Same-Day Antiretroviral Therapy Initiation
How Do We Get There?
Should We Go There?

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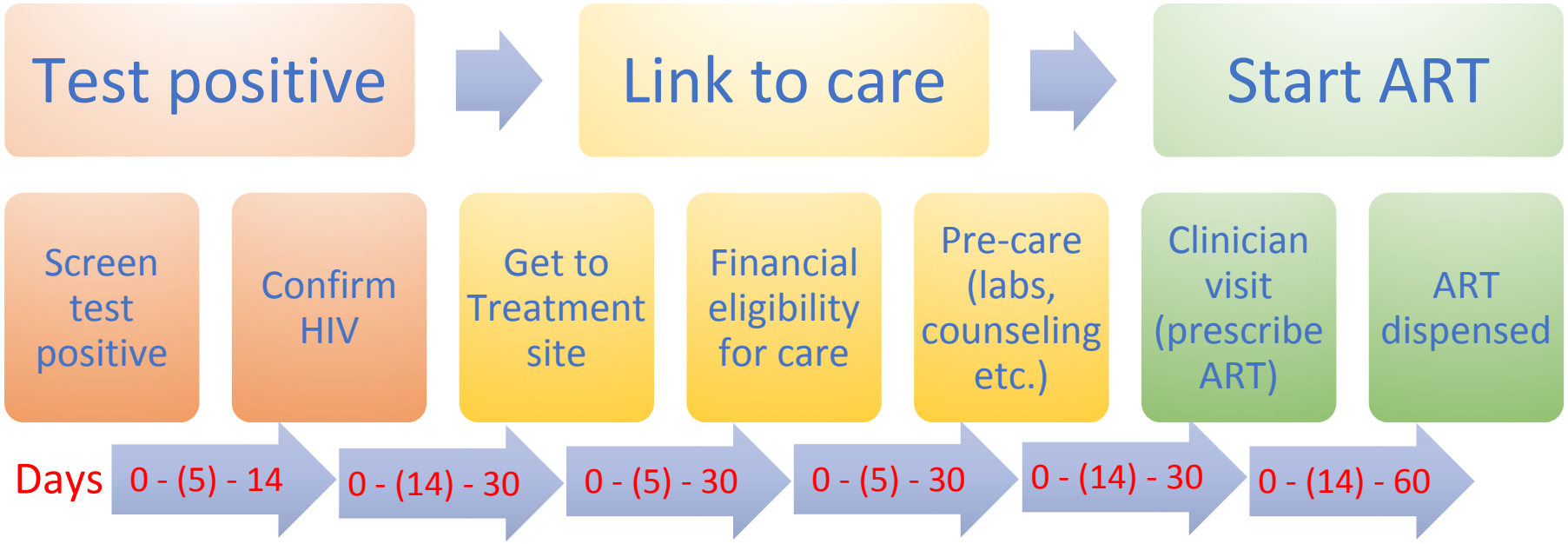
Disclosures

- No disclosures or conflicts of interest

“Test and Treat” vs “Same-day Treatment”

- Test and Treat, Treatment as Prevention (TasP), Fast Track initiatives, 90-90-90:
  - Universal testing followed by universal treatment
  - Strategy to improve health and end HIV
  - Taking universal treatment to population scale
- Same-day Treatment:
  - Compress the time from diagnosis to treatment
  - Process redesign to treat people faster; less about scale

Early steps in the continuum of care



Total: 0 - (57) - 194 days!

Should we try for 0?

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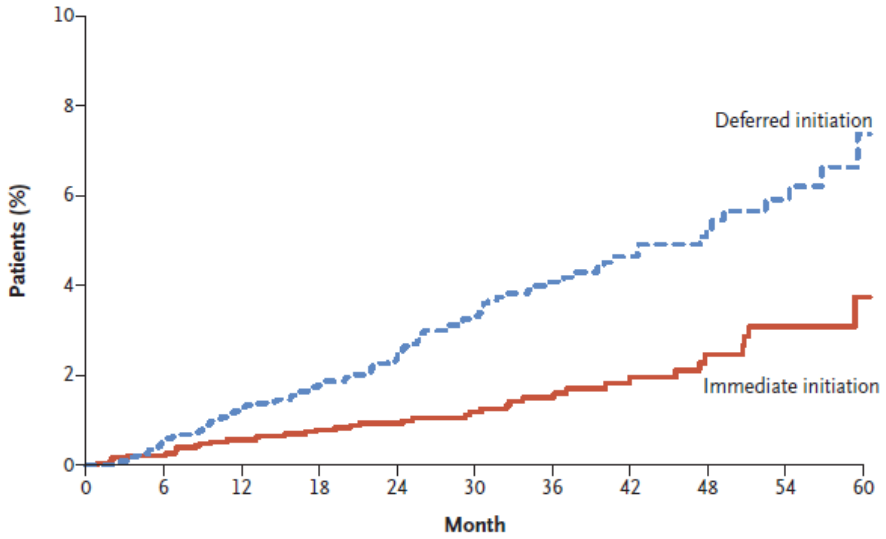
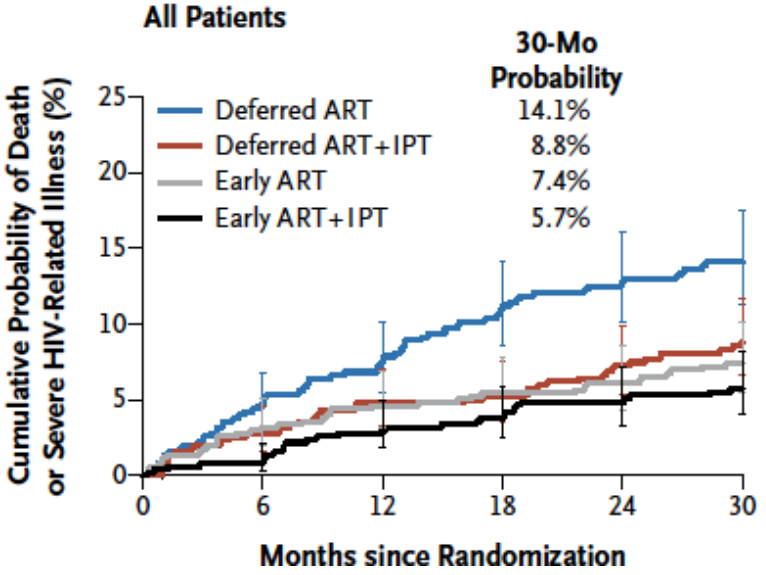
Early treatment is beneficial: START and TEMPRANO



INSIGHT START Study Group, N Engl J Med. 2015 Aug 27;373(9):795-807



TEMPRANO ANRS 12136 Study Group, N Engl J Med. 2015 Aug 27;373(9):808-22

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Clinical data

- Early treatment is beneficial: START, TEMPRANO:
  - Better on ART than off no matter the CD4 cell count
- Difference slow to emerge, so weeks or couple months at the beginning should not make a clinical difference
- Clinical trials, even strategy trials, are not the same as routine care (clinic selection, patient selection, support of research staff)
- If there is a clinical benefit from starting a few weeks or months earlier, it could be offset by any harms from same-day treatment
- On the other hand, if too many people lost in the pre-ART phase who would have stayed engaged if they were treated, there could be substantial benefit to same-day treatment

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Why treat same day?

- Better clinical outcomes due to less time off ART
- Engage people in care with ART before LTFU so less LTFU
- Shorter time to treatment means less anxiety, more trust
- Treatment as prevention (HPTN 052)

Why treat same day? Why not?

- Better clinical outcomes due to less time off ART
- Engage people in care with ART before LTFU so less LTFU
- Shorter time to treatment means less anxiety, more trust
- Treatment as prevention (HPTN 052)
- Might treat with the wrong ART (NNRTI, Hepatitis B, renal insufficiency)
- Don't want to miss TB or other OI that require deferral of ART
- Less time to address barriers to ART and adherence
- LTFU pre-ART doesn't risk resistance; LTFU after ART does
- Adds logistical complexity (paying for ART, appointment scheduling)

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The evidence

- Two trials randomized at individual level
  - RapIT in South Africa (Sydney Rosen)
  - Same Day ART study in Haiti (Serena Koenig)
- One trial randomized at clinic level
  - START-ART in Uganda (Elvin Geng)
- One non-randomized study in US
  - RAPID protocol in San Francisco (Chris Pilcher)

RapIT

RESEARCH ARTICLE

Initiating Antiretroviral Therapy for HIV at a Patient's First Clinic Visit: The RapIT Randomized Controlled Trial

Sydney Rosen[1,2]*, Mhairi Maskew[2], Matthew P. Fox[2,3], Cynthia Nyoni[2], Constance Mongwenyana[2], Given Malete[2], Ian Sanne[2], Dorah Bokaba[4], Celeste Sauls[2], Julia Rohr[1], Lawrence Long[2]

1 Department of Global Health, Boston University School of Public Health, Boston, Massachusetts, United States of America, **2** Health Economics and Epidemiology Research Office, Department of Internal Medicine, School of Clinical Medicine, Faculty of Health Sciences, University of the Witwatersrand, Johannesburg, South Africa, **3** Department of Epidemiology, Boston University School of Public Health, Boston, Massachusetts, United States of America, **4** Health Department, City of Johannesburg, Johannesburg, South Africa

