Computer-Facilitated 5A's for Smoking Cessation: Using Technology to Improve Implementation and Provider Adherence

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Implementation Science: Our Big Picture....

1. How can we improve the availability and fidelity of EBBP's in primary care?

2. How can we get primary care practices to adopt technology tools to improve patient care?

5A's: Our Evidence-Based Intervention

- **Ask** about smoking at every visit.
- **Advise** smokers to quit or at least cut down.
- **Assess** a patient's level of readiness to quit.
- **Assist** patients to enhance motivation to quit and/or develop a plan for cessation including counseling, meds, NRT, quitlines, and other tools.
- **Arrange** a follow-up appointment to check progress and continue the conversation.

The 5A's Work, But…

- 75-80% of providers ask and advise
- Only 63.4% assess and 56.4% assist. (Park ER., JAMA Intern Med, 2015)
- The fifth 'A' - arrange a follow-up and referral - has been followed by only 10.4% of providers. (Park ER., JAMA Intern Med, 2015)
- Behavioral determinants?
  - Time, knowledge, expertise, confidence

Implementation Strategies

Waiting Room Tablet

Clinical Summary and Decision Tool

Herrera, Gustavo]
[DOB: 1/23/1967]

Smoking Cessation Guide

PROVIDER REPORT
05/23/16

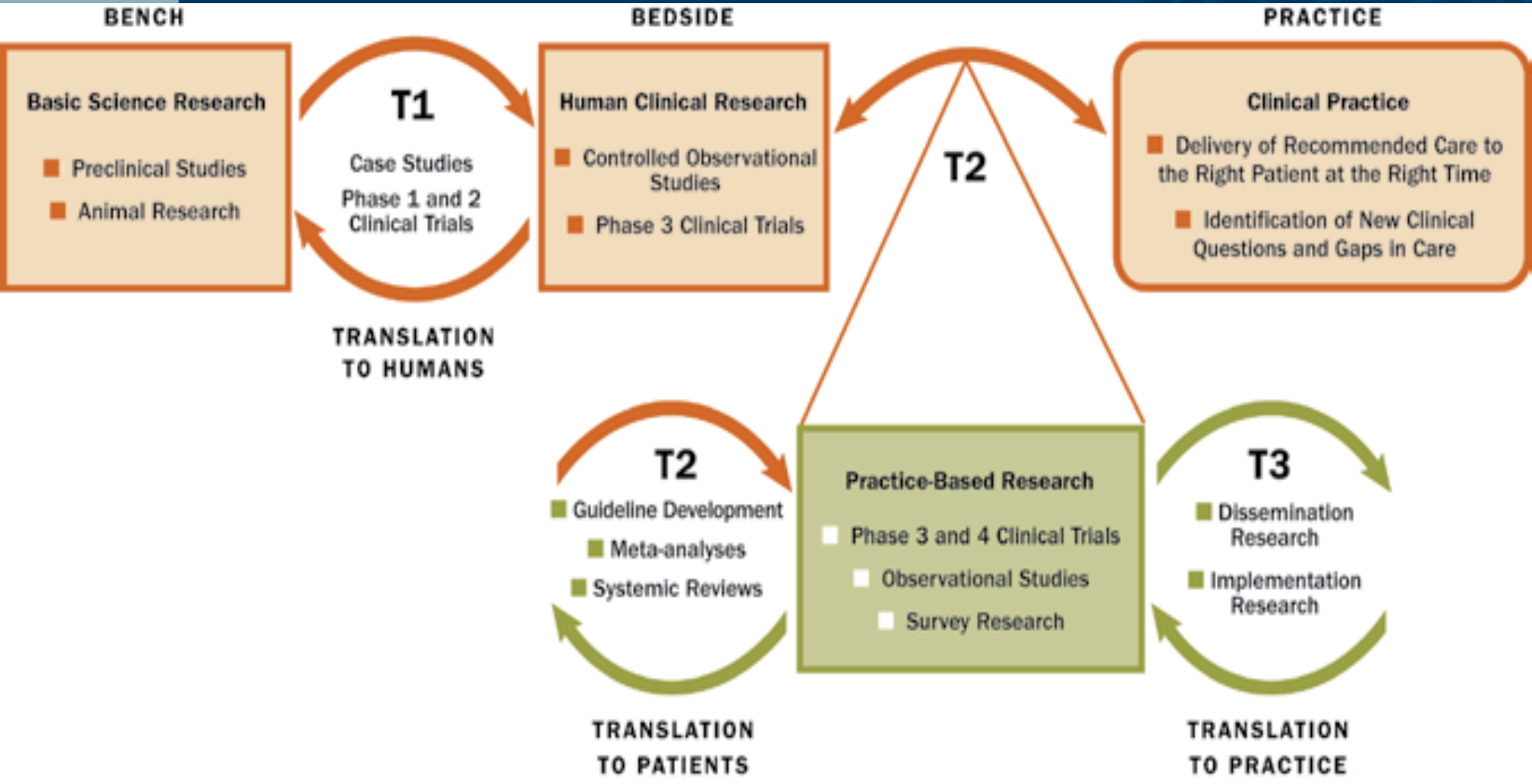
Patient Stage: **Preparation (Change in 1 month)**

