

Engagement is Key to Effectiveness of Individualized Texting for Adherence Building (iTAB) Among HIV+ Methamphetamine Users

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June 30th, 2015

10th International Conference on HIV Treatment and Prevention Adherence



Background

- Methamphetamine (METH) use strongly associated with continued incidence of HIV/AIDS in the U.S.
- METH use associated with ↓ antiretroviral therapy (ART) adherence
- Texting to improve ART adherence in HIV+ substance using cohorts feasible
- Meta-analysis → text messaging yielded higher ART adherence than control conditions
 - » Studies with larger effects on adherence: 1) Sent less than daily messages, 2) Supported bidirectional communication*, 3) Had personalized content*, 4) Were matched to participants' dosing schedule*

CDC HIV/AIDS Fact sheet, 2007; Blackstone et al., 2013; Moore et al., 2012; *Finitsis, Pellowski, & Johnson, PLoS One, 2014; Moore et al., ART, 2013* Ingersoll et al., *J Sub Abuse Tx, 2014*

Objective

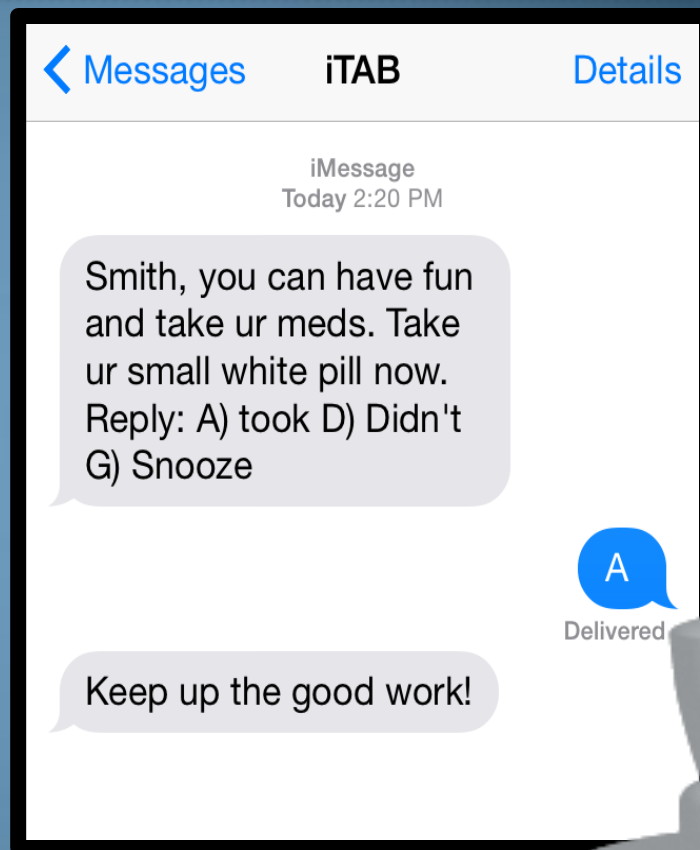
- To compare a brief psychoeducation plus adherence text messaging intervention (iTAB) to psychoeducation without adherence text messaging (CTRL) for the improvement of objectively measured medication adherence among HIV+/METH+ persons

iTAB-M Study Methods

- 6-week trial Randomized Controlled Trial; March '12 to April '14
- 2:1 assignment to iTAB-M (n=50) or CTRL (n=25)
- Inclusion criteria:
 - » HIV-infected individuals
 - » 18 years or older
 - » METH use within 45 days of enrollment and diagnosed with lifetime METH dependence or abuse
 - » Current ART rx
- Retention good iTAB=88% (n=44), CTRL=96% (n=24)
- Issues with MEMS, so showing per-protocol analysis
 - » iTAB-M (n=35) vs. CTRL (n=19)
 - » Outcome: MEMS ARV adherence \pm 2-hour dosing window; MEMS ARV adherence

Individualized Texting for Adherence Building (iTAB) intervention

- **Both–iTAB/active control (CTRL):**
 - Adherence psychoeducation
 - Sentinel ARV for MEMS
 - Daily mood text message
 - Daily METH text message
- **iTAB:**
 - Daily interactive ART texts:
 - Preferred dosing time, name, choice of personalized reminder stems, description of pill
 - If 3 doses missed=emergency text; 5 doses missed=RA call



Example Thematic Reminder Stems

» Social Support/responsibility to others

- People care about u. Pls take ur...

» Self-Esteem

- U are special. Pls take ur...

» Dangers of Non-adherence

- Not taking ur meds could make u resistant. Take ur...

» Harm Reduction

- You can have fun and take ur meds. Time 4 ur...

» Time/focus

- It's pill time! Take ur...

» Spirituality

- God grant me the serenity to do this. It's time 4 ur...

» Celebration of Health

- 2 help keep u feeling good, remember 2 take ur...

» Disease control

- Ur health is impt, remember 2 take ur meds. Take ur...

Montoya et al., AIDS Care, 2014

Demographic Characteristics

	iTAB (n=35)	CTRL (n=19)	P-value
Age, mean (SD)	45.4 (8.3)	46.8 (8.7)	.55
Education, mean (SD)	13.3 (3.0)	13.8 (2.6)	.53
Male, # (%)	33 (94.2%)	19 (100.0%)	.29
Gay/bisexual, # (%)	32 (91.4%)	15 (78.9%)	.19
Race/Ethnicity			.01
Non-Hispanic white, # (%)	21 (60.0%)	4 (21.1%)	
Black, # (%)	9 (25.7%)	7 (36.8%)	
Other, # (%)	5 (14.3%)	8 (42.1%)	
Employed, # (%)	13 (37.1%)	2 (10.5%)	.04

Psychiatric & Substance Use Characteristics

	iTAB (n=35)	CTRL (n=19)	P-value
Psychiatric			
Beck Depression Inventory ^a	14.4 (10.2)	12.1 (9.1)	.41
Current Major Depressive Disorder ^c	8 (22.9%)	0 (0.0%)	.04
Lifetime Major Depressive Disorder ^c	22 (62.9%)	11 (57.9%)	.72
Methamphetamine (METH) Use			
Days since last use ^b	4.5 [2.0, 21.0]	7 [1.5, 17.5]	.99
Age of 1 st use (years) ^a	22.5 (11.4)	20.0 (13.2)	.51
Lifetime quantity used (grams) ^b	661 [71, 3764]	239 [43, 2233]	.38
Previous treatment for METH use ^c	26 (74.3%)	14 (73.7%)	.96