PLOS Medicine | DOI:10.1371/journal.pmed.1002015 May 10, 2016

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RapIT

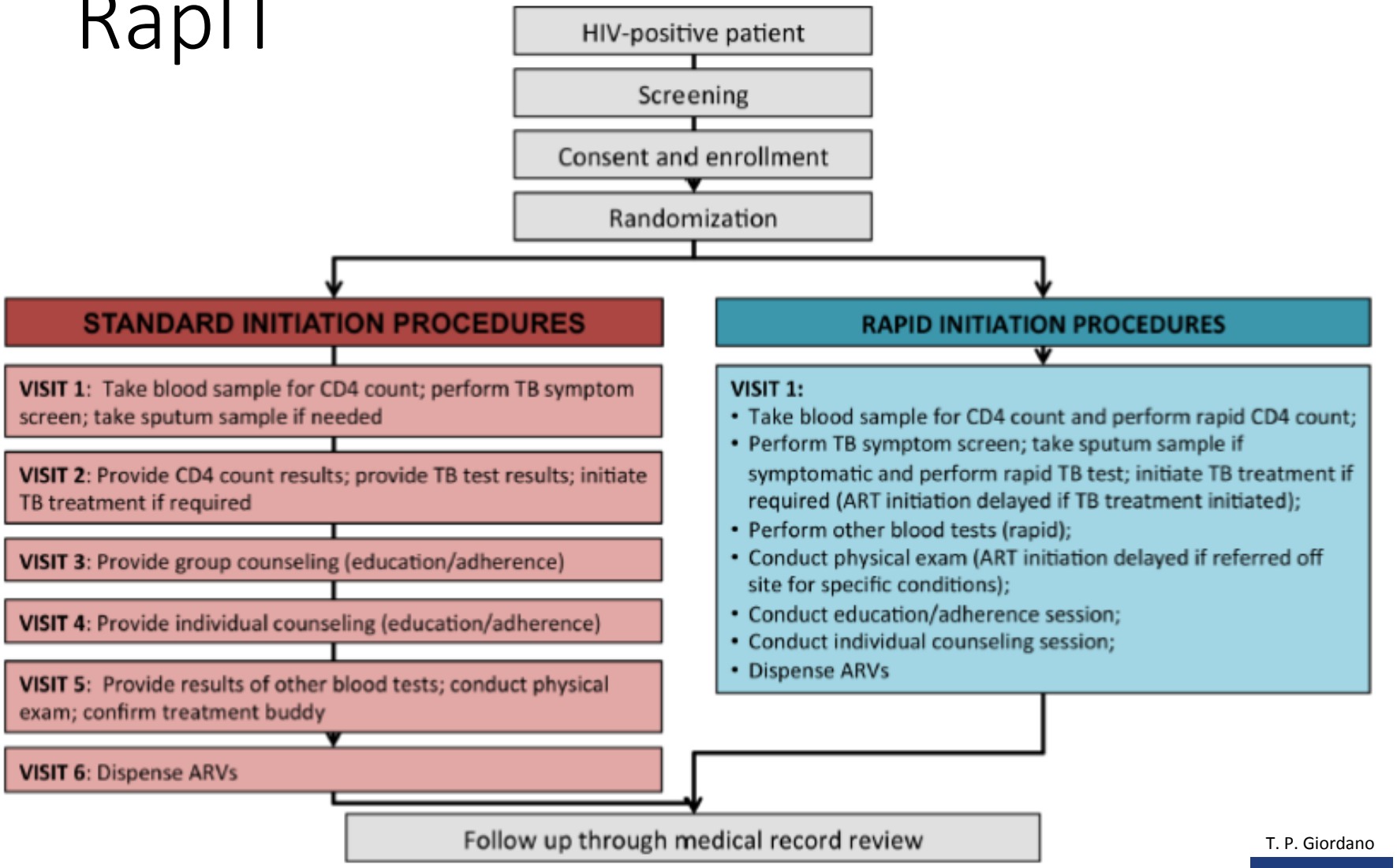

Fig 1. Standard initiation of treatment and rapid initiation procedures and visit schedule.

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Rosen S, RapIT, PLOS Medicine, 2016

RapIT: ART was quickly started

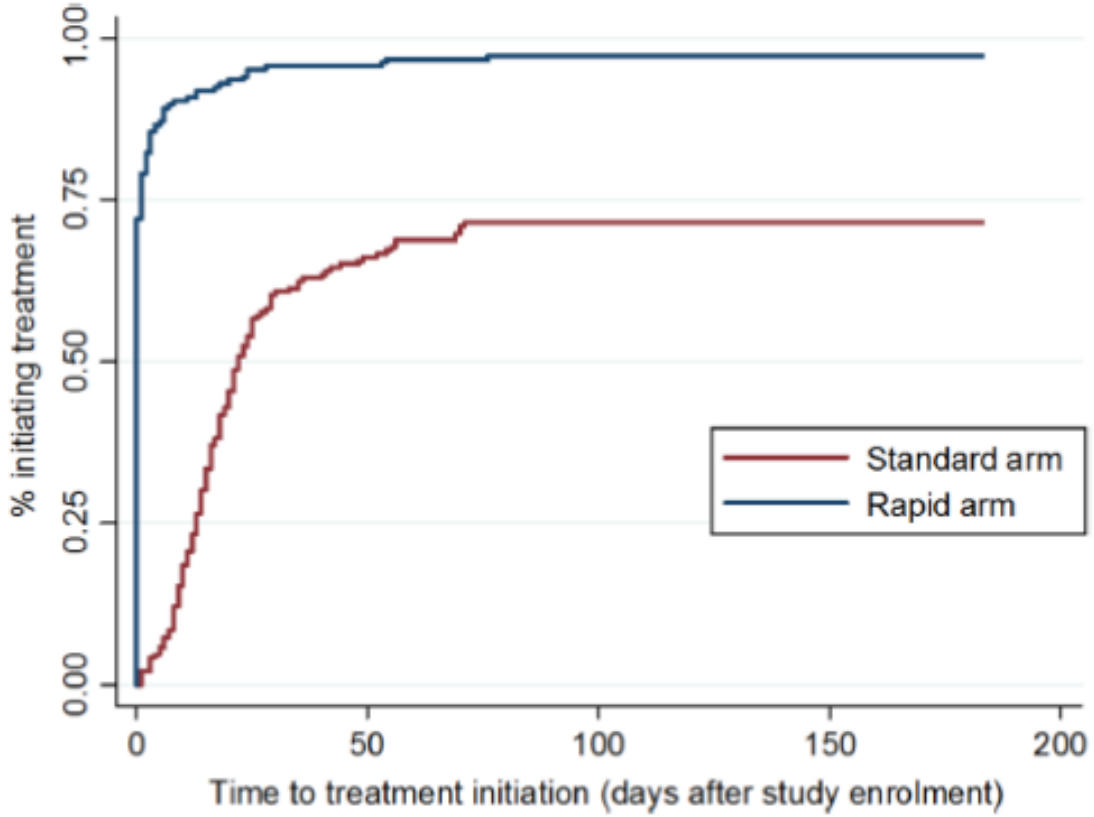

Fig 3. Time to ART initiation, by study arm. Cumulative incidence of ART initiation in each study arm, by number of days since study enrollment.

Rosen S, RapiT, PLOS Medicine, 2016

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RapIT: Outcomes

Table 2. ART initiation, 10-mo retention in care, and 10-mo viral suppression.

Outcome	Standard arm(%) n = 190	Rapid arm(%) n = 187
Initiated ≤ 90 d and suppressed by 10 mo (primary outcome)	96 (51%)	119 (64%)
Of those not initiated ≤ 90 d and suppressed by 10 mo	*94 (49%)*	*68 (36%)*
Not initiated	*54 (28%)*	*5 (3%)*
Initiated but not suppressed	*40 (21%)*	*63 (34%)*
Of those initiated but not suppressed:		
Retained, unsuppressed viral load test reported	*11 (6%)*	*17 (9%)*
Retained, no viral load test reported	*14 (7%)*	*16 (9%)*
Transferred to another clinic	*1 (1%)*	*6 (3%)*
Died	*3 (2%)*	*0 (0%)*
Lost to follow-up	*11 (6%)*	*24 (13%)*
Initiated ≤ 90 d	136 (72%)	182 (97%)
Initiated ≤ 90 d and retained at 10 mo (secondary outcome)	121 (64%)	151 (81%)
Of those not initiated ≤ 90 d and retained at 10 mo:	*69 (36%)*	*36 (19%)*
Initiated but not retained	*15 (8%)*	*31 (17%)*
Not initiated	*54 (28%)*	*5 (3%)*

+13% VL <400

+13% VL >400

+25% on ART
+17% retained

Rosen S, RapiT, PLOS Medicine, 2016

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RapIT

- NB:
  - High acceptance rate (>80%)
  - Two sites in study (one public clinic, one hospital clinic)
  - 47% were enrolled at visit to get their CD4 cell results, so had already partly linked to care; 41% enrolled on day of diagnosis
  - All physically at the clinic at recruitment
  - Overall, more suppressed, more retained, but more on ART failed, too