Patient Summary	Smoking Data	
Mr. Herrera is **READY TO QUIT**	Current Smoker:	Yes
He currently **does not have a plan**	Days/week:	7
His confidence is **HIGH (7/10)**	Current cigarette use:	8/day
HAS successfully quit in the past	Years of use:	23
	Quit History:	Yes

	What You Should Do	Patient DATA
☐	➢ **Reinforce cessation advice and health benefits of quitting**	The most important thing you can do to improve your health is to stop smoking....
☐	➢ Discuss resources and supports for quitting such as NRT, Rx, Quit lines, websites (see reverse) ➢ Assist patient in creating an action plan that includes: avoidance of triggers, ways to cope with cravings, how to utilize social supports, when to call quitline or use websites for assistance.	1st cigarette: **less than 30 minutes** Knows someone who quit: **N/A** Other successful changes (like weight loss): **N/A** Patient interested in the following NRT/Rx: • **Nicotine gum, Zyban** Patient interested in the following resources: • **Telephone quit line, Smoking cessation group**
☐	➢ **Review and sign patient's smoking handout.**	➢ Your endorsement may increase adherence.
☐	➢ **Arrange a follow-up appointment to re-assess progress and set a quit date.**	➢ Ideally, confidence should be 8/10. Quit date should be within 2 weeks after your next appointment.