^a = mean (SD); ^b = median [IQR]; ^c = # (%)

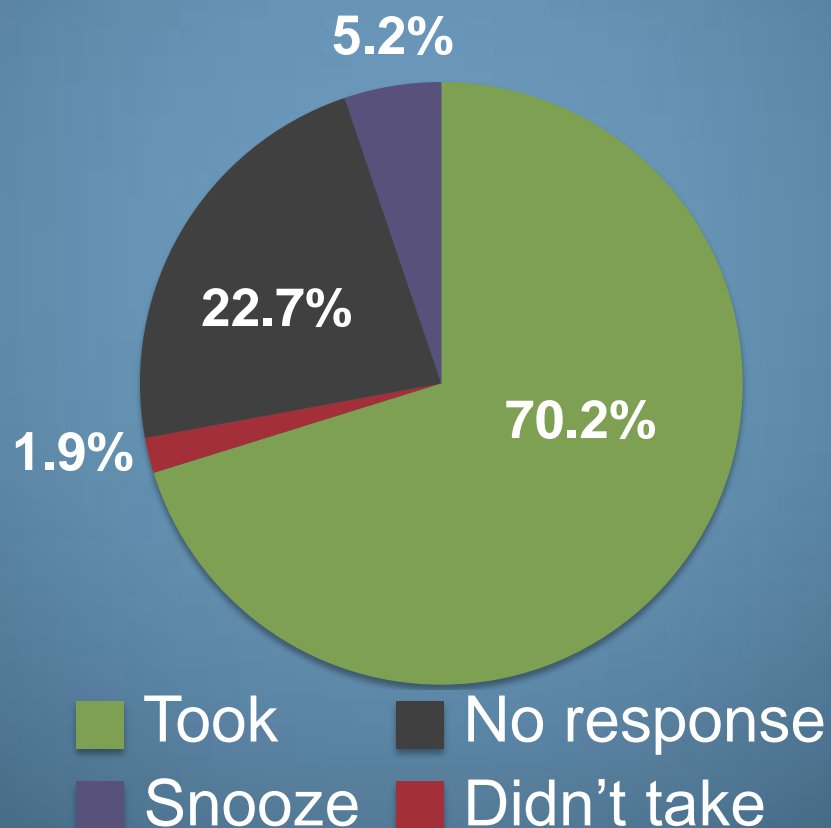
HIV Disease Characteristics

	iTAB (n=35)	CTRL (n=19)	P-value
HIV Disease Characteristics			
Duration of HIV disease (years) ^a	13.4 (8.0)	11.2 (8.2)	.42
Proportion with undetectable HIV RNA plasma ^c	26 (81.3%)	10 (71.4%)	.46
CD4 count within past year ^a	603 (364)	438 (292)	.14
Nadir CD4 count ^b	179 [46, 371]	196 [12, 250]	.33
Proportion with AIDS diagnosis ^c	19 (57.6%)	11 (57.9%)	.70
Antiretroviral Treatment (ART)			
Years on current regimen ^b	2.1 [1.0, 4.3]	1.6 [0.9, 3.7]	.58
Years of exposure to any regimen ^b	4.9 [2.3, 11.2]	8.8 [4.4, 14.5]	.46
Proportion on once-daily regimen ^c	33 (94.3%)	17 (89.5%)	.52

^a = mean (SD); ^b = median [IQR]; ^c = # (%)

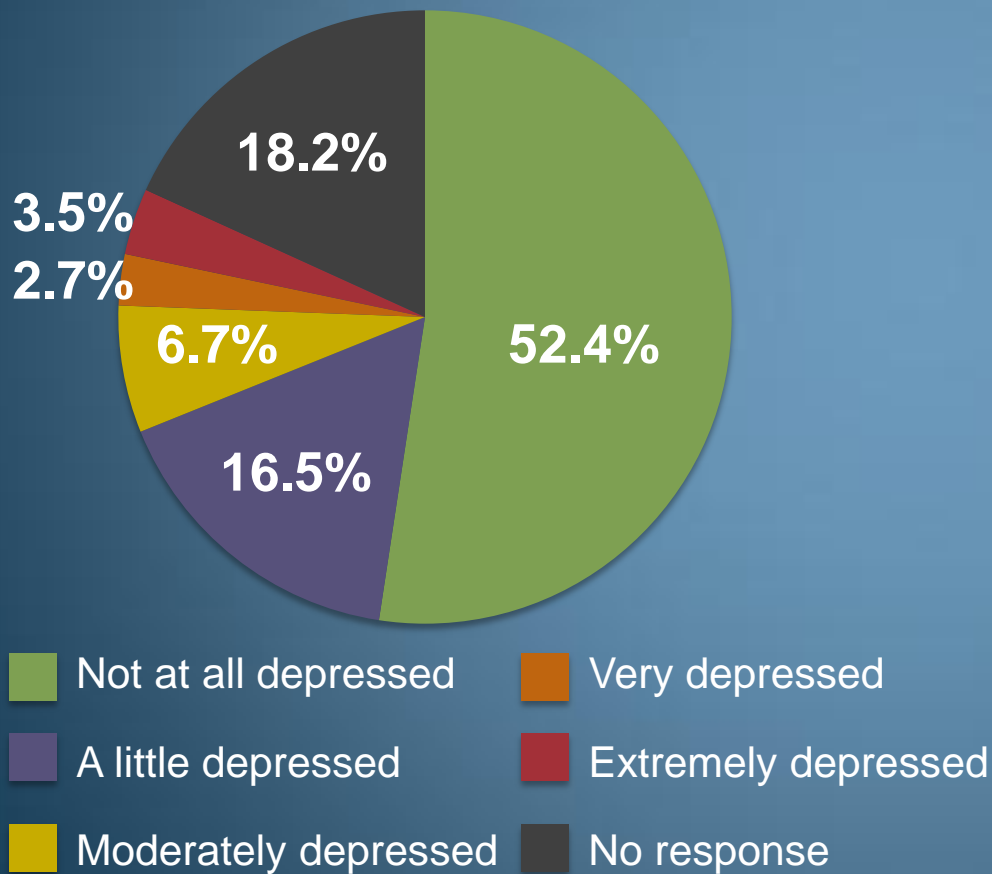
Engagement: Responsiveness to ART Prompts

iTAB only:
ART Prompts (N=1163)