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Same Day ART

Superior Outcomes with Same-Day HIV Testing and ART Initiation

Serena Koenig, MD, MPH

GHESKIO, Haiti

Brigham and Women's Hospital, USA

Slide: Koenig S, WEAE0202, AIDS 2016, Durban, SA

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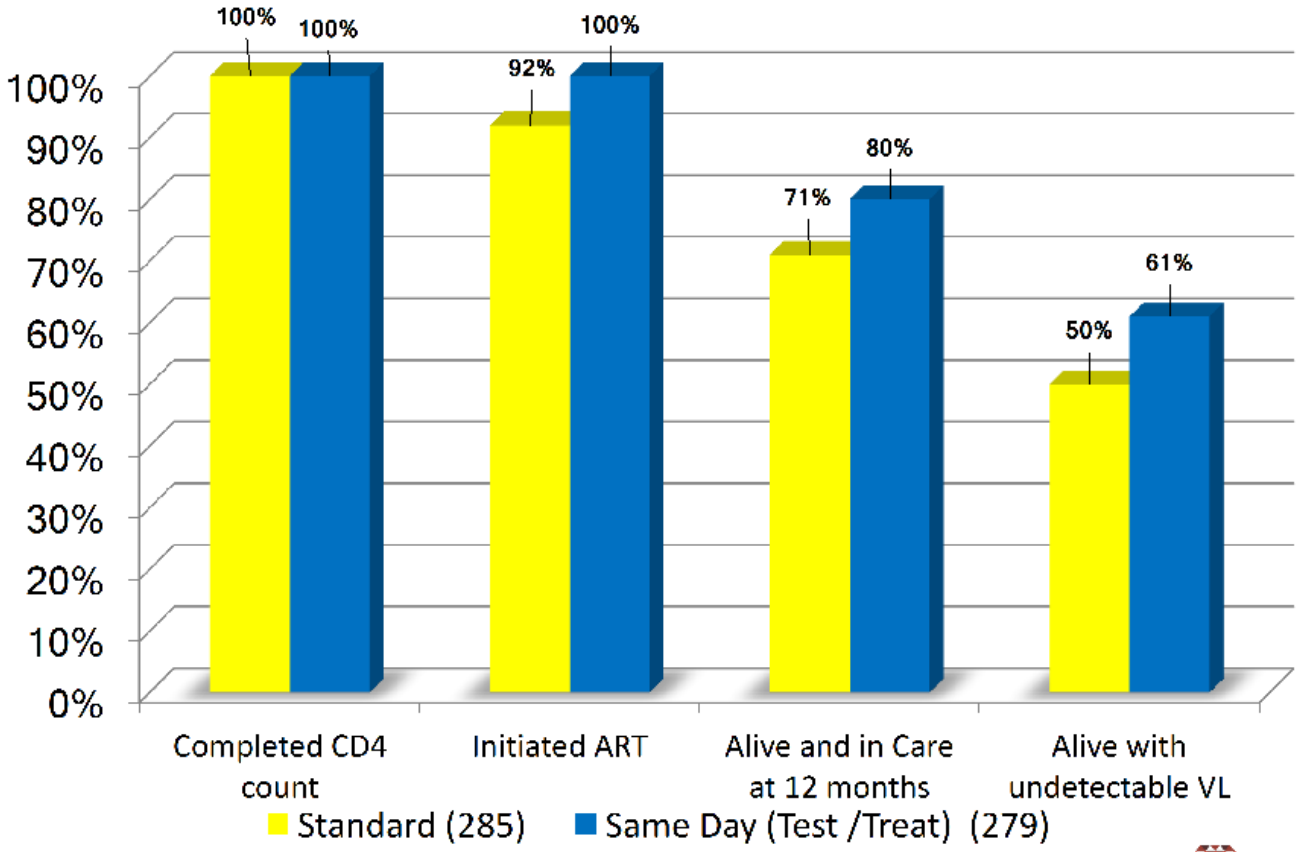
Same Day ART

Schedule of Visits

- Standard group
  - Days 7, 14, and 21: Physician/social worker visits
  - Day 21: ART initiation
  - Week 5: Physician/social worker visits
- Same-day ART group
  - Day 1: Counseling and ART initiation
  - Days 3, 10, and 17: Physician/social worker visits
  - Day 24: Physician visit
- *Only difference was timing of ART initiation*

Slide: Koenig S, WEAE0202, AIDS 2016, Durban, SA

Same Day ART



#AIDS2016 | @AIDS_conference

AIDS 2016 DURBAN, SOUTH AFRICA

Slide: Koenig S, WEAE0202, AIDS 2016, Durban, SA

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Same Day ART

- NB:
  - Truly enrolled and treated on day of diagnosis
  - Just changed time of initiation of ART to before rather than after the “pre-ART” care
  - Not yet published (abstract and oral presentation)
  - Single site (center of excellence and research)
  - All physically at the clinic at recruitment
  - No data on starts who were LTFU or not suppressed (39% in Same Day vs 42% in Standard)
  - Overall, more suppressed, more retained, better survival

START-ART

Effects of a multicomponent intervention to streamline initiation of antiretroviral therapy in Africa: a stepped-wedge cluster-randomised trial

Lancet HIV 2016; 3: e539–48

Gideon Amanyire, Fred C Semitala, Jennifer Namusobya, Richard Katuramu, Leatitia Kampiire, Jeanna Wallenta, Edwin Charlebois, Carol Camlin, James Kahn, Wei Chang, David Glidden, Moses Kamya, Diane Havlir, Elvin Geng

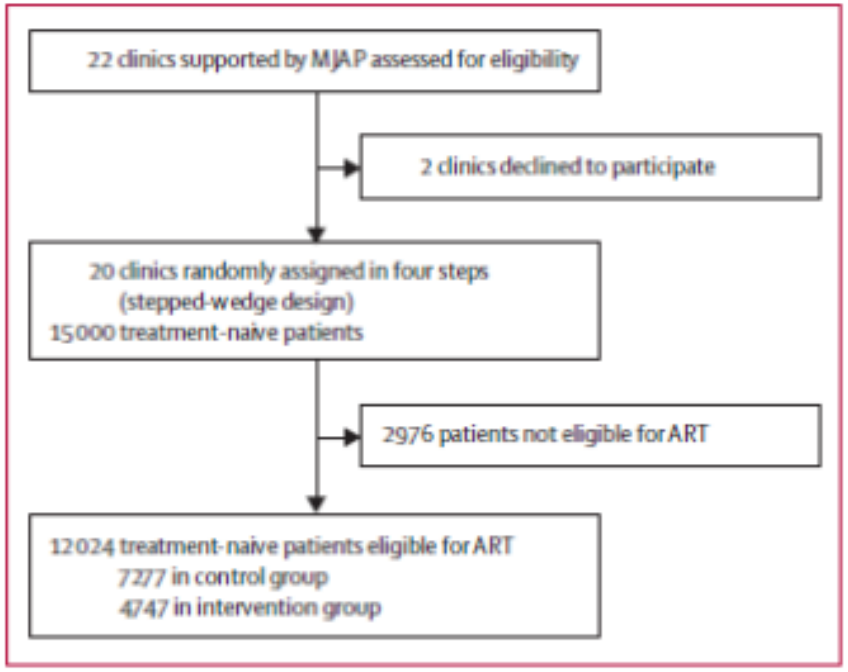

Figure 1: **Trial profile**
MJAP=Makerere University Joint AIDS Program.

- MD champion to change culture with didactic session, coaching
- Relax treatment supporter requirements
- Assess readiness rather than assume non-readiness (rather than 3 pre-ART visits to prepare patient)
- PIMA rapid CD4 cell count machine (rather than overnight processing)
- Feedback every 6 months comparing clinics on ART initiation rates
- 20 clinics in Uganda

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START-ART: Intervention

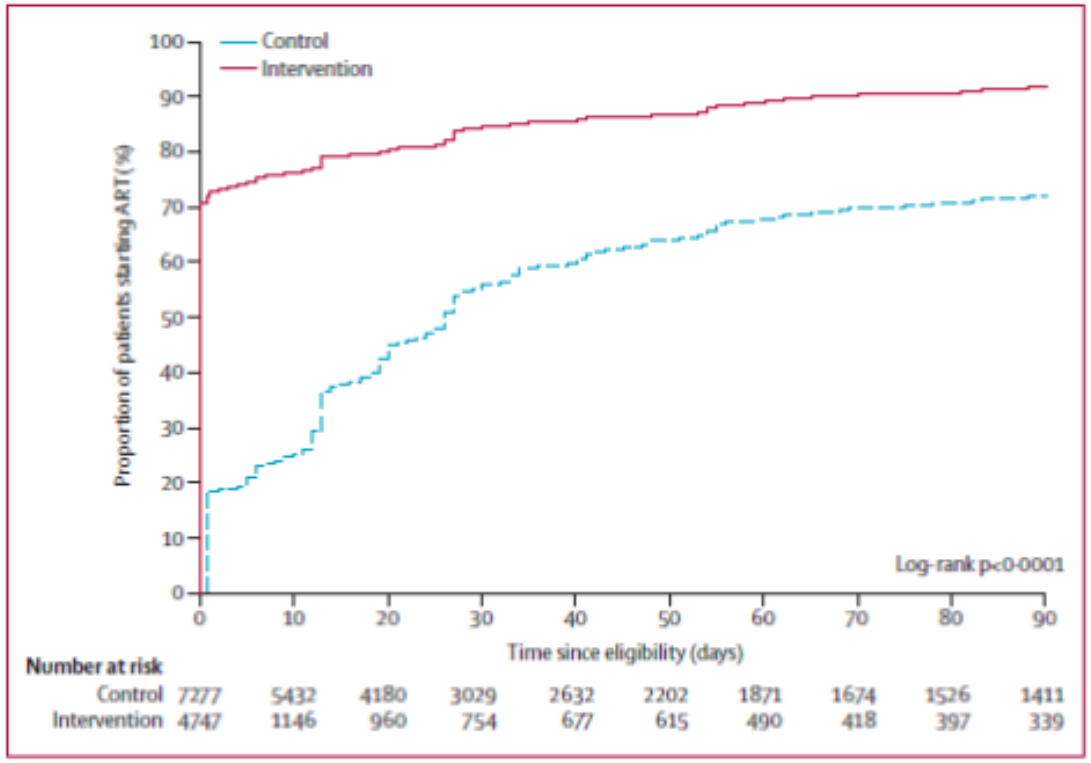

Figure 2: **Cumulative incidence of ART initiation**
ART=antiretroviral therapy.