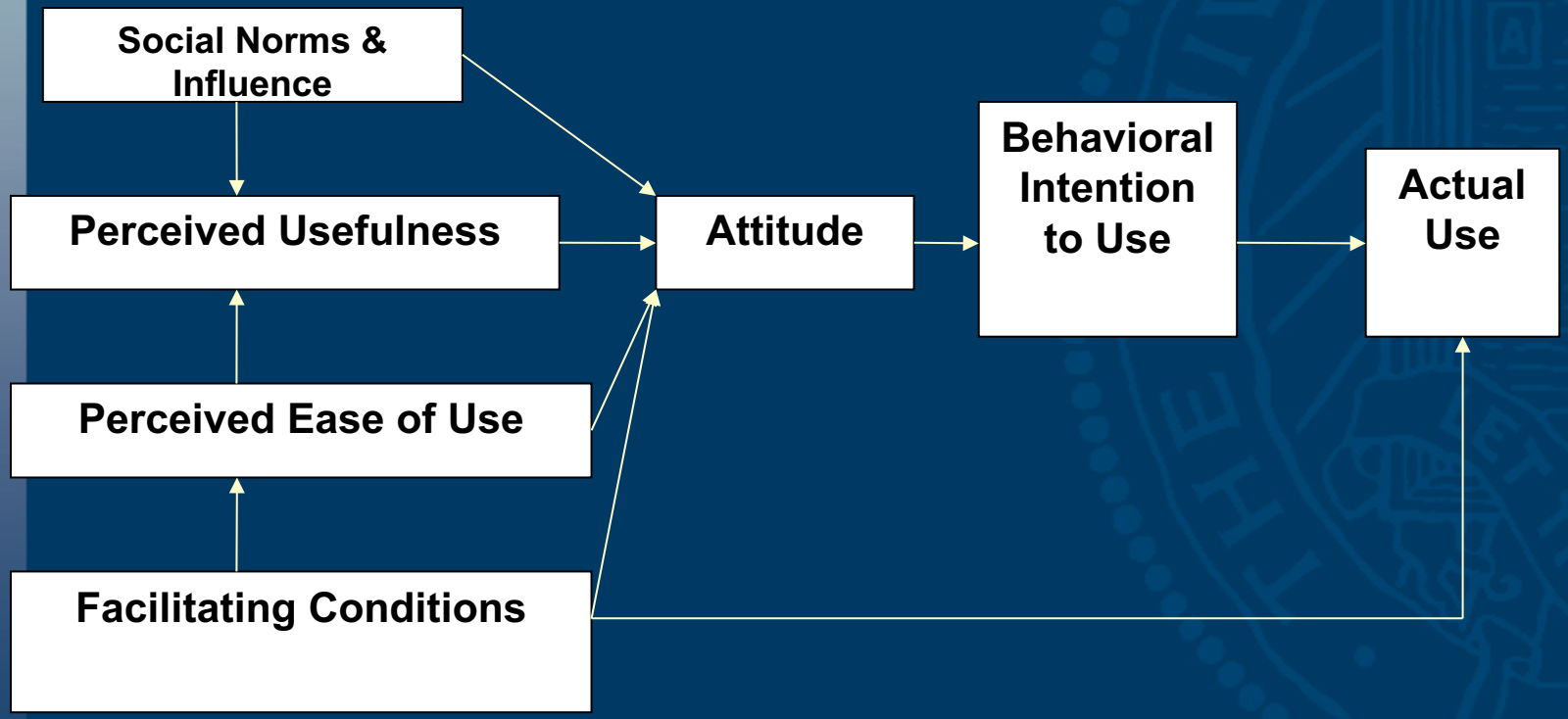
Pt's quit date should be set next visit if confidence is =>8.
Quitlines: 1-800-NO-BUTTS or 1-800-QUIT-NOW
Website: smokefree.gov
Pt's next follow-up appt is _____
Smartphone apps: QuitSTART or QuitGuide

Research Pipeline: Implementation Science



Development & Technology Acceptance Model

(Davis 1989, 1993)



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RESEARCH ARTICLE Open Access

Perceptions of clinicians and staff about the use of digital technology in primary care: qualitative interviews prior to implementation of a computer-facilitated 5As intervention

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Abstract

Background: Digital health interventions using hybrid delivery models may offer efficient alternatives to traditional behavioral counseling by addressing obstacles of time, resources, and knowledge. Using a computer-facilitated 5As (ask, advise, assess, assist, arrange) model as an example (CF5As), we aimed to identify factors from the perspectives of primary care providers and clinical staff that were likely to influence introduction of digital technology and a CF5As smoking cessation counseling intervention. In the CF5As model, patients self-administer a tablet intervention that provides 5As smoking cessation counseling, produces patient and provider handouts recommending next steps, and is followed by a patient-provider encounter to reinforce key cessation messages, provide assistance, and arrange follow-up.

Methods: Semi-structured in-person interviews of administrative and clinical staff and primary care providers from three primary care clinics.