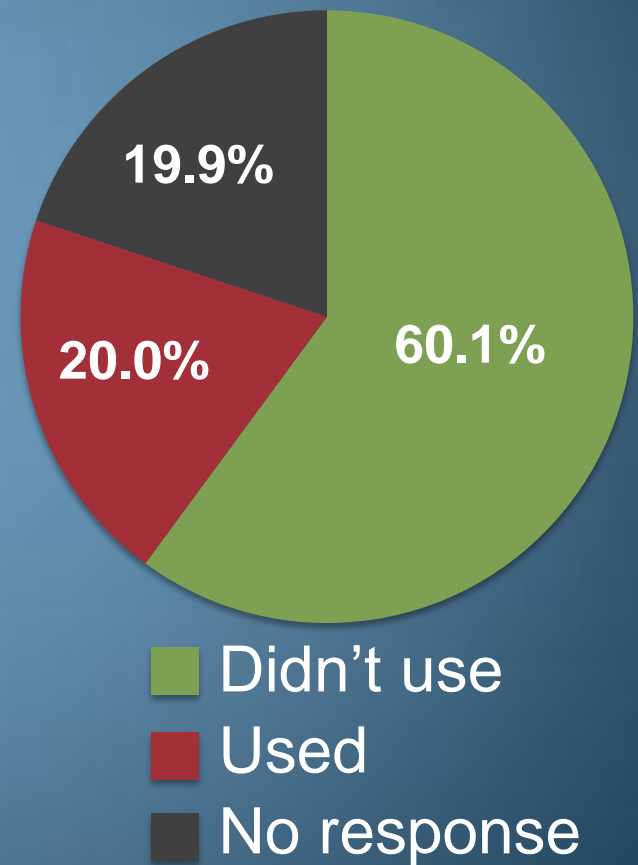


Engagement: Responsiveness to Mood & METH Prompts

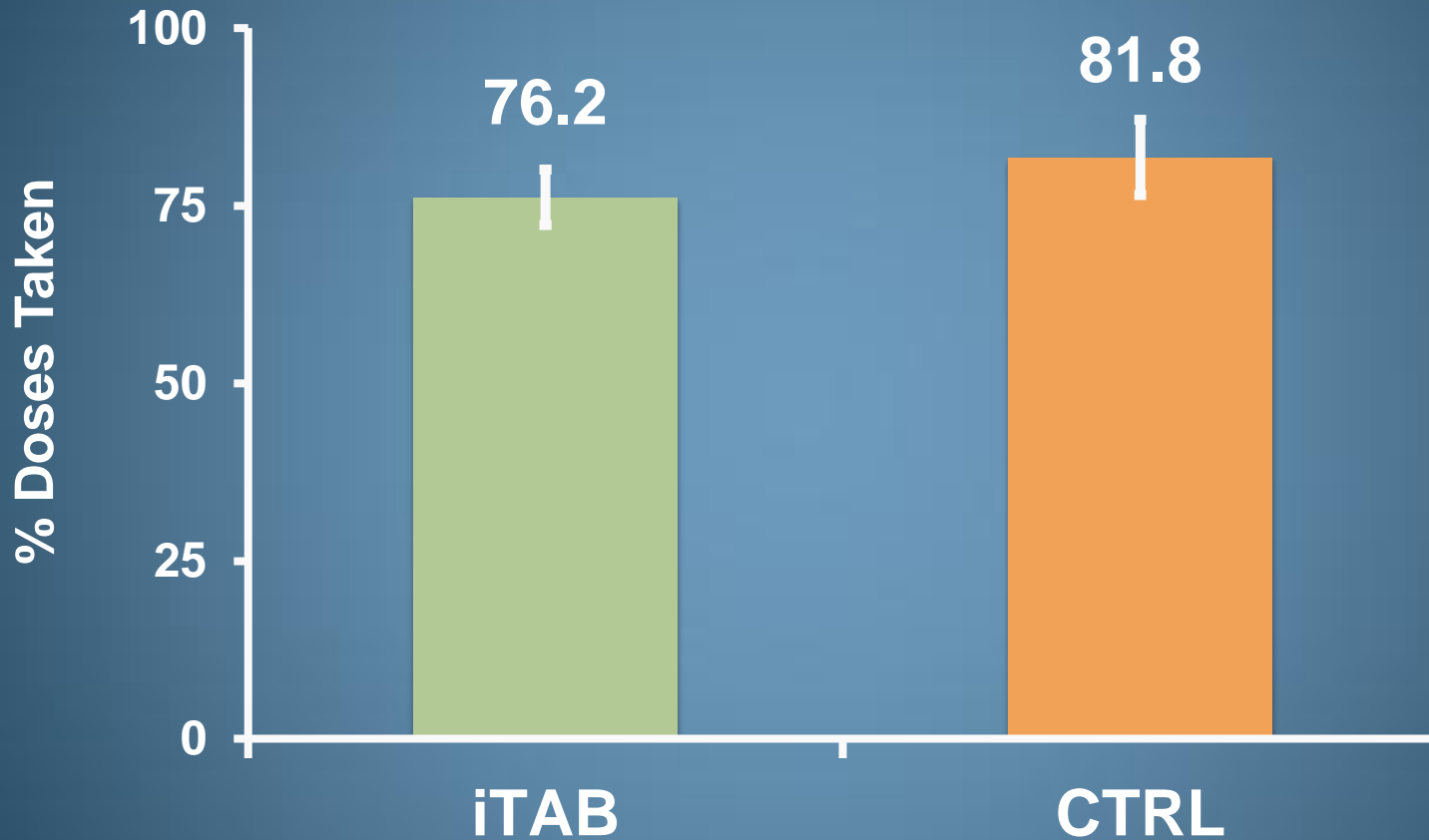
iTAB + CTRL:
Mood Prompts (N=1610)



iTAB + CTRL:
METH Prompts (N=1605)

