, yrs (IQR) (n = 758)	40 (33-46)
• Median yrs on ART (IQR)	4.0 (2.0-9.0)
• Self-reported adherence \geq 90%, %	98
• Self-reported undetectable HIV-1 RNA, %	93
During follow-up	
• Missed ART for > 4 consecutive days, %	2
• Diagnosed with STI, %	27

RESULTS

<i>Sexual Behavior Reported by HIV-Negative Partner</i>	<i>Linked HIV Transmissions</i>	<i>Upper 95% CI for Rate of Within-Couple HIV Transmissions</i>	<i>CYFU</i>	<i>CL Sex Acts</i>
Any sex	0	0.23	1596	76,991
Anal sex	0	0.24	1546	70,743
Insertive anal sex	0	0.27	1345	52,572
Receptive anal sex with ejaculation	0	0.57	652	20,770
Receptive anal sex without ejaculation	0	0.43	867	23,153
Any sex with a STI	0	2.74	135	6301

RESULTS

- During 76,991 condomless sex acts in PARTNER2, upper 95% CI for rate of within couple HIV transmission between serodifferent MSM couples while HIV-positive partner receiving suppressive ART was 0.23/100 couple years of follow up (CYFU).
- 15 HIV negative men acquired HIV infection
 - 11 reported recent condomless sex with others
 - Phylogenetic analysis found no evidence of link to HIV positive partner

Conclusion: risk of HIV transmission from an HIV-positive partner who has undetectable HIV-1 RNA is effectively zero



OPPOSITES ATTRACT

INTRODUCTION

- Observational cohort study
- 343 serodiscordant MSM couples from Australia, Brazil and Thailand were enrolled and followed up.
- Aim to calculate transmission rates in couples reporting condomless anal intercourse (CLAI)
- HIV partners are suppressed (VL < 200 copies/mL) and daily Pre-exposure prophylaxis was not used by HIV negative partners

METHODS

- At study visits, HIV-negative partners provided information on sexual behaviour and were tested for HIV and sexually transmitted infections
- HIV-positive partners had HIV viral load tests, CD4 cell count, and sexually transmitted infection tests done.
- Linked within-couple HIV transmissions were identified with phylogenetic analysis.
- Incidence was calculated per couple-year of follow-up, focusing on periods with CLAI, no use of daily PrEP, and viral suppression.

RESULTS

- 258 (75%) of 343 HIV-positive partners had viral loads consistently less than 200 copies per mL
- 115 (34%) of 343 HIV-negative partners used daily PrEP during follow-up.
- 253 (74%) of 343 couples reported within-couple CLAI during follow-up, with a total of 16 800 CLAI acts.
- Three new HIV infections occurred but none were phylogenetically linked.
- Upper 95% CI for rate of within couple HIV transmission between serodifferent MSM couples while HIV-positive partner receiving suppressive ART was 1.59 per 100 couple years of follow up (CYFU).

Conclusion: HIV treatment as prevention is effective in men who have sex with men.

WHAT DOES ALL THIS MEANS?

- People living with HIV has faced a lot of discrimination and prejudice over the years, and this is still widespread ever now.
- A lot of this stems from public perception that people living with HIV will transmit the virus to them.
- These trials are significant in reducing this prejudice because it shows that if you are suppressed on ARVs, your risk of transmission is nearly negligible, low enough that people are now saying there is no transmission if you are suppressed.
- It offers hope to people living with HIV- that they can truly be treated like any other person.



THANK YOU