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Disparities in receipt of 5As for smoking cessation in diverse primary care and HIV clinics

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ABSTRACT

Clinical practice guidelines recommend that clinicians implement the 5As (Ask, Advise, Assess, Assist, and Arrange) for smoking cessation at every clinical encounter. We sought to examine the prevalence of patient- and clinician-reported 5As in two primary care and one HIV care clinics in San Francisco, California between August 2013 and March 2014 ($n = 462$ patients and $n = 61$ clinicians). We used multivariable logistic regression analysis to identify factors associated with receipt of the 5As, adjusting for patient demographics, patient insurance, clinic site, patient tobacco use, and patient comorbidities. The patient-reported prevalence of 5As receipt was as follows: Ask, 49.9%; Advise, 47.2%; Assess, 40.6%; any Assist, 44.9%; and Arrange, 22.4%. In multivariable analysis, receipt of Advise, Assess, and Assist were associated with older patient age. Whereas patients with HIV had a lower odds of reporting being advised (AOR 0.5, 95% CI 0.3–0.8) or assessed for readiness to quit (AOR 0.6, 95% CI 0.4–0.9), patients with pulmonary diseases had higher odds of reporting being assisted (AOR 1.6, 95% 1.0

How Does CF5A's Work?

Front desk tablet distribution

Pt completes Q's in waiting room

Assigned to intervention vs control

Electronic 5A's + tailored pt handout

Clinical summary and decision aid to intervention provider

Pt interviewed after PC visit

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Journal of Substance Abuse Treatment

Beyond the ask and advise: Implementation of a computer tablet intervention to enhance provider adherence to the 5As for smoking cessation

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ABSTRACT

Background: The 5As for smoking cessation is an evidence-based intervention to aid providers in counseling patients to quit smoking. While most providers "ask" patients about their tobacco use patterns and "advise" them to quit, fewer patients report being "assessed" for their interest in quitting, and even fewer report subsequent "assistance" in a quit attempt and having follow-up "arranged".

Purpose: This article describes the design of an implementation study testing a computer tablet intervention to improve provider adherence to the 5As for smoking cessation. Findings will contribute to the existing literature on technology acceptance for addressing addictive behaviors, and how digital tools may facilitate the broader implementation of evidence-based behavioral counseling practices without adversely affecting clinical flow or patient care.

Methods: This project develops and tests a computer-facilitated 5As (CF-5As) model that administers the 5As

5A's RCT

- 3 clinics, stratified randomization by provider
- Intervention = 5A's program on tablet
  - Tailored health handout for pt
  - Summary and tx recs for provider
- Control = Usual care
- Primary outcome: 5A's fidelity rates