- 2x ART starts by 14 d
- VS at 1 year:
  - Weighted proportion for missing data 66% vs 58% (p=.2)
  - Inverse probability weighting for missing data 85% vs 75% (p=.02)
- No difference in mortality (<5%)
- No difference in retention in care

Amanyire G, START-ART, Lancet HIV, 2016, e539-48

START-ART

- NB:
  - True system change: implemented clinic-wide
  - Large study with consistent effects
  - Radically revised pre-ART care (eliminated pre-ART visits and treatment supporter requirements)
  - Proves rapid treatment is implementatable and sustainable
  - All patients physically at the clinic at recruitment
  - No data on starts who were LTFU
  - Overall, more suppressed, same retained, same survival

RAPID

The Effect of Same-Day Observed Initiation of Antiretroviral Therapy on HIV Viral Load and Treatment Outcomes in a US Public Health Setting

Christopher D. Pilcher, MD, Clarissa Ospina-Norvell, FN-P,* Aditi Dasgupta, BS,† Diane Jones, RN,* Wendy Hartogensis, PhD,* Sandra Torres, MSW,* Fabiola Calderon, MSW,* Erin Demicco, MPH,* Elvin Geng, MD,* Monica Gandhi, MD,* Diane V. Havlir, MD,* and Hiroyu Hatano, MD**

(*J Acquir Immune Defic Syndr* 2017;74:44–51)

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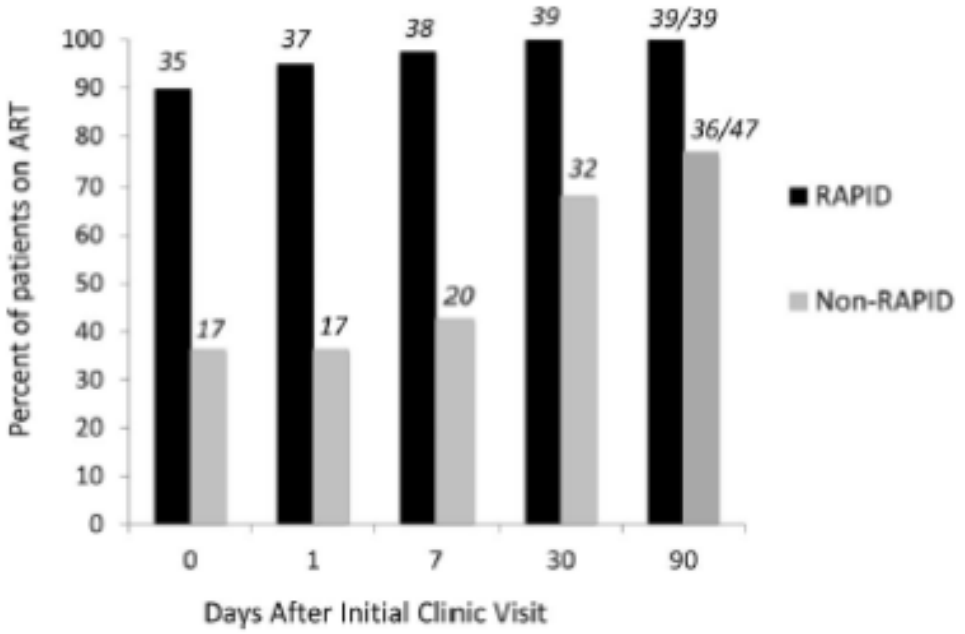
RAPID

- Designed for persons with acute or recent HIV; later expanded
- No changes at testing sites; all intervention at clinic
- Intervention:
  - Taxi vouchers if needed
  - Same-day clinician, support services, and lab appointment (3-4 hours)
  - Rapid financial assistance to provide emergency drug assistance
  - 5-day starter pack, if needed
  - DOT of first dose
  - RN telephone f/u 1-7 days



Pilcher C, RAPID, JAIDS, 2017, 74:44-51

TABLE 2. Time to Achievement of Clinical Milestones Among Newly Diagnosed Patients Hospital HIV Clinic

Group	RAPID	Non-RAPID	Universal ART Era	CD4-Guided Era
Referral years	2013–2014	2013–2014	2010–2013	2006–2009
Patients for whom ART recommended	All	All	All	CD4 < 500
Received intervention	Yes	No	No	No
N	39	47	69	25
Mean (range) time in days from referral to				
Clinic intake visit	1 (0–5)	10 (7–17)	13 (7–26)	9 (2–44)
Primary provider visit	14 (3–30)	26 (13–105)	31 (17–60)	30 (7–65)
ART prescription	1 (0–7)	22 (14–48)	37 (26–148)	128 (39–520)
Viral suppression <200 copies per milliliter	56 (40–87)	79 (53–174)	132 (91–210)	218 (116–777)
Time in days from diagnosis to				
Referral to the clinic	6 (2–11)	11 (3–104)	14 (4–48)	33 (4–120)
Viral suppression <200 copies per milliliter	65 (52–119)	170 (79–363)	190 (113–302)	580 (138–971)

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Pilcher C, RAPID, JAIDS, 2017, 74:44-51

RAPID

- NB:
  - First study to make provisions for people diagnosed at different location, but don’t know how many refused referral
  - No safety or resistance issues identified (90% INSTI-based ART)
  - Small study, non-randomized, single center, limited follow-up
  - No data on starts who were LTFU (10% of RAPID patients) or VS at 12 m
  - Overall, more suppressed and shorter time to suppression

Evidence summary

- 3 large randomized studies in different contexts with fairly consistent results: more suppression, same or better retention in care, same or better survival
  - Pre-ART care can be dramatically simplified
  - Even easier if CD4 count not needed
- Long-term safety and outcomes are not known
  - Concern about the strategy with NNRTI-based ART
- Promising but very limited data in high resource countries
- Emerging data for starting ART outside the HIV treatment clinic (Glass, abstract 201, Lesotho)

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RESEARCH ARTICLE

A universal testing and treatment intervention to improve HIV control: One-year results from intervention communities in Zambia in the HPTN 071 (PopART) cluster-randomised trial

Richard Hayes[1]*, Sian Floyd[1], Ab Schaap[1,2], Kwame Shanaube[2], Peter Bock[3], Kalpana Sabapathy[1], Sam Griffith[4], Deborah Donnell[5], Estelle Piwowar-Manning[6], Wafaa El-Sadr[7], Nulda Beyers[3], Helen Ayles[2,8], Sarah Fidler[9], for the HPTN 071 (PopART) Study Team[¶]

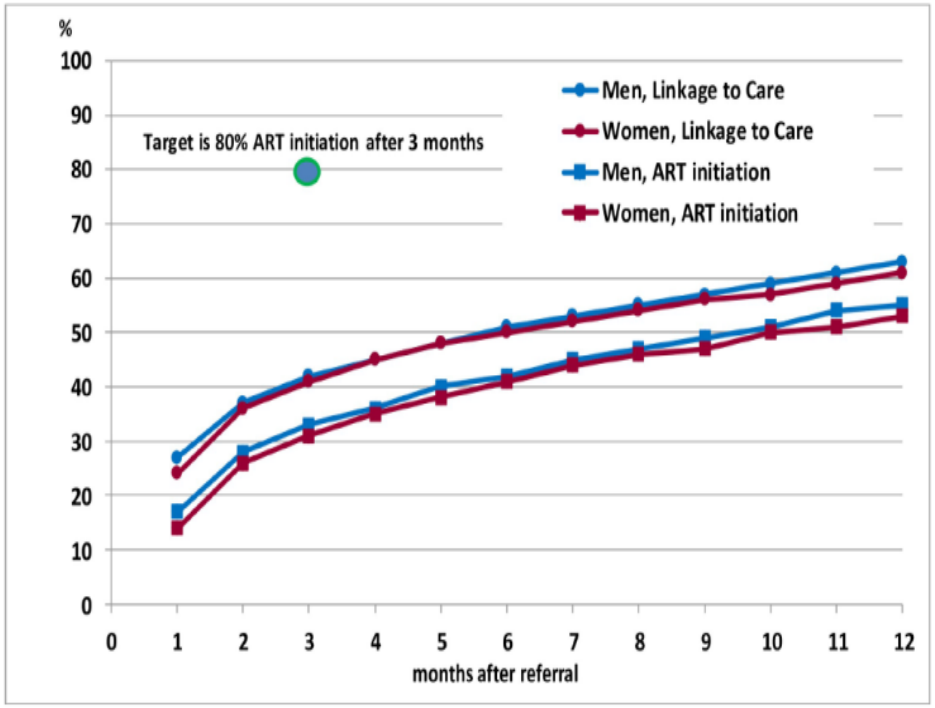


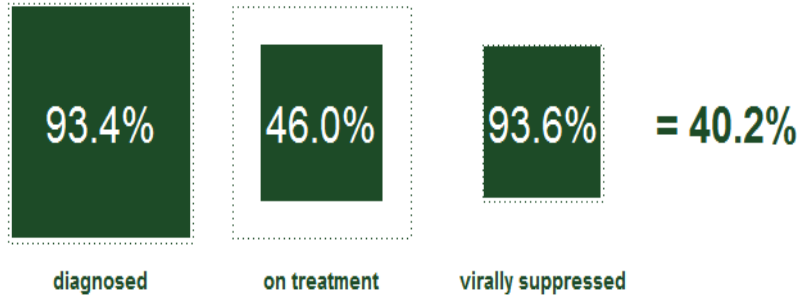
Fig 3. Time from referral to linkage to care and ART initiation during the first annual round of the PopART intervention. Survival curves showing cumulative proportions linking to care or initiating ART following referral by community HIV-care providers. ART, antiretroviral therapy.