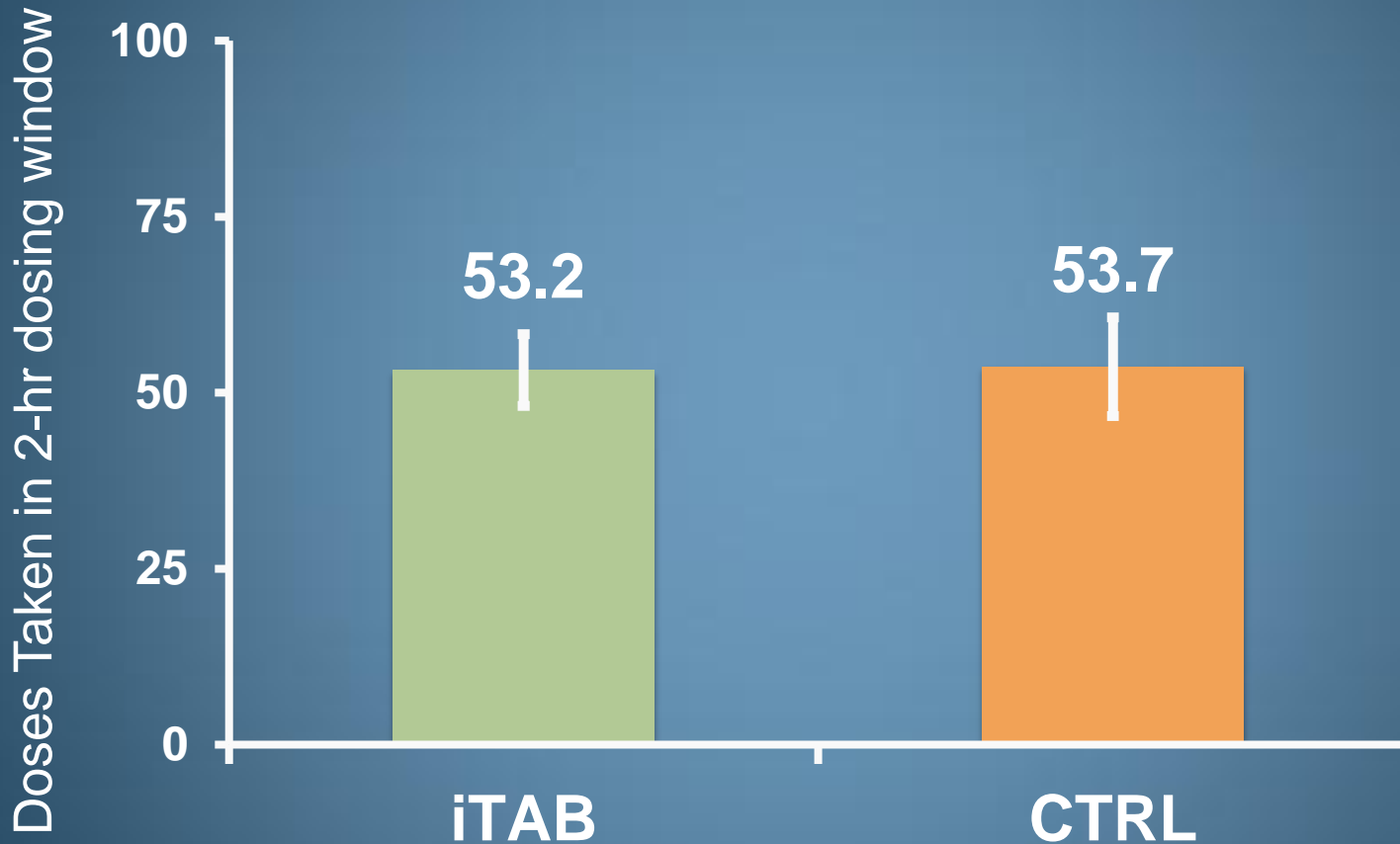


MEMS ARV Adherence



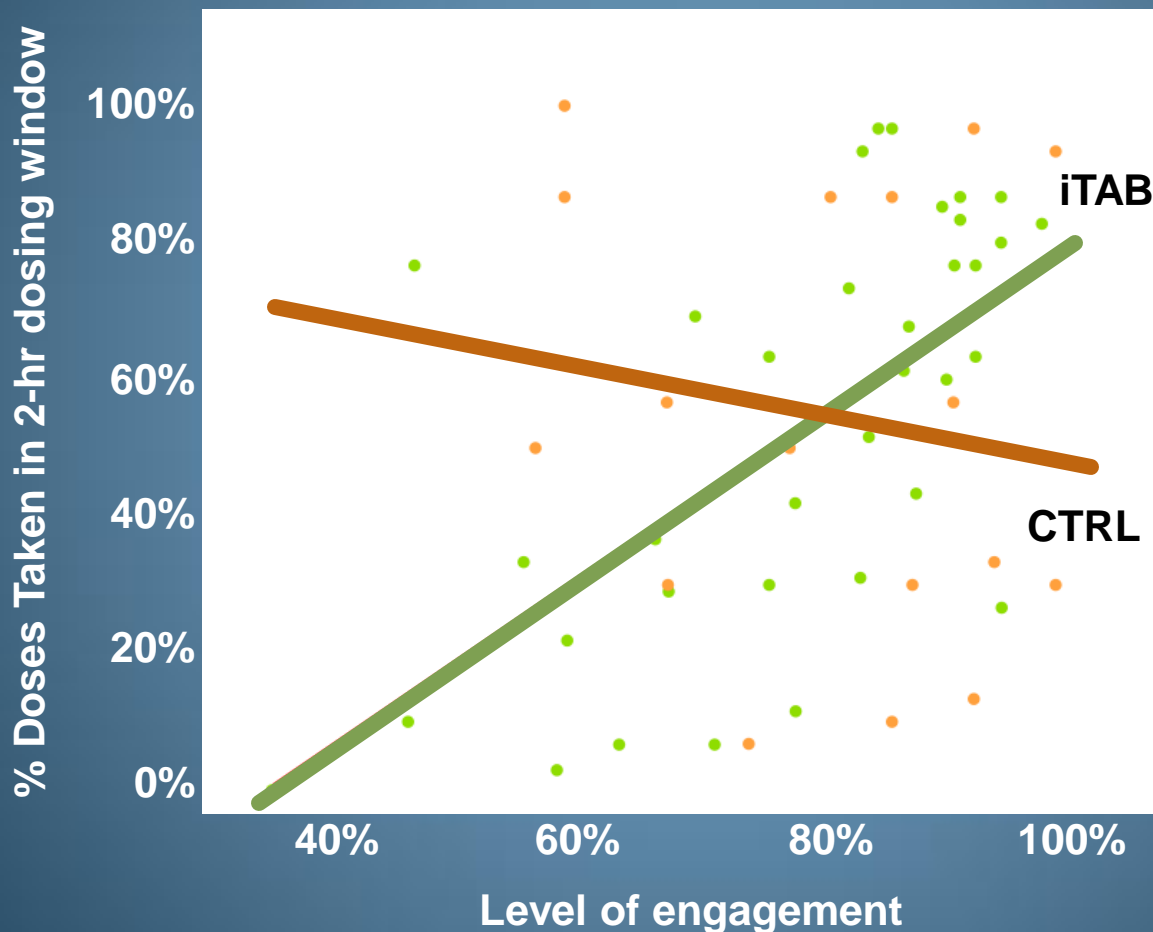
$t = -0.85, p = 0.40, \text{Cohen's } d = -0.24$