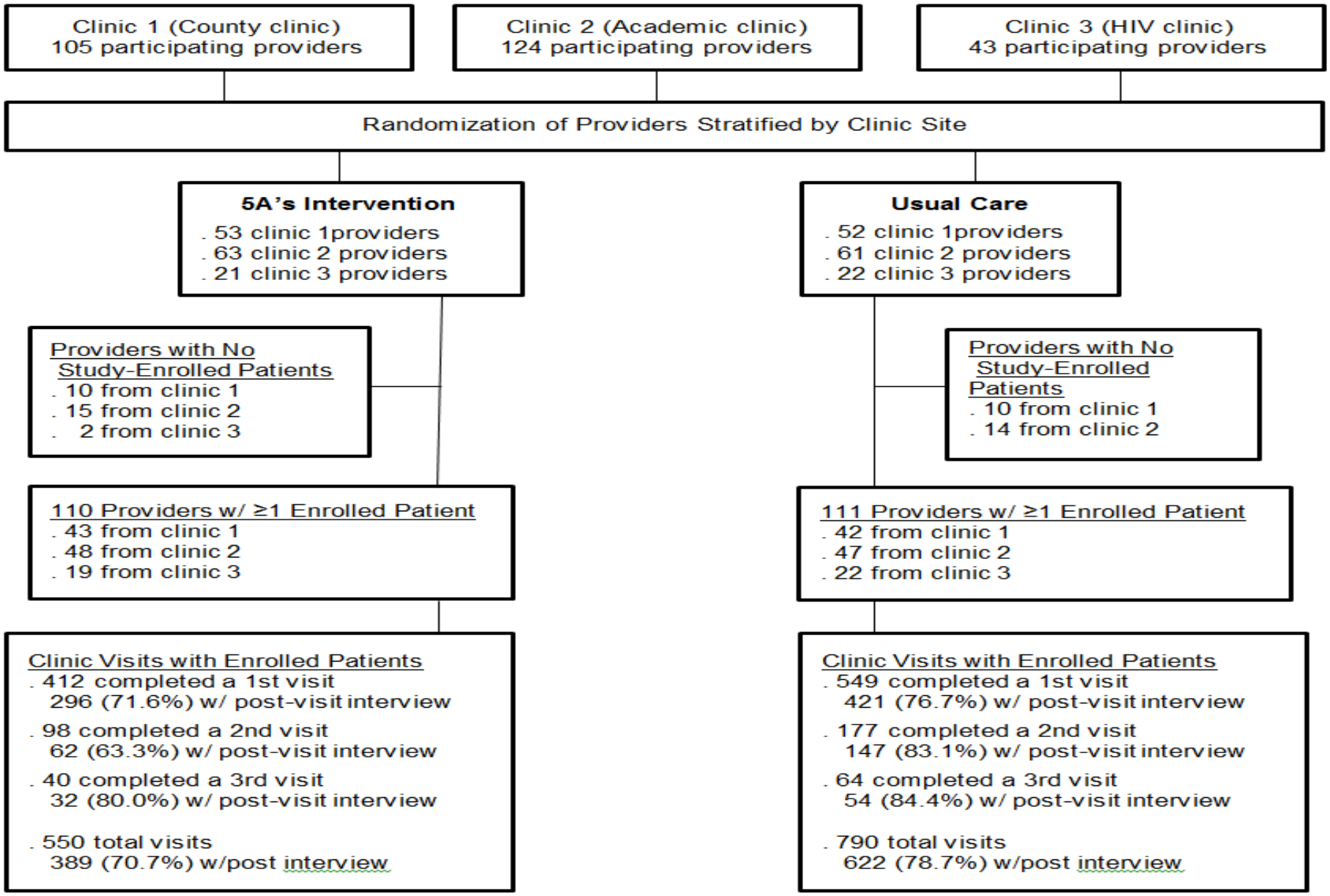
Patient Eligibility

- English or Spanish speaking
- Smoked at least 1 cig in past 7 days
- Smoked at least 100 cigs in lifetime
- Must be in office for PC visit
- Could participate up to 3 times/year

3 Study Clinics

- MZ: 18,000 pts with 40,200 visits/yr; 32% medicare, 15% Medi-Cal; ~12% smokers
  - 30 faculty physicians, 63 residents, 3 fellows, and 5 NPs
- GMC: 6,500 pts with 25,000 visits/yr; 32% uninsured, 36% Medi-Cal; ~25% smokers
  - 22 faculty, 51 residents, 2 fellows, and 7 NP's
- PHP: 2,600pts with 12,000 visits/yr; ~40% smokers
  - 30 faculty, 6 fellows, and 4 NP's

RCT Results: Consort Diagram



RCT Results

- N=221 providers; n=961 unique patients
  - N=549 control; N=412 intervention
- N=1,340 PC encounters
  - N=1,011 completed post-visit interview (75.4%)

Provider Demographics n=221

	Control (n=111)	Interv (n=110)
Female	66 (59.5)	65 (59.1)
Male	45 (40.5)	45 (40.9)
Faculty	40 (36)	35 (31.8)
Resident/Fellow	65 (58.6)	69 (62.7)
Other (NP)	6 (5.4)	9 (5.4)
% Clinical Effort	13.5%	11.5%