PLOS Medicine | https://doi.org/10.1371/journal.pmed.1002292 May 2, 2017

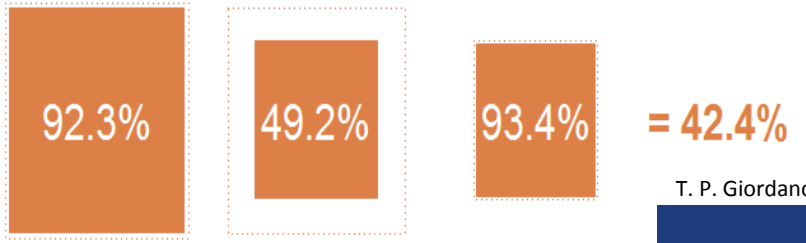
The impact of Universal Test and Treat on HIV incidence in a rural South African population

Dabis, ANRS 12249
AIDS 2016, Durban

Control



Intervention



Dabis, ANRS 12249 TasP, AIDS 2016
FRAC0105LB, Durban, SA

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Positive predictive value, 4th generation HIV test

Assumptions		Truth		Total	
Sensitivity: 99.94%	Test	Pos	Neg		
Specificity: 99.5%	Pos	17989	410	18399	PPV: 17989/18399 = 97.8%
Undx HIV: 18%	Neg	11	81590	81601	NPV: 81590/81601 = 100%
	Total	18000	82000	100000	

Houston: 2.5M people, 25000 PLWH + 18% Undx = 4500 Undx (0.18% of 2.5M)

Test characteristics		Truth		Total	
Sensitivity: 99.94%	Test	Pos	Neg		
Specificity: 99.5%	Pos	180	499	679	PPV: 180/679 = 36.5%
Undx HIV: 0.18%	Neg	0	99321	99321	NPV: 99321/99321 = 100%
	Total	180	99820	100000	

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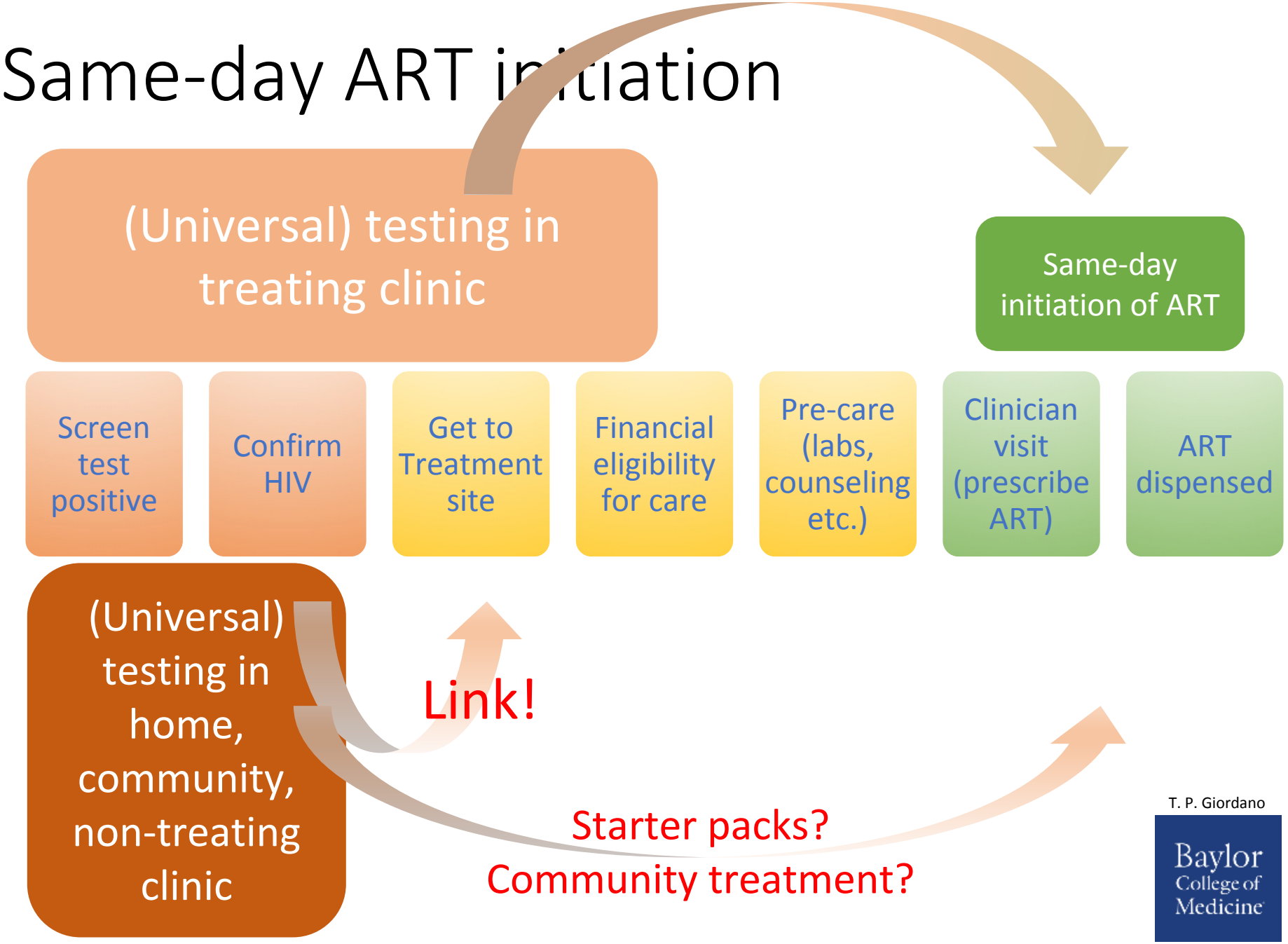
Same-day ART initiation



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Same-day ART initiation

- Should we go there?
  - Start ART first HIV clinician visit: strong RCT data (START and TEMPRANO) and short-term data (RapIT, START-ART)
  - Start ART first linkage to HIV clinic: strong short-term data in low-resource settings
  - Start ART at HIV diagnosis if outside HIV clinic (e.g., starter packs): emerging data
  - No long-term data, no resistance data, no cost data
- How do we get there?
  - System redesign and removing barriers
  - Capacity for drop-ins
  - Financial eligibility if no universal health care
  - Same day ART if no current funding for drugs
  - Ensure access to long-term supply of ART
  - When to start relative to screening vs confirmed diagnosis
  - Protocols to change ART if laboratory results dictate
- Excellent area for implementation research

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  - K. Rivet Amico, University of Michigan
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  - April Petit, Vanderbilt University
  - Chris Pilcher, UCSF
  - Robert Remien, Columbia University
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  - NIH, HRSA, CDC, VA, and local funding
  - Facilities and resources at Baylor College of Medicine, Harris Health System, and Michael E. DeBakey VA Medical Center, Houston
  - Views are the author's and not necessarily the views of the VA, CDC, NIH, HRSA

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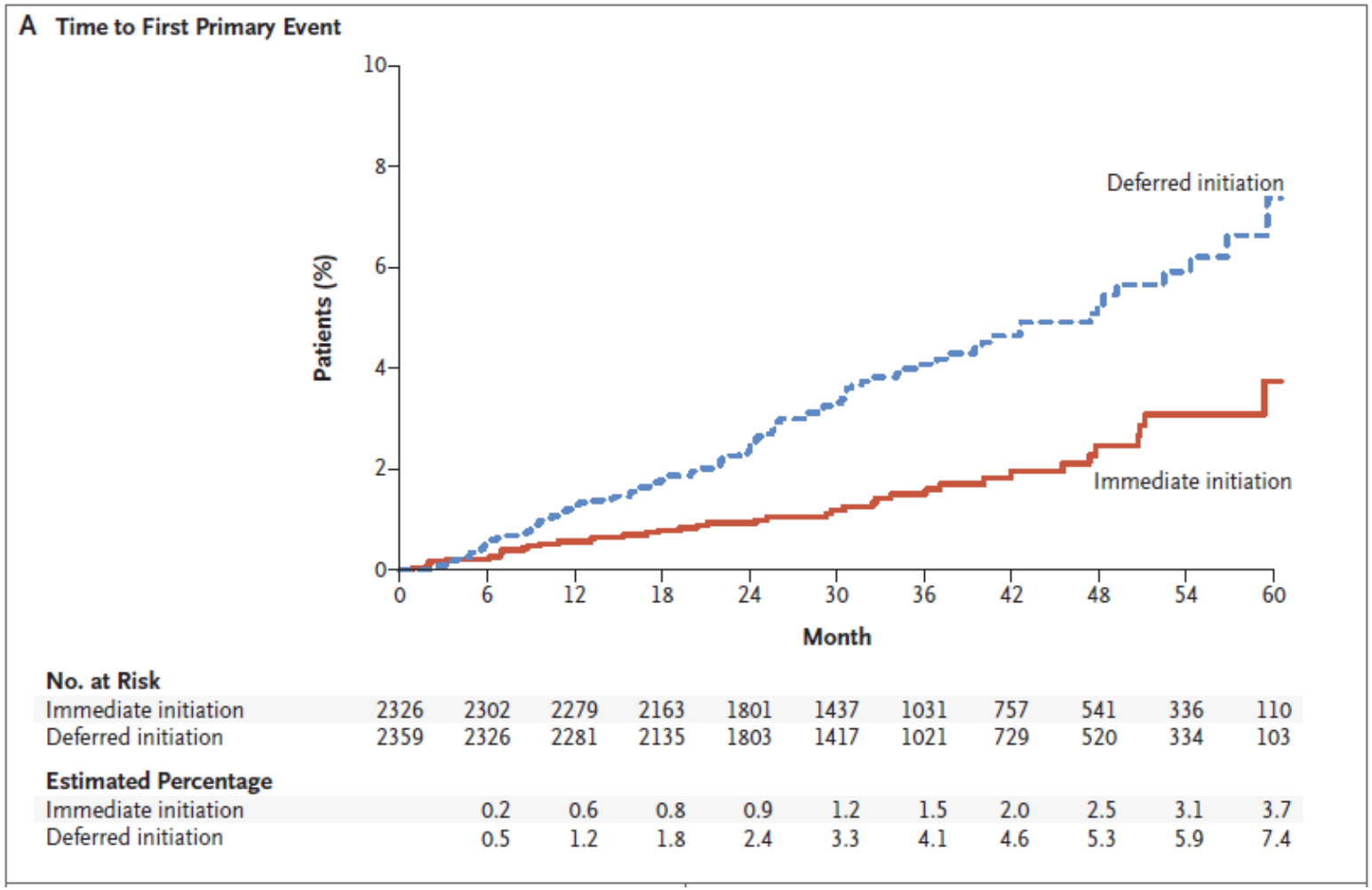
Early treatment is beneficial: START