MEMS ARV Adherence in Dosing Window



$t = -0.05$, $p = 0.96$, Cohen's $d = -0.02$

Group x Level of Engagement

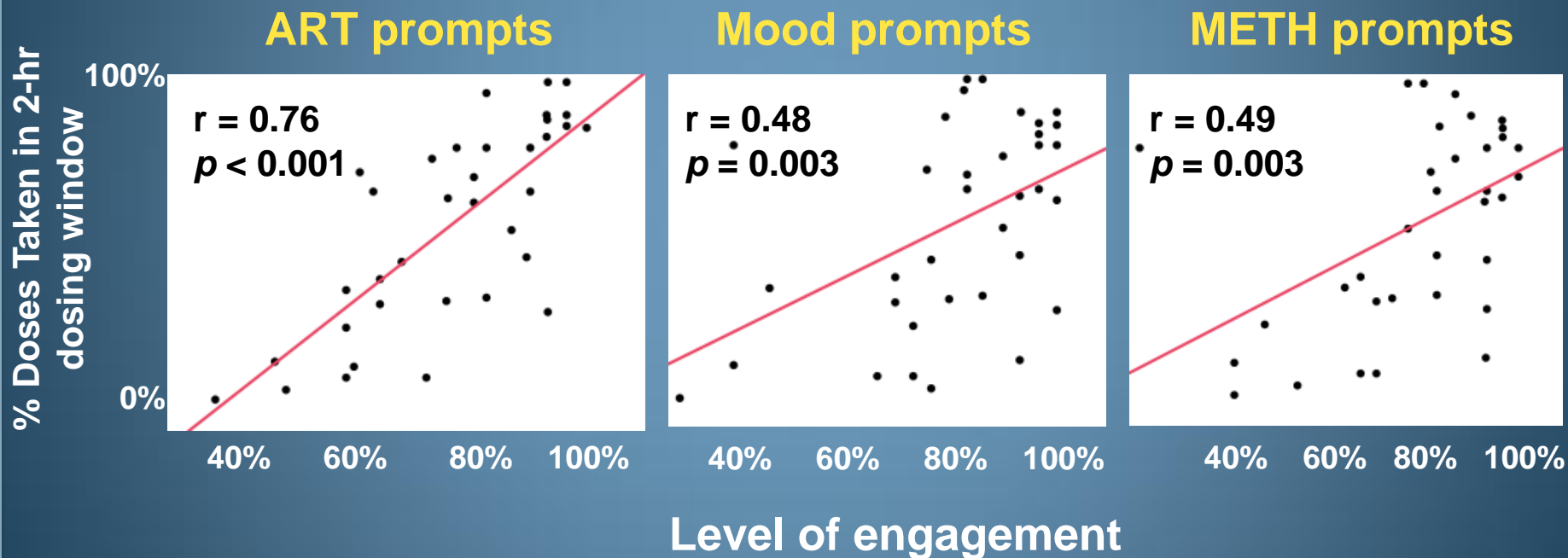


Model

$R^2 = 0.23$

$F = 6.13, p < 0.01$

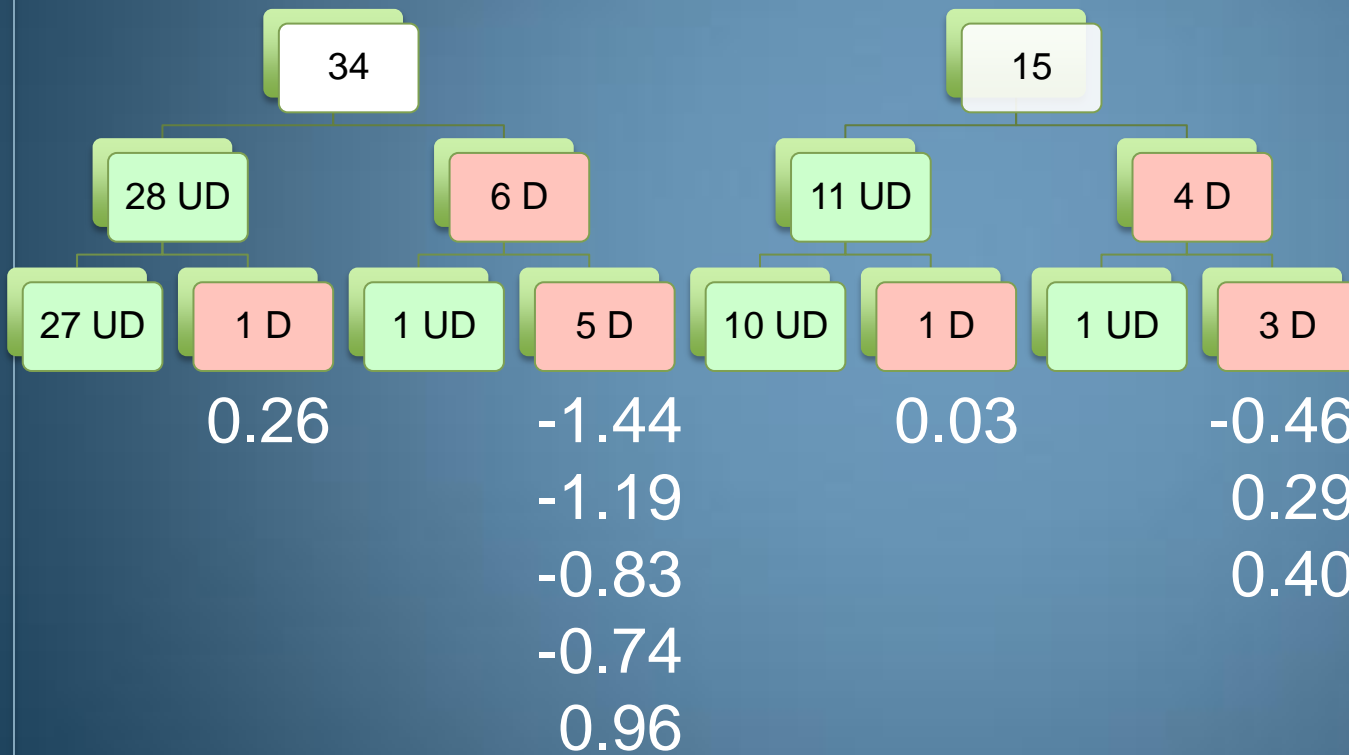
iTAB only: MEMS ARV adherence by responsiveness to prompts