Patient Demographics N=961	Control (%) N=549	Interv (%) N=412
Age (Mean)	50	51
Female	195 (35.7)	139 (33.9)
Race/ethnicity		
White*	202 (37.2)	118(28.1)
African American	216 (39.7)	160 (38.9)
Hispanic/Latino**	81(14.9)	89 (21.6)
Asian/PI**	17 (3.1)	24 (5.8)
Education		
High school or less	274 (51.2)	195 (48.3)
Smoking status, Mean (SD)		
Current cigarettes daily,	10.2 (9.5)	10.7 (8.4)
# of yrs smoked in lifetime	28 (14.2)	28 (27.7)
Time to first cigarette %		
≤30 minutes	251 (59.6)	165 (55.9)
Readiness to quit		
Precont-Contemplation	254 (60.3)	177 (60.0)
Preparation	110 (26.1)	88 (29.8)

GEE Analysis of Primary Outcomes

- The data represent a 4-level nested structure (sites, providers, patients, visits)
- Preliminary models determined that the provider-level clustering could be ignored
- Final GEE models had visits clustered with patients and modeled site variability via a fixed main effect
- Modeled X variables: group, visit, group*visit, site

GEE Analysis of Patient-Reported Outcomes Describing Provider-Delivery of 5As

N=961 patients with n=1340 visits

Intervention vs Usual Care	Inter-vention %	Usual Care %	A-OR	95% CI	p
ASK-Prov	60.2	53.0	1.21	0.93-1.57	0.156
ADVISE-Prov	58.9	50.8	1.26	0.96-1.66	0.091
ASSESS-Prov	**56.4**	**47.0**	**1.32**	**1.01-1.72**	**0.037**
ASSIST-Prov	**62.3**	**50.3**	**1.45**	**1.08-1.93**	**0.012**
ARRANGE † -Prov (visit-ave)	25.6	19.2	0.87	0.53-1.44	0.596
Visit 1	**27.9**	**17.9**	**1.72**	**1.23-2.40**	**0.002**
Visit 2	21.6	20.2	0.99	0.50-1.97	0.981
Visit 3	11.5	27.8	0.39	0.12-1.31	0.127
All 5A's ‡ - Prov (visit-ave)	16.2	10.5	0.86	0.47-1.59	0.641
Visit 1	**17.9**	**9.1**	**2.04**	**1.35-3.07**	**0.001**
Visit 2	13.0	12.6	0.86	0.39-1.89	0.701
Visit 3	6.9	16.9	0.37	0.09-1.53	0.169

GEE Analysis of Pt-Reported Outcomes Describing Provider and/or Tablet-Delivery

N=961 patients with n=1340 visits

Intervention vs Usual Care	Inter-vention %	Usual Care %	A-OR	95% CI	p
ASK-P/T	**85.8**	**79.2**	**1.57**	**1.07-2.31**	**0.021**
ADVISE-P/T	**69.6**	**54.9**	**1.73**	**1.30-2.30**	**0.0002**
ASSESS-P/T	**78.9**	**58.8**	**2.39**	**1.82-3.14**	**<0.0001**
ASSIST-P/T	**83.1**	**56.2**	**3.43**	**2.43-4.84**	**<0.0001**
All 5A's †- P/T (visit-ave)	19.0	11.8	0.90	0.47-1.70	0.739
Visit 1	**21.4**	**10.5**	**2.26**	**1.52-3.36**	**<0.0001**
Visit 2	13.6	13.4	0.85	0.36-2.02	0.719
Visit 3	7.1	19.0	0.38	0.09-1.59	0.182

Conclusions

- CF5A's was effective in increasing the likelihood of patients receiving higher fidelity 5A's delivered by either the provider or tablet.
- CF5A's was effective in changing provider 5A's behavior for Assess, Assist, Arrange (1st visit), and All 5A's (1st visit).
- Tablet-based clinician-extenders hold promise for a range of behavioral counseling options in PC.

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