No. at Risk											
Immediate initiation	2326	2302	2279	2163	1801	1437	1031	757	541	336	110
Deferred initiation	2359	2326	2281	2135	1803	1417	1021	729	520	334	103
Estimated Percentage											
Immediate initiation		0.2	0.6	0.8	0.9	1.2	1.5	2.0	2.5	3.1	3.7
Deferred initiation		0.5	1.2	1.8	2.4	3.3	4.1	4.6	5.3	5.9	7.4

INSIGHT START Study Group, N Engl J Med. 2015 Aug 27;373(9):795-807

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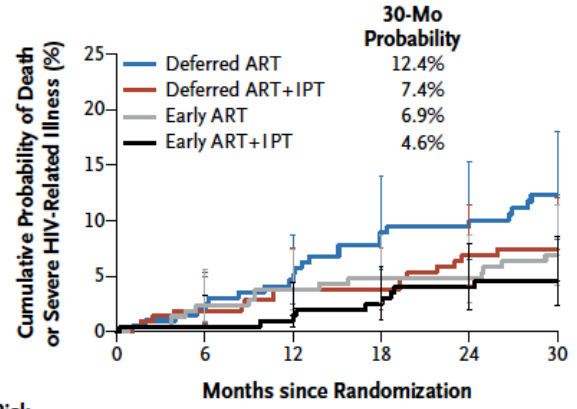
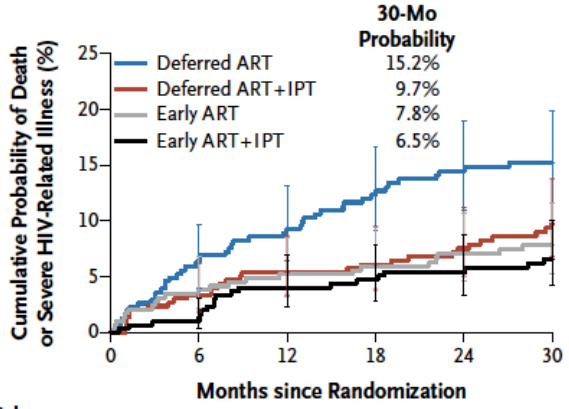
Early treatment is beneficial: TEMPRANO

Patients with Baseline CD4+ Count ≥500/mm³



No. at Risk						
Deferred ART	201	190	181	168	162	145
Deferred ART+IPT	212	204	197	191	182	174
Early ART	222	205	193	189	185	171
Early ART+IPT	214	205	197	190	184	171

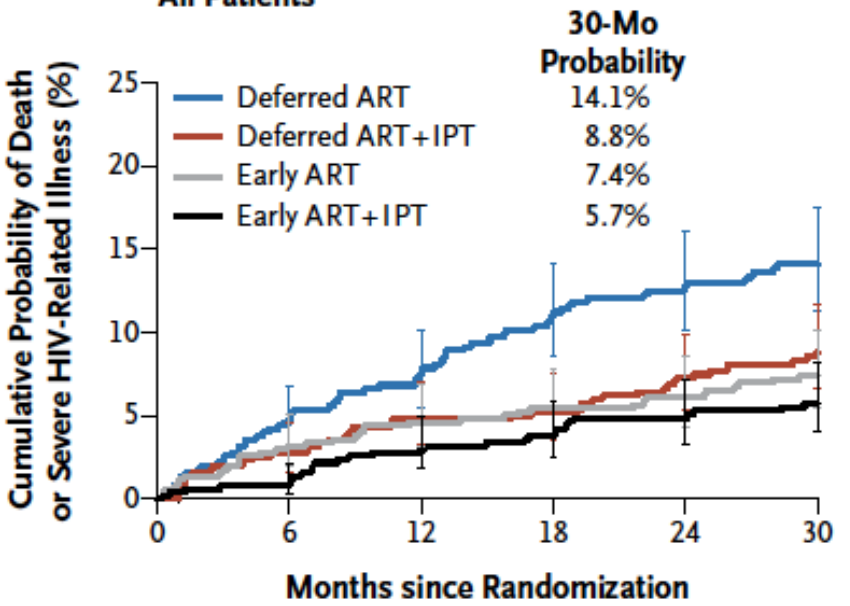
Patients with Baseline CD4+ Count <500/mm³



No. at Risk						
Deferred ART	310	283	267	250	238	221
Deferred ART+IPT	300	285	276	268	258	245
Early ART	293	276	270	263	247	232
Early ART+IPT	304	296	281	269	261	247

A Primary Outcome

All Patients



No. at Risk						
Deferred ART	511	473	448	418	400	366
Deferred ART+IPT	512	489	473	459	440	419
Early ART	515	481	463	452	432	403
Early ART+IPT	518	501	478	459	445	418

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TEMPRANO ANRS 12136 Study Group, N Engl J Med. 2015 Aug 27;373(9):808-22

Positive predictive value, 4th generation HIV test

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Houston: 2.5M people, 25000 PLWH + 18% Undx = 4500 Undx (0.18% of 2.5M)

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Undx HIV: 0.18%	Neg	0	99321	99321	NPV: 99321/99321 = 100%
	Total	180	99820	100000	

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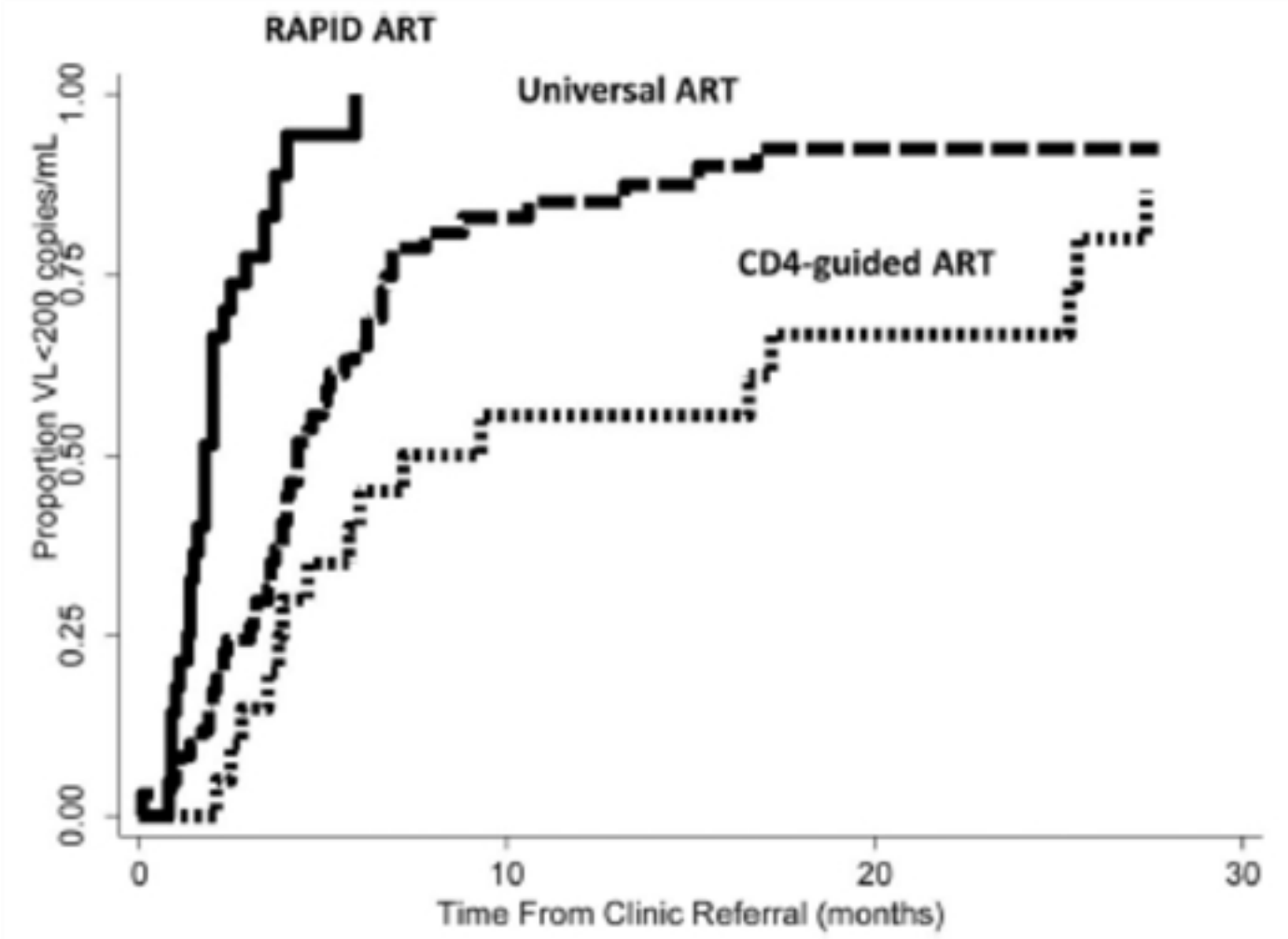
The challenges