VL Change

iTAB

CTRL



VL Available

Baseline VL

6-Week VL

Δ Log VL

D = Detectable VL
UD = Undetectable VL

Conclusions & Future Directions

■ CONCLUSIONS

- » Improving ART adherence among current METH users difficult; additional components likely needed
- » iTAB improves engagement as compared to CTRL; higher engagement associated with ART adherence among HIV-infected METH users
- » High engagement with text possible proxy for those who are effectively adhering to ART (assessment v. information)
- » Viral Load direction in iTAB Promising

■ FOOD FOR THOUGHT/FUTURE DIRECTIONS

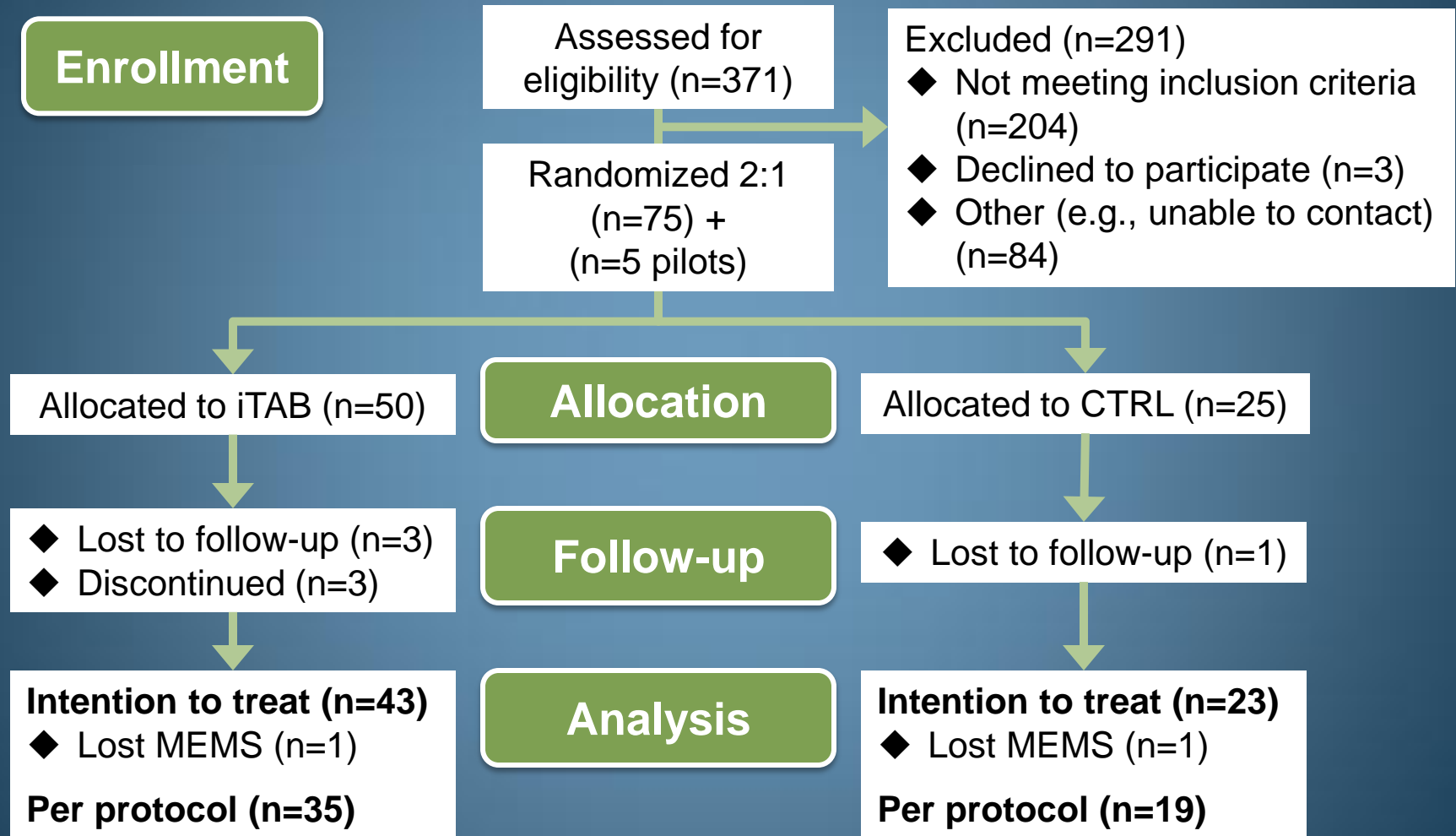
- » Optimize engagement—how? Variability in messaging? In-person? Sooner?
- » Message content: choice vs. theory-based vs. triggered
- » What is best role for texts? Assessment? Intervention? Both?
- » Willingness to disclose ART non-adherence vs. substance use