- Randomized studies all started with participants who were already in the treating clinic (initiated linkage); RAPID in San Francisco provided transportation assistance for people outside the treating clinic
- Diagnoses outside the treating clinic (e.g., home-based testing in Test and Treat studies): not aware of data

RAPID



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Pilcher C, RAPID, JAIDS, 2017, 74:44-51

TABLE 1. Patient Characteristics and ART Use Among 86 Newly Diagnosed Patients Referred to the San Francisco General Hospital HIV Clinic

Characteristic	RAPID, N = 39	Non-RAPID, N = 47	*P*
Sociodemographic			
Age, mean (range)	31.6 (21–47)	34.8 (19–68)	0.14
Race/ethnicity, n (%)			0.034
Black	2 (5.1)	12 (25.5)	
Latino	18 (46.2)	15 (31.9)	
White	16 (41.0)	13 (27.7)	
Asian/Pacific Islander	3 (7.7)	7 (14.9)	
Sex, n (%)			0.11
Male	39 (100.0)	44 (93.6)	
Female	0 (0.0)	3 (6.4)	
Mental health, n (%)			
Major disorder present	21 (53.9)	15 (31.9)	0.04
Housing, n (%)			0.97
Stably housed	25 (64.1)	31 (66.0)	
Homeless	11 (28.2)	13 (27.7)	
Unknown	3 (7.7)	3 (6.4)	
Illicit substance use, n (%)			
Any reported	18 (46.2)	18 (38.3)	0.75
Clinical characteristics			
Baseline CD4 cell count,* mean (range)	474 *(3 to 1391)*	417 *(11 to 1194)*	0.38
Baseline HIV RNA viral load,† mean (range)	4.89 *(2.76 to 6.61)*	4.49 *(1.60 to 6.08)*	0.082
Acute or recent HIV Infection,‡ n/N (%)			
Acute (RNA positive/Ab negative)	8/32 *(25.0)*	2/32 *(6.3)*	0.041
Recent (Ab negative within 6 mo)	24/32 *(75.0)*	9/32 *(28.1)*	<0.001
Transmitted resistance, n/N (%)			
Genotype obtained	32/39 (82.1)	43/47 (91.5)	0.21
Any§	8/32 (25.0)	18/43 (41.9)	0.13
Major NNRTI-R§	7/32 (21.9)	11/43 (25.6)	0.71
Major PI-R	1/32 (3.1)	2/43 (4.7)	0.99
Major NRTI-R	0 (0)	1/43 (2.3)	0.99
ART initiated,‖¶ n/N (%)	39/39 (100)	38/47 (80.9)	0.003
INSTI use¶	35/39§ (89.7)	32/38 (84.2)	0.47
PI use¶	5/39 (12.8)	5/38 (13.2)	0.97
NNRTI use¶	0/39 (0)	3/38 (7.9)	0.12

*Baseline CD4 T cell count units: cells/mm^3.

†Baseline HIV RNA Viral Load units: log10 (copies/mL).

‡Acute HIV infection status was defined by having a negative or indeterminate antibody test for HIV on the date of an initial positive test. Recent HIV infection status was defined by <6 months between diagnosis and prior negative HIV test result, which was known for only n = 64/86 patients (74.4%) and among that overall group the proportion with acute or recent infection was 33/64 patients (51.8%). If known at the time of referral this was one indication for RAPID program enrollment.

§Presence of any RT or protease mutations consistent with transmitted drug resistance determined using current Stanford surveillance definitions. Major mutations conferring clinically significant resistance to given medications used current Stanford clinical resistance definitions[10]; there were 14 K103N, 3 V179D, and 1 V106A NNRTI mutations observed; only 2 major PI mutations (1 I54V, 1 L90M); and one virus with M184V. No K65R or T215F/Y mutations were observed and no 2 class resistant viruses were seen. Integrase resistance testing was not clinically available and was not performed.

‖ART initiation documented at any time up to the time of maximum follow-up in June 2015 (at least 6 months after referral of the last patient included in the analysis).

¶INSTI, integrase strand transfer inhibitor; PI, protease inhibitor; NNRTI, non-nucleoside reverse transcriptase inhibitor. Regimens followed current guidelines.[11] The most common regimen initiated in RAPID patients was truvada (tenofovir disoproxil fumarate/emtricitabine) plus dolutegravir (in 26 patients); others included stribild (tenofovir/emtricitabine/elvitegravir/cobicistat) in 7 patients; truvada plus darunavir plus ritonavir (4 patients); truvada plus raltegravir (1 patient) and triumeq (abacavir plus lamivudine plus dolutegravir) in 1 patient.

Same Day ART

Screening and Enrollment

- 1255 patients with CD4 count ≤500 cells/mm^3 evaluated by HIV clinic physician on day of HIV testing; 434 had WHO Stage 3 or 4 disease or CXR consistent with TB
- 821 patients referred to study team on day of HIV testing
  - 51 excluded for Stage 3 or 4 disease or prior ART
  - 1 refused
  - 7 failed ART readiness questionnaire
- 762 enrolled/randomized
  - 51 transferred and excluded
- April 2016 DSMB recommended publication due to superior results with same-day ART
- Analysis includes 564 enrolled by Feb 2015

Slide: Koenig S, WEAE0202, AIDS 2016, Durban, SA

TasP

Antiretroviral Treatment as Prevention • ANRS 12249
Ukuphila kwami, ukuphila kwethu (my health for our health)

AFRICA CENTRE For Population Health

Bordeaux school of public health
ISPED
Institut de Santé Publique d'Epidémiologie et de Développement

The impact of Universal Test and Treat on HIV incidence in a rural South African population

François DABIS
for the ANRS 12249 TasP study team

21st IAC, FRAC0105LB,
Durban, SA 2016

Ceped
Centre Population et Développement

Inserm

anrs France REcherche Nord & sud Sida-hiv Hépatites
Agence autonome de l'Inserm

UNIVERSITY OF Southampton

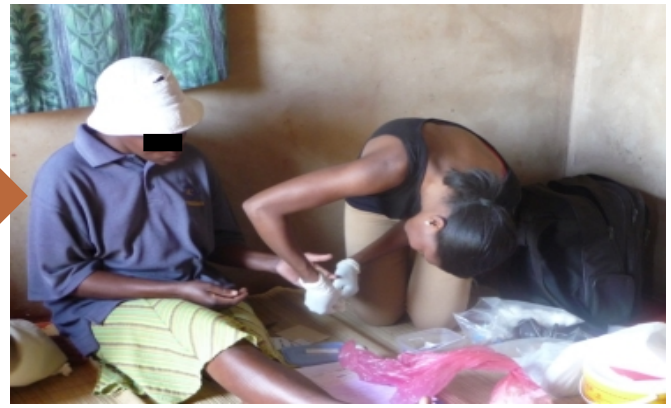
UCL

Trial procedures

Homestead identification
(GPS)

Homestead visit every 6 months

1. Head of household verbal consent
2. Registration of individuals



Homestead procedures

1. Household assets questionnaire
2. Individual questionnaire
3. DBS sample, rapid HIV testing
4. TasP card

TasP clinic

- One per cluster (45 min walk max)
- HIV care and treatment according to arm
- Study questionnaires

HIV +

HIV -

Referral to TasP clinics

Repeat HIV test 6 mths later

Dabis, ANRS 12249 TasP, 21st IAC, FRAC0105LB, Durban, SA 2016

Trial process indicators

	Intervention	Control
Contact rate per survey round (range)	61% – 84%	66% – 90%
HIV ascertainment rate per survey round (range)	70% – 83%	77% – 88%
Entry into care among individuals not in care		
Within 3 months	28%	29%
Within 6 months	36%	37%
Within 12 months	**47**%	**47**%

Dabis, ANRS 12249 TasP, 21st IAC, FRAC0105LB, Durban, SA 2016

ANRS 12249 TasP - Estimated cascade of care

Dabis, ANRS 12249 TasP, 21st IAC, FRAC0105LB, Durban, SA 2016

RESEARCH ARTICLE

A universal testing and treatment intervention to improve HIV control: One-year results from intervention communities in Zambia in the HPTN 071 (PopART) cluster-randomised trial

Richard Hayes[1]*, Sian Floyd[1], Ab Schaap[1,2], Kwame Shanaube[2], Peter Bock[3], Kalpana Sabapathy[1], Sam Griffith[4], Deborah Donnell[5], Estelle Piwowar-Manning[6], Wafaa El-Sadr[7], Nulda Beyers[3], Helen Ayles[2,8], Sarah Fidler[9], for the HPTN 071 (PopART) Study Team[¶]