Acknowledgments

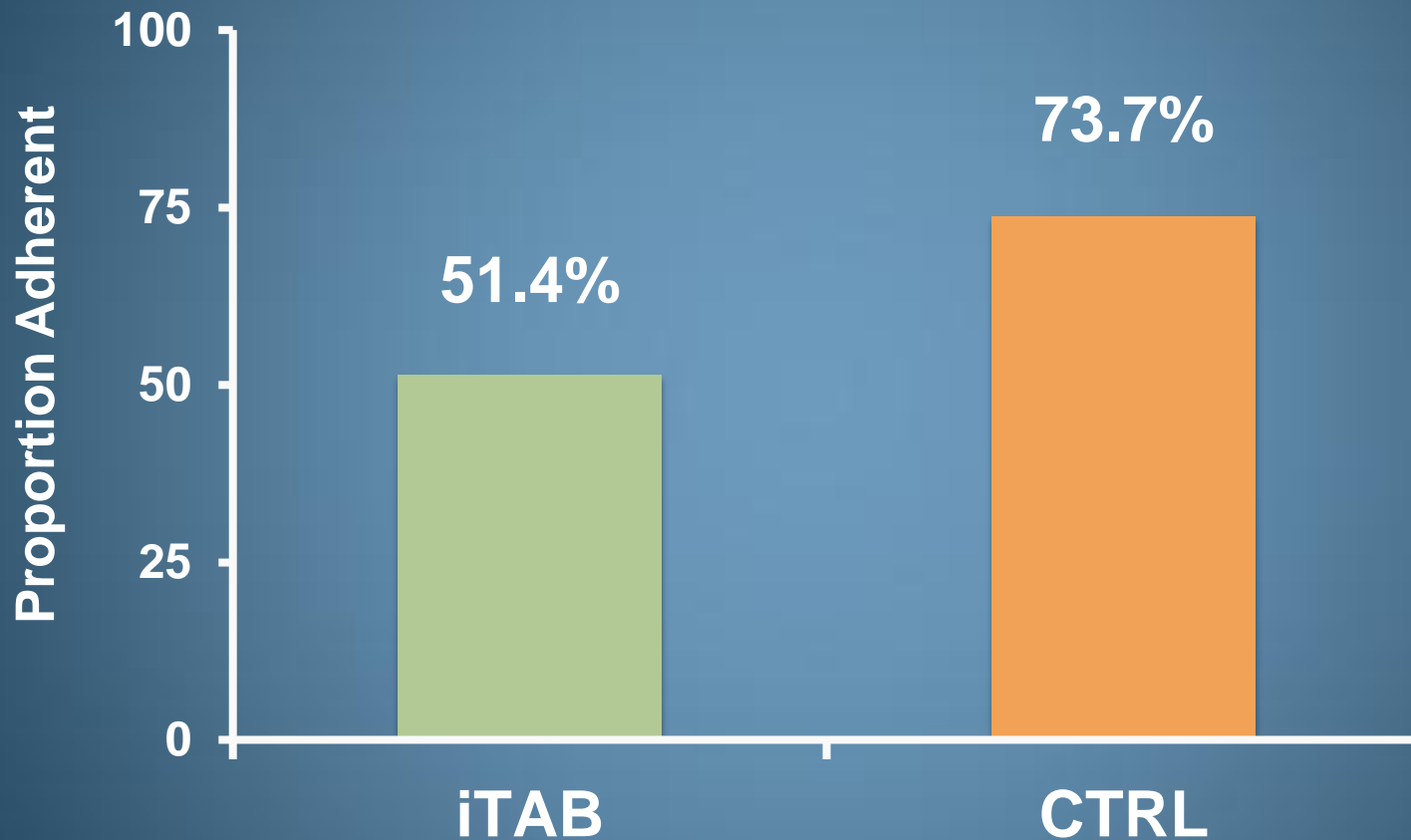
- **Participants**
- **Funding Support**
 - » NIDA R34 DA31058 (NCT01317277)
 - » NIDA P50 DA026306
 - » California HIV/AIDS Research Program ID-09-047, EI-11-SD-005
 - » NIMH/CSPAR P30 MH062512
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 - » Amelia Poquette
 - » Alexandra Rooney*
 - » Crosby Vargas
- **Cal-IT2 Technical Experts**
 - » Kevin Patrick, M.D., M.S.
 - » Allison Flick
 - » Fred Raab
 - » Mark Sullivan