PLOS Medicine | https://doi.org/10.1371/journal.pmed.1002292 May 2, 2017

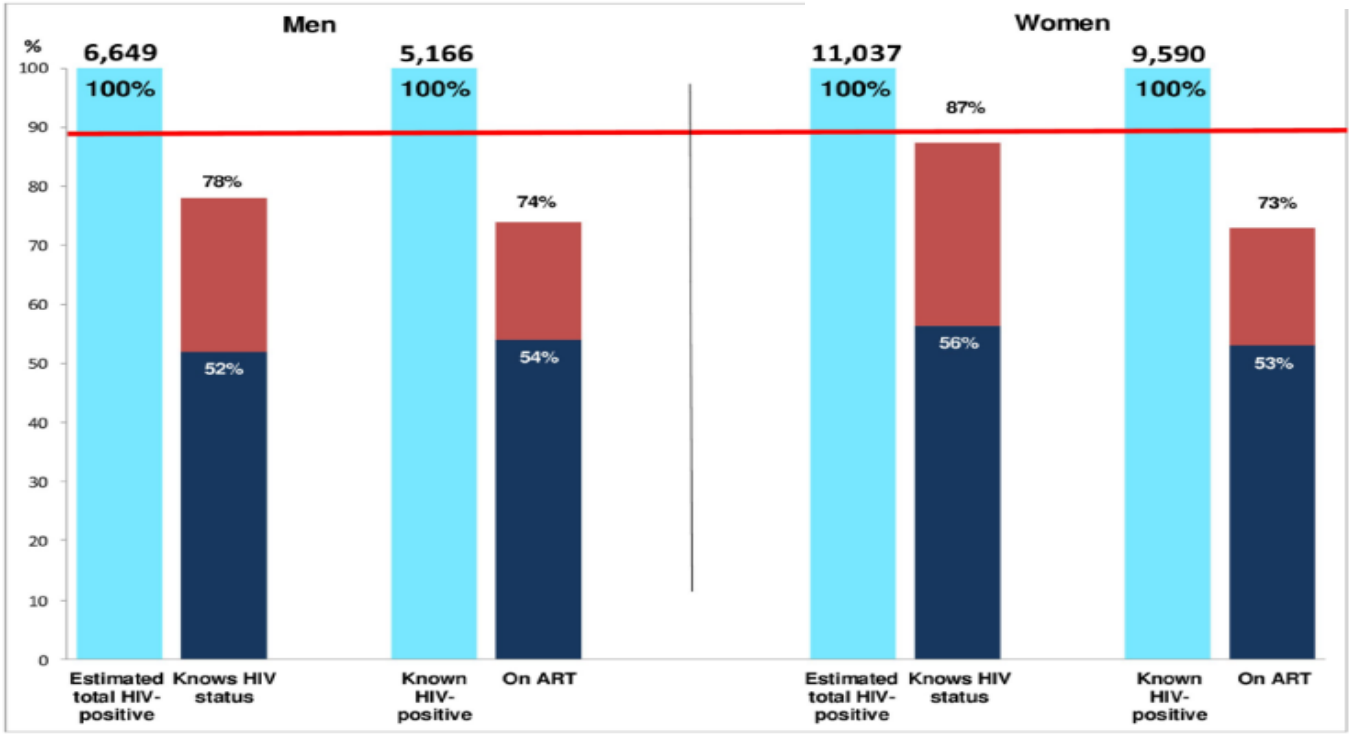


Fig 5. Estimated coverage compared with the first two 90 targets extrapolated to the total adult population. The red line shows the 90% target for first two of the 90-90-90 targets. Dark blue bars show the estimated proportion of HIV+ adults who knew their status (first 90 target) and the estimated proportion of those who knew their HIV+ status who were on ART (second 90 target), pre-intervention. Red bars show the same estimated proportions, post-intervention. ART, antiretroviral therapy.

- PopART:
- Universal home-based testing
- Linkage to care in community
- Universal ART

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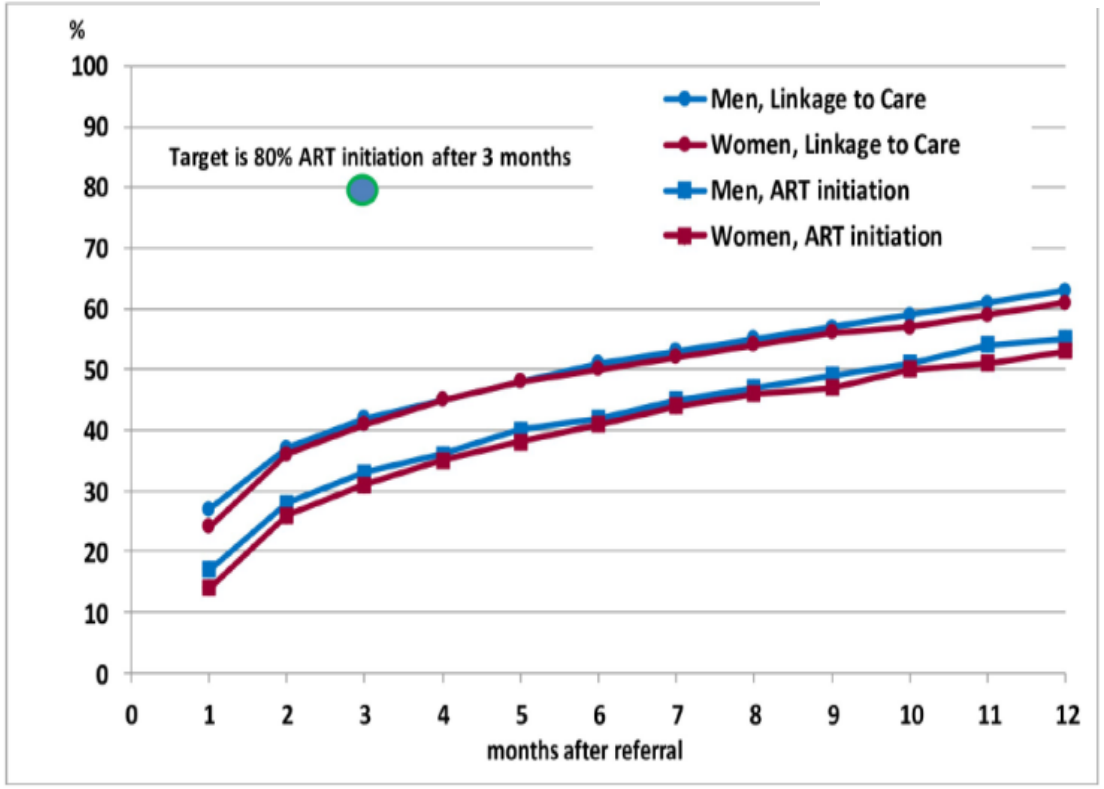

Fig 3. Time from referral to linkage to care and ART initiation during the first annual round of the PopART intervention. Survival curves showing cumulative proportions linking to care or initiating ART following referral by community HIV-care providers. ART, antiretroviral therapy.

- PopART:
- Slow “linkage to care” but that needs to be unpacked

- TasP is limited by linkage to care
- Rapid treatment may promote linkage to care
- Protocols merging rapid treatment with universal testing and treatment may have potential to reach 90-90-90 targets
- Such protocols would have countless moving parts and complexity

Clinical Data

- Early treatment is beneficial : START, International: CD4 guided therapy trial, proves that clinically, better on ART than off no matter the CD4 cell count
- Study was huge and clinical difference small, so weeks or months should not make a clinical difference
- Clinical trial, even strategy trials, are not the same as routine care
- Test and treat: take START to routine care, i.e., treat everyone. Doesn't necessarily work better: ANRS study in Kwa Zulu Natal. Promise of treatment alone is not enough.
- Linkage to care was weak link: gap between testing and treatment (Rosen data)
- Same day ART: start treatment at first clinic visit: Koenig trial in Haiti
- Rapid treatment: accelerate time to first clinic visit: San Francisco

RAPID

TABLE 2. Time to Achievement of Clinical Milestones Among Newly Diagnosed Patients Referred to the San Francisco General Hospital HIV Clinic

Group	RAPID	Non-RAPID	Universal ART Era	CD4-Guided Era	Between-Group Comparisons	
Referral years	2013–2014	2013–2014	2010–2013	2006–2009	RAPID versus non-RAPID	RAPID versus 2010–2013 universal
Patients for whom ART recommended	All	All	All	CD4 < 500	(contemporaneous)	(pre–post intervention)
Received intervention	Yes	No	No	No		
N	39	47	69	25	*P**	
Mean (range) time in days from referral to						
Clinic intake visit	1 (0–5)	10 (7–17)	13 (7–26)	9 (2–44)	<0.001	<0.001
Primary provider visit	14 (3–30)	26 (13–105)	31 (17–60)	30 (7–65)	0.13	0.089
ART prescription	1 (0–7)	22 (14–48)	37 (26–148)	128 (39–520)	<0.001	<0.001
Viral suppression <200 copies per milliliter	56 (40–87)	79 (53–174)	132 (91–210)	218 (116–777)	0.009	<0.001
Time in days from diagnosis to						
Referral to the clinic	6 (2–11)	11 (3–104)	14 (4–48)	33 (4–120)	0.004	0.008
Viral suppression <200 copies per milliliter	65 (52–119)	170 (79–363)	190 (113–302)	580 (138–971)	<0.001	<0.001

*P-values shown did not consider loss to follow-up as a competing risk (see text).

Outcomes are compared between patients who were offered the RAPID intervention and those who were not offered the intervention but who received an otherwise similar standard of care, either during the same time frame (the "non-RAPID" comparison group) or under evolving treatment guidelines during the years before the RAPID program.

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