CONSORT DIAGRAM

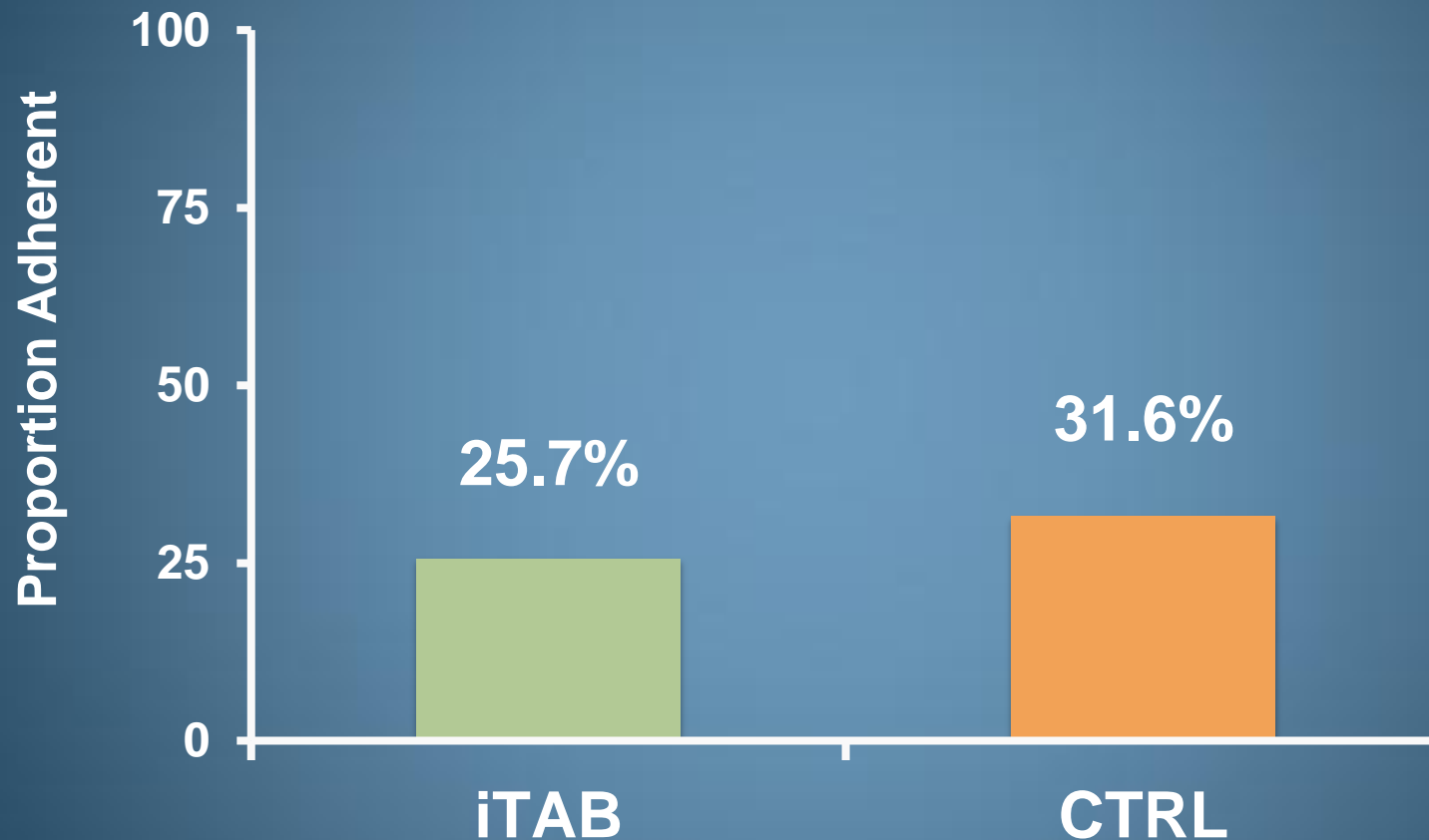


≥80% ARV Adherent



$\chi^2 = 2.5, p = 0.11$

≥80% ARV Adherent in Dosing Window



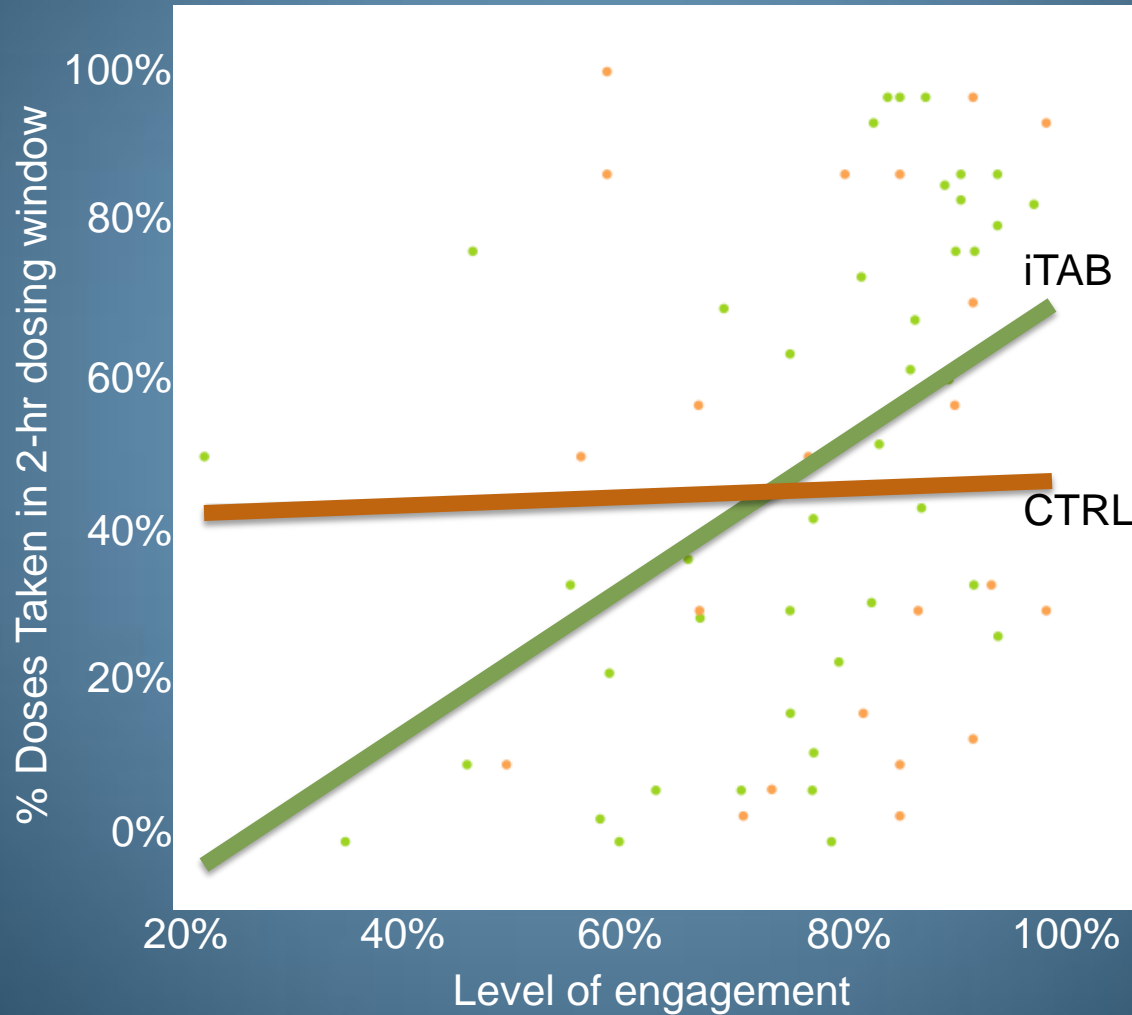
$\chi^2 = 0.21, p = 0.65$

Group x Level of Engagement

Multivariable logistic regression model predicting
≥80% ART adherent in Dosing Window:
 $X^2 (3, N = 54) = 12.7, p = 0.005$

	X ²	p-value
Intervention arm [ref: CTRL]	1.81	.18
Level of engagement	0.29	.59
Intervention arm * level of engagement	5.13	.02

Group x Level of Engagement



Model

$R^2 = 0.12$

$F = 3.95, p = 0